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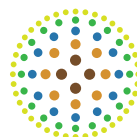
Australian Farm Business Performance

Insights from effective farm
business managers

*By Geoff Slaughter, Rod Glass, Christopher Noble,
Claire Beattie*

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By Geoff Slaughter, Rod Glass, Christopher Noble, Claire Beattie

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Foreword

This research contributes to an improved understanding of farm business performance across selected Australian agricultural industries. This is a study of the views, practices and priorities of a selection of producers, seen by industry informants as being effective in managing resources and inputs in order to achieve business and related goals. It provides insights into how these producers analyse and innovate in their business to achieve those goals. This study of how and why these producers make decisions can inform other producers and assist policy makers in engaging more effectively with the needs of producers.

The study sample is 80 producers from the cotton, grains, sheep, cattle, pig, chicken, sugar cane, vegetable, tree fruit and nut industries. Data collection method was through face-to-face interviews.

Critical themes in the data were observed and analysed with results used to construct a Qualitative Framework for Reflective Practice that will help guide other producers in selecting management strategies and tactics.

The report summarizes producer perspectives on management strategies, seen as important by the respondents, such as growth, consolidation, rationalisation, reinvestment and human capital development that are implemented over the long term.

The Qualitative Framework for Reflective Practice developed in this research synthesises the factors reported to be important to business performance so that participants and other producers can better achieve their goals.

The overall results suggest that variables that relate to better farm performance include the ability of a producer to manage personal and business relationships, financial acumen, how the business is structured, planning, and the use of information gathered.

This report is an addition to RIRDC's diverse range of over 2000 research publications and it forms part of our National Rural Issues R&D program, which aims to inform and improve policy debate by government and industry on national and global issues relevant to agricultural and rural policy in Australia by targeting current and emerging rural issues, and produce quality work that will inform policy in the long term.

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Craig Burns
Managing Director
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Executive Summary

What the report is about

This national study aims to improve farm business performance through developing a reflective self-assessment tool to assist farmers to evaluate their business performance, and to prioritise strategies and tactics to improve performance. The Farm Management Strategy Tool is based on insights into strategies and tactics used to achieve performance goals from the perceptions of a large and diverse sample of farmers who are seen as relatively successful by their peers and industry leaders. This research identifies the thinking behind the strategies and tactics that could contribute to increased profitability and the ability to achieve business-related goals. The reflective self-assessment tool assists farmers and their advisors to tailor relevant strategies and tactics to their own unique situation and performance goals.

Who is the report targeted at?

This report is targeted at Australian farm businesses operating across a broad range of agricultural industries, scales and regions. Industry stakeholders and advisors working with these farm businesses are also expected to find the project outputs useful. The results and recommendations could also inform the development of public policy in relation to business training and development needs in agriculture.

Where are the relevant industries located in Australia?

The sample in this study comprised farm business managers from across a broad range of regions and five agricultural industries: grazing, intensive livestock, broadacre cropping and cotton, horticulture, and sugarcane. It should therefore be relevant to managers in the major cropping and grazing areas, as well as for tree crop producers in more specific geographical areas. It is expected that there will be cross-industry learnings.

Background

Despite a myriad of research, extension and structural adjustment programs since the early 1970s, there remains a significant ‘tail’ of producers who are considered financially at-risk. On the other hand, there are 20 to 25 percent of producers who achieve higher rates of return. In the middle, between the at-risk and highly successful farmers, there exists a large group of Australian producers that could become more or less viable, depending on economic and climatic conditions and on management decisions. The wide range of financial performances within industries with similar available technologies, even for same-scale operations, suggests that management decisions may explain at least some of the differences. Therefore, this study was focussed on management approaches and priorities.

Aims/objectives

The objective of this project was to assist farmers and industry stakeholders in identifying options to improve farm business performance. The first aim of the research was to provide insights into how farmers, who are seen as highly successful by their peers and industry leaders, perceive farm performance and employ strategies and tactics to achieve their performance goals. Based on these insights, the second aim was to develop a set of reflective questions and a reflective self-assessment tool to assist farmers to evaluate their business performance, and prioritise strategies and tactics to improve performance.

Methods used

This qualitative research project uses case study methodology. In-depth interviews were conducted with between 6 to 18 participants for each of the five agricultural industries providing a total sample of 80 case studies. Purposeful sampling techniques were used to ensure coverage across industries, geographical regions and farm scale. Sample selection was supported by the outcomes of preliminary focus groups and guidance provided by an Industry Reference Panel made up of representatives from industry, government, research agencies and universities. Interview questions were developed based on the research objectives, a comprehensive literature review and input from the Industry Reference Panel. Each interview was recorded, transcribed and coded for analysis.

The researchers repeatedly interrogated the data using the qualitative data management software NVIVO to draw out prominent themes and determine the relative importance of concepts. Analysis was conducted across the full sample of 80 interviews to explore producer definitions of farm performance and to identify common strategies amongst participants. The analysis of priorities and tactics was conducted on an industry-by-industry basis, and in some cases by region. This approach facilitated the identification of priorities and tactics most relevant to each industry/region and allowed comparisons across industries to be made. Differences between farms of different scales were also investigated.

Based on the findings from the cross-industry analysis, five sets of reflective questions were formulated to prompt the producer to look at key practices within the farm business. These questions are incorporated into the Farm Management Strategy Tool. The goal of questions is to draw the attention of the producer to an area of the enterprise and allow them to appraise the need to change their business.

Results/key findings

From analysing the varying perceptions of these producers, farm business performance can be a complex and multilayered concept but can be considered as having at least three dimensions:

- *Continuity*: This incorporates business sustainability, or more correctly sustaining the business through production over all time periods as well as financial certainty, a strong family unit and continuation of family ownership.
- *Social dimensions*: Family underpins the success of the business and this is tied to valuing employees and customers and building strong relationships with them.
- *Business attributes*: Production and an emphasis on yield and efficiency are underpinned by recognition of holistic financial factors in setting goals. Both quantitative and qualitative performance indicators are used to guide decision-making but judgement and experience can complement or override those.

We noted variations in management priorities across industries and even regions, reflecting different differences in climates and industry structures. In addition, business growth is a common but not universal goal.

There are three basic strategies that are employed by participants:

- *Growth strategy*: a high proportion of participants stated that they were either in the process of growing, had goals to grow. Land purchasing remains a popular form of growth but we note a number of other strategies being used, with some reluctant to take on substantial debt.
- *Consolidation strategy*: Consolidation often follows a phase of growth within the business. As a consequence of the complexity within a farming system, it entails proper formation of the system after a substantial change has taken place.
- *Rationalisation strategy*: A number of enterprises were conducting strategies to rationalise their business. This can be as a result of people being at a stage in life where they wished to

contribute less labour, or small measured steps taken to reduce the size of the business and an emphasis on replacing infrastructure or land development.

The tactics used by participants relate to shorter time frames and complement their strategies. The focus is production, markets and financial returns relating to an annual cycle as well as activities that facilitate longer-term business and social goals.

While there is variation in strategies and tactics within and across industries. Strategies within industries differ due to location and scale and greater production risk results in less precise measures of performance being used and more intuitive qualitative measures used given circumstances at particular time. This was more evident in grazing systems whereas intensive livestock are very precise and rely heavily on metrics to improve efficiencies both in terms of costs and production. Broadacre grain and cotton follow a similar pattern where production risk is perceived to be lower measurement of performance tends to be more precise with a focus on efficiency. Where production risk is perceived to be higher more intuitive measures are used with a focus on minimising production risk.

As businesses increase in size they become more strategic in terms of management and rely more on employees for operational activities as well as sources of information through training and staff development. Medium businesses tend to use consultants and advisors more often where small businesses are much more focussed on seeking information to improve their operations with family heavily involved in management and daily activities. Regardless of scale, production was key focus for all business sizes with small and medium businesses focusing on ways to minimise production risk whereas large enterprises seek to maximise production efficiency. Family remained important for all business sizes.

The findings from the research have been used to develop a qualitative framework for reflection that can be used by producers. The framework comprises sets of categorised questions covering strategic, tactical, business, operational and social aspects identified by participants as important to their success. This is not a checklist or decision tree but a way that can assist producers to start thinking about their priorities and developing strategies and tactics that may improve their farm performance rather than prescribing specific actions.

This research is applicable to range agricultural industries including grazing, intensive livestock, broadacre grains and cotton, sugar and horticulture. If adopted this research will assist farmers, researchers and policy makers to identify strategies and options to facilitate improved farm performance that align with farmers perceptions of performance.

Implications for relevant stakeholders for:

Industry:

Insights into the strategies and tactics of farmers who are perceived to be successful can support the development of targeted industry strategies and plans that align with farmers' performance management priorities and help improve industry performance over time.

Communities:

Initiatives that are developed from the insights from this research can assist industry, government and communities in developing initiatives that can improve farm performance. Broader improvements in farm performance will strengthen resilience and benefit farming communities over time

Policy makers:

The insights from this research can be used by policy makers to design policy initiatives to improve farm performance that align with the perceptions of farmers to increase perceived relevance and engagement. Over time this could begin to address the issue of poor farm performance that is endemic in Australia and facilitate greater business resilience in agriculture.

Recommendations

This research set out five recommendations. These recommendations are targeted at industry, farmers, research agencies and policy makers. These recommendations set out the key areas where stakeholders can develop initiatives that are aligned with the perceptions and of farmers increasing their relevance and can help facilitate improved farm performance over time.

Recommendation 1: Pilot qualitative framework for reflective practice to gauge validity and refine instrument.

Recommendation 2: Design of management decision support tools that incorporate multiple goals.

Recommendation 3: Enhance programs and structures that facilitate supply chain engagement.

Recommendation 4: Develop models for collaborative business practices.

Recommendation 5: Financial literacy and communication skills bridging.

1. Introduction

Agricultural producers have comparatively little control over the prices received for their goods, with many if not most industries having strong production competition and few buyers of the untransformed products. Despite extensive research and government initiatives to improve the productivity and profitability of Australian farms with varying levels of success, farm business viability remains a major issue across Australian agricultural industries (Commonwealth of Australia, 2014; Mullen & Keogh, 2013). In the absence of direct price control, business strategies to improve or maintain profitability include cost control, product differentiation, increasing scale, enterprise diversification, technological innovation and more efficient management of resources. Industry exit is also an important strategy both for the individual and for policy-makers, but in this report we assume that the focus is on strategies leading to continuing in agriculture. Agricultural productivity (output per person) has generally increased, especially through technological innovation but, according to Treadmill Theory, the adoption of innovative technologies gives only short to medium term gains for individual farm businesses, followed by further downward price pressure as other producers also adopt the particular technology.

The rates of return on investment can be highly variable within an industry, even for same-scale operations, suggesting that management decisions may also explain some of the differences. Despite a myriad of research, extension and structural adjustment programs since the early 1970s, there remains a significant 'tail' of producers who are considered financially at-risk. Increasing the level of management skills and knowledge of the business amongst producers allows them the opportunity to better assess risk management strategies. This research provides a way of identifying the thinking behind the strategies and tactics of producers that could contribute to increased profitability and the ability to achieve business-related goals.

Given that farms are diverse and the business and producer dynamic, there is a large variation in the strategies and tactics used by producers to manage their farms. Moreover, the biophysical characteristics and circumstances of individual farms within farming industries vary significantly. Therefore approaches that work well on one farm may well fail on another. As such the strategies and tactics used by producers to improve farm performance and maintain or improve farm viability must be adaptable to individual circumstances, which is the focus of the second part of the research and this report.

2. Research questions

The research questions for this research are aimed at providing insights into ways to improve the performance of farm businesses from the perspective of farmers who are seen as highly successful by their peers and industry. Improved insights into successful farm businesses can inform strategies and tactics that can be used by farmers and stakeholders to help improve the performance of farms that are less successful. The research questions addressed are as follows:

- How do farmers who are seen as highly successful by their peers and industry define farm business performance?
- What strategies do farmers in this research utilise to operate their farm businesses?
- What are some of the tactics and priorities of the farmers sampled?
- What are some of the differences between the strategies and tactics and scale within industries?
- What are some of the differences between the strategies and tactics of farm businesses across industries?

Farmers from a range of different industries were asked about their experiences in answering these questions. By recording their thoughts about farm performance the research grounds its results and recommendations in the understanding these producers possess.

3. Objectives

The overall goal of this research is to provide insights into how farmers, who are seen as highly successful by their peers and industry, perceive farm performance and discuss the strategies and tactics they employ to achieve their overall goals. The information contained in this report is designed to assist other producers and stakeholders in identifying options to improve farm business performance.

The objectives in this research are as follows:

1. Identify a sample of producers, considering project focus, representativeness and resource constraints.
2. Collect and collate qualitative data from a sample of farm businesses that are perceived as effectively managing resources to achieve goals by their peers and industry leaders and advisors to this project.
3. Identify farm performance variables from the data as well as some interrelationships between those variables.
4. Develop a reflective self-assessment framework to assist farmers to evaluate their business performance, and prioritise strategy and tactics.
5. Draw out the key recommendations and/or implications relevant to farm management, the provision of farm business advice and policy formulation.

4. Literature Review

4.1 Perspectives on farm performance

Perspectives on farm business performance have come from, or been influenced by, a range of different disciplines, including economics, sociology, environmental and production sciences. Organisations such as the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) and Research Development Corporations (RDCs), universities, banks, peak industry bodies and private business have attempted to identify, measure, and explain the variables underpinning the outcomes of agricultural production. Measurements of farm business performance include indices, such as the total factor productivity (see Sheng, et al., 2015, as an example), or financial spreadsheets such as gross margin schedules or whole farm schedules (see Heard et al., 2013). This allows a relative comparison of business attributes. In the case of the total factor productivity index, the formula normalises the costs and revenues to provide a scalar against which another business can compare efficiency. In contrast, a spreadsheet analysis itemises inputs and outputs against prices. While spreadsheet analysis is more open to interpretation depending on the treatment from the analyst, the decomposition of items in these schedules can enable direct comparisons of businesses. If there are differences between the businesses, such as the scale, a spreadsheet analysis does not normalise these factors for a comparison to be made.

Characteristics such as farm scale, technical efficiency, allocative efficiency and technology adoption are used by some researchers to break down the performance of an enterprise into components (Sheng et al., 2011; Fleming et al., 2006). Such classifications are used in productivity analysis based on mathematical properties of priced volumes of inputs and outputs. Similarly, Islam, et al. (2014) further disaggregate performance into physical resource endowments, technology, capital and infrastructure, costs and prices, and efficiency variations. They argue that efficiency gains (possibly scale, technical or allocative) are just as explanatory as technological change in terms of performance. This allows for greater discussion on each components role in creating the performance. This approach is popular in economic and financial research of production because it can be mathematically calculated and provide a range of observations.

Economic and financial measures, such as rates of return, productivity and profitability are also commonly used when discussing farm performance (Maclean, 2014; Lagura & Ronan, 2010; Islam et al., 2014; O'Donnell, 2010; Mullen & Keogh, 2013; Mullen, 2007; Fleming et al., 2006; Productivity Commission, 2005). The distinction between financial and economic concepts is important for understanding farm performance, with economics looking at allocative concepts and financial approaches concentrating on monetary considerations, although they are frequently used interchangeably when research is reported. The most obvious end of process measures of farm business performance used for both economics and financial analysis are prices, quantities marketed, return on investment, profit and costs. Profit is still the economic and financial 'gold standard' in measuring performance as it represents the value gained from operating the farm business.

While quantitative measures of performance are important, they measure only the results of farm activities not the factors or relationships that underpin how a result is achieved (Ronan & Cleary, 2000; Malcolm, 2004). These types of analysis do not however explain the processes taken to achieve performance and as such, the producer requires additional knowledge to act. The understanding of process provides some direction to an operator about how to improve performance. Both Burton et al. (2008) and Farmar-Bowers and Lane (2009) argue that the use of financial and economic variables alone have a limited influence on producer's decision making. It may not provide the detailed understanding of how to create a beneficial outcome when other factors such as social or environmental aspects are explanatory to the outcome. It is also important to understand the factors that underpin a producers' approaches to the management of their businesses and how this translates into the quantitative measures they focus on to measure performance outcomes. Research and extension programs, major rural reconstruction projects and strategies to facilitate improve farm

business performance have met with mixed success and financial viability issues persist. The following section provides an overview of some of the factors seen to influence farm performance.

Despite the large volumes of literature written on farm performance outcomes, variables of performance and programs designed to deliver information and skills to a producer, the factors that influence farm performance are not fully understood. Furthermore, policy, public and industry discussions often focus on those factors least able to be affected by business managers – prices and climate. Discussions of agriculture in the economy in Australia tend to be focussed on the desire for sustained production (Salim & Islam, 2010; Vanclay, 2004; Chisholm, 1992), yet variability is more the norm. External (to the farm) influences include competition in markets in and outside of agriculture, social preferences around food production and environmental pressures (Mullen & Keogh, 2013; McCann et al., 1997; Salim & Islam, 2010; Kingwell & Pannell, 2005). Further complicating analyses of farm business management, practices are taken up or discarded by producers for many reasons and these reasons are not always identified by researchers (Reimer et al., 2012).

Research has provided a list of concepts that could be explanatory variables for decision making and farm performance (Abadi Ghadim & Pannell, 1999; Lindner, 1987). Often the information seen to be required by producers is diffuse within and between research articles (Bosch et al., 2007), hence the case for first asking the managers how they see business performance, although some researchers are wary of this (Ferris & Malcolm, 1999; Ronan & Cleary, 2000). Without understanding what producers want from their farms however, we will not be able to reconcile what farm performance means at the producer level. Producers can provide critical insights and, given limited resources, we argue for first focussing on those seen to be effective in managing their resources to achieve goals. We also suggest that it is important to consider decision-making in the social as well as economic context.

Sociologists have contributed to discussions that are useful for understanding farm performance; for example, rural sociologists have a long history of research in areas such as innovation (Rogers, 2003; Cochrane 1993; Ruttan, 1996), cultural embeddedness and extension (Black, 2000; Guerin & Guerin, 1994; Williams 1968). Social norms and influences complement many of the economic findings (Elster, 1989), because these place the producer as an actor in the production and industry environment. Sociologists seldom speak of farm performance, perhaps wishing to avoid the ‘more is better’ implication (Burton, 2004) but look at how a producer act or relate to others. There is also consideration of the cognitive frameworks behind decisions (Howden & Vanclay, 2000; Vanclay et al., 2006; Frank, 1995; Burton, 2004). The strategic focus of an enterprise is not necessarily, or only, in line with maximising production output or profits (Rodriguez et al., 2014). Studies with a more sociological focus have looked at the inherent knowledge of producers (Ruttan, 1996; Howden & Vanclay, 2000) and engagement with programs such as landcare (Lockie & Vanclay, 1997; Curtis & Lockwood, 2000; Sobels et al., 2001) and some have proposed particular sociological research methods, for example in fields such as innovation (Vanclay and Enticott 2011) and rural culture (Vanclay et al., 2013). We therefore consider, to some extent the social context of the decision-makers in our sample.

Sustainability

Discussions of farm performance can involve consideration of sustainability but the fluidity of the concept can lead to some confusion, so while we report on respondents’ views of sustainability, care is needed in interpreting the conclusions from that. The origin of the term sustainability is clearly in consideration of natural resources and these are obviously important in all agricultural industries (van der Werf & Petit, 2002). The organising framework from a planning and evaluation perspective is the triple bottom line, organised according to economic, social and ecological factors (Vanclay, 2004; Mooney, 2004; Thompson, 2007). As Vanclay (2004) points out, most of the issues in managing farm resources have multiple bottom lines. Kingwell and Pannell (2005) list environmental issues that are impacting on agriculture, including dryland salinity, loss of soil structure and soil acidity. The producer can influence each of these threats to the business in either a preventive or remedial

capacity. In cases where the producer cannot influence an environmental variable itself, the producer still has the ability, in a reactive capacity to work within those conditions (for example, see Lawes & Kingwell, 2012, on the reactions of producers to drought). In other usage, sustainability can come to be dominated by concerns about sustaining a business over time. Most research on sustainability in agriculture is multi-disciplinary, considering social networks, culture, identity, labour constraints and financial constraints (for example Vanclay & Lawrence, 1995; Vanclay, 2004; D'Emden et al., 2008; Llewellyn et al., 2012).

Specific motivations for acting on the environment within a business include environmental goals, corporate responsibility, benefits to production, ethics of native flora and fauna conservation, or financial return (Llewellyn et al., 2012; Kancans et al., 2014). Where production is compromised by environmental degradation remedial action is undertaken to maintain and improve production through the management of environmental variables such as soil nutrition and pasture health (Kancans et al., 2014). While this may have broader environmental benefits the primary motivation for many farmers is productivity and farm viability (Llewellyn et al., 2012). Producers see the environment from the perspective of the sustainability of their production system. That is, where a desired outcome is compromised by environmental degradation remedial action is needed, however, to maintain and improve production, environmental and production management are integrated activities that underpin farm performance.

Production science and farm performance

The technical capabilities of producers have been enhanced by findings from production science over time and change in capabilities is estimated by some measures as significant (Mullen, 2007; Mullen & Keogh, 2013). Just as other disciplines have measures of benefit, such as profit, production science and agronomics emphasises yield as an important yardstick along with a mix of many other commonly used production-related measures. These include pest and disease infestation rates, soil moisture content, growth rates, soil nutrient analysis and production quality measures such as moisture content, protein levels, fat scores and so on, with the type of measure and individual importance of each measure dependant on the type of enterprise, the activity and goal of that activity within an enterprise at a given time (Carberry et al., 2010).

Overcoming technical limitations at the regional level is viewed by natural scientists as the avenue to increase yields and general productivity (Carberry et al., 2010). The Productivity Commission (2005) concluded that more sophisticated farm machinery and equipment, improved herbicides, fertilisers and other chemicals that have improved yields, and the genetic modification of plants and animals has increased the productive potential of farms. Bramley (2009) links technology to information acquisition as a means to overcome the variation of inputs within an enterprise. Griffith et al. (2013) discusses the change in agricultural practices available once other technological changes are made such as communications technology. Producers attempting to make their enterprise perform will make changes in response to the changes made elsewhere in the enterprise. However, the extent to which changes will be made by producers will depend on the perceived need for change and the relevance of a given technology to the individual farming system.

Benchmarking Farm Performance

Benchmarking is a commonly used extension technique that focuses on variables within the production system with the goal of comparing farm business performances. A number of methodologies have been commonly used with varying degrees of success. Benchmarking research has focused on financial measures, environmental/production measures and combinations of measures, including social and socio-economic indicators have been applied widely to Australian agriculture (Moran et al., 2000; McGregor, 2009; Boyce, 2012; Medhurst, 2004; de Snoo, 2006; MLA & AWI, 2008; Hassall & Associates, 2005; Roth, 2010; Hooper & Levantis, 2011). Such studies can inform producers as to where their levels of resource usage and production practices sit in relation to another producers' enterprises.

The problem identified in this research, is how to rationalise all of these variables into a comprehensible form so that producers can identify the performance gaps in their business so they can plan and prioritise strategies and tactics. Benchmarking and related comparative analysis procedures have substantial precedence in Australian agriculture where, in particular, accounting benchmarking has been prominent (Ronan & Cleary, 2000; Wilson et al., 2004; Jack, 2009). It has been criticised for having many of the same failings as comparative analysis (Ferris & Malcolm, 1999; Ronan & Cleary, 2000; Malcolm, 2004; Fleming, et al., 2006). Schache and Adams (2005) argue that the value for a producer in a benchmarking program lies in how they participate in the program and ensuring the program is maintained over time. They note that the benefit to producers from participation in benchmarking programs is limited if the underlying method is not consistent.

Fleming et al. (2006) note that benchmarking techniques lack economic foundations in their construction. Malcolm (2004) provided examples of metrics that are not consistent indicators of value but were being employed in benchmarking programs. Others have suggested that the link between production and benchmarking methods needs to be reliable (Ronan & Cleary, 2000). Benchmarking, and other measure-based assessments of farm business performance can however be defended on the grounds that they are still useful tools (Ronan & Cleary, 2000; Ronan, 2007), provided the basis for the measurement is sound. Percentages and averages are often provided to producers based on what is considered desirable or average, however percentages are relative measures and do not provide good insights in isolation and averages can hide the variation that exists within data (Wilson et al., 2004; Fleming et al. 2006). These types of measures still do not get directly to the underlying practices that led to the results and how those practices may be distributed, yet it is the practices that are often of most interest to producers. Furthermore, comparison of businesses should include consideration of the resources and capabilities available within an individual enterprise. The technique employed needs to reflect the production process prior to measuring the outcome and the goals.

Best-practice

In response to the criticism of comparative measures, such as benchmarking, other extension methodologies can address this limitation. The ‘best-practice’ methodology is a newer paradigm for agriculture which can partially fulfil the demand for measureable information by producers. Best-practice can be viewed as a subsection of the technology/innovation adoption literature (Kraemer-Mbula, 2011; Baumgart-getz et al., 2012) and is linked to increased enterprise efficiency, profitability and competitiveness (Nelson & Phelps, 1966). Best-practice “is not static – it is changing and improving through examining our [the producer’s] practice and its results” (Coutts & Roberts, 2003 p.2). Using a dynamic best practice approach that is adaptable to an individual’s needs can better inform the producer and provide the producer with cause and effect options rather than information or actions in isolation (Kraemer-Mbula, 2011).

Adoption of best practice depends on the characteristics of the practice and its relevance to a given situation (Reimer et al., 2012). Best-practice programs are designed in a variety of ways to provide the producer with different capabilities. Programs, such as Smartcane BMP (Canegrowers, 2013), are guides to production that provide enough room for a producer to develop their own best practice. Other best-practice programs, such as Grains Best Management Practices emphasise the process of change and encourage self-assessment by producers (QDPI&F, 2008). Best practice programs provide other advantages such as legal and certification assistance, for example, MyBMP (CRDC & CA, 2013).

The process best-practice techniques use is different to that of benchmarking (Ronan & Cleary, 2000). Under best-practice, production processes are measured to make comparisons and understand variations in outcomes, i.e. a known practice is compared. Under benchmarking, measurements are taken to discover the process, i.e. an unknown practice is compared in relation to an outcome. The best-practice approach simplifies the process for comparison. By looking at a known, the producer has the ability to judge from an earlier stage in the process whether a practice is suitable for their situation.

Best-practice outcomes need to be adapted from producer to producer and therefore prescription needs to be avoided (Ronan and Cleary, 2000). Baumgart-Getz et al. (2012) showed that individually many factors in the adoption 'best-practice' frameworks were ineffectual, arguing that a range of factors, acting in combination, explain the differences in adoption rates and the success of best practice initiatives. While best-practice is an improvement on some aspects of benchmarking in that it can provide insights into the factors underpinning benchmark outcomes, it has limitations. Lockie (1998) raises the question of 'who decides what is best practice' suggesting that the practices to be implemented are not easily identified and that the producer's perspective is important.

4.2 Research Approach

Research shows that production and financial performances continue to be highly variable within and between agricultural industries. Despite many years of research, extension programs, benchmarking, best-practice programs and reconstruction initiatives poor farm business performance is still a major issue in Australia. Variations in farm business performance cannot be fully explained by factors such as farm size, location or industry. There are farms of all sizes, within some boundaries, across all industries that continue to perform well productively and financially when others in similar circumstances face major production and financial hardships. The key question that arises from this disparity is what sets farmers who are perceived as performing well by their peers and industry apart from those that are not performing well?

This research posits that the perceptions of producers who are seen by their peers and industry as "consistently performing well" at managing their farm business can provide key insights into how they approach the management of their businesses and how this management underpins successful farm business performance. They will, we assume, consider their own measurable indicators, such as yields, cash flow and so on. This project provides a different, but potentially complementary, to measurement and benchmarking, approach to farm business performance. This methodology provides initial information on areas of focus and how these were investigated to allow comparison across industries and overall. In doing so, a sample of farmers that were perceived by their peers and industry as successful were interviewed to gain insight into farm performance.

5. Methodology

The aim of this research is to provide insights into the conceptions of farm business performance by farmers who are perceived by their peers and representatives of industry associations to be effective in their use of resources to achieve business and related goals. This section provides a summary and rationale for the methodology.

5.1 Industry reference panel

In the first stage of the project, an Industry Reference Panel was formed to refine the scope of the research and the process for data collection. The initial review of literature provided background on the perceptions of farm business performance and factors that influence that performance and options for conducting the research. Advice from the panel supported an emphasis on qualitative research as it was felt that quantitative measures could not be consistently applied across all industries.

The selection of the panel was based on key industry contacts within the research team that extended across major industry sectors and regions. The panel was made up of representatives from the following organisations:

- Rural Industries Research and Development Corporation (RIRDC)
- University of Southern Queensland (USQ)
- Meat and Livestock Australia (MLA)
- Horticulture Australia Ltd (HAL)
- Sugar Research Australia (SRA)
- Rabobank Australia
- University of Queensland (UQ)
- Australian Pork Ltd (APL)
- University of Melbourne (UniMelb)
- Queensland United Egg Producers
- DAFF Queensland (QDAFF)
- National Farmers Federation (NFF)
- Graingrowers Association

The panel convened for a day of discussion at the start of the research during which they assisted in refining the research objectives, delineating the scope of the research.

The panel provided feedback on the validity of the approach and the data required. A step by step approach to the research process was developed with the Industry Reference Panel through a consensus for the methods to be used for each stage of the research. It was agreed that quantitative measures of performance are well defined for each industry and given the broad cross section of industries and variations in the relative financial and production KPIs for each industry, such measures would be incompatible as comparative performance benchmarks. As such the focus of the research was directed towards understanding the qualitative factors behind farm business performance and farm business strategies and tactics. A number of insights from the reference panel reinforced the literature review conclusions that producers are motivated by a number of things, including financial outcomes, current financial position and stage of life. This resulted in a move away from the initial plans for structured surveys to focus groups and semi-structured interviews to provide more ‘in-depth’ data from the sample.

Subsequently, the reference panel assisted in the research process by providing advice and identification of potential participants for the respective industries they represent. This included advice on suitable geographical areas where research could be conducted or alternative meeting places

such as conferences. Where the reference panel felt others had useful knowledge about producers in particular areas, the panel assisted by facilitating contact with those professionals. Consequently, the areas from which samples were drawn and, to a further extent, the farm businesses that were invited to participate, were located centrally to each industry and perceived to be highly successful by their peers and industry associations.

5.2 Sample selection and data collection

The three stages of data collection in the research were:

1. A pilot study of short face-to-face interviews;
2. Focus groups; and
3. A series of in-depth face-to-face interviews for the main sample.

The pilot study of brief face-to-face interviews was conducted to incorporate feedback from the Industry Reference Panel into the data collection process and to make sure questioning of participants in the main sample would allow the producer the opportunity to put their point of view across. Recruitment of participants for the pilot were assisted by a member of the Industry Reference Panel to make appropriate selections of potential participants. A total of twelve participants were interviewed using a short interview guide and asked to discuss how they managed their business. The data from the pilot was reviewed and insight from the pilot incorporated into subsequent interview and focus group interview guides.

Focus groups

Focus groups were conducted for the industries of grazing, horticulture, and sugar cane, with individual focus groups targeting six to eight participants. Focus groups were not conducted for intensive livestock industries as strong competition between businesses in those industries prohibited an exchange of information in an open forum. During each focus group, participants had an opportunity to contribute to discussion (Stewart et al., 2007). Semi-structured questioning was designed to gain perceptions about farm business performance in each industry and promote some debate about alternative points of view. The focus group methodology was dropped after some initial meetings because of the difficulty organising time poor producers to meet in a convenient location. In place of focus groups face-to-face interviews covering the topic areas of the focus groups were undertaken.

The focus groups allowed the research team to gain an overview of some of the participants and their businesses. It assisted in an initial identification of large, medium and small producers based on farm size and relative financial and production characteristics in relation to their respective industries. The effect of size on farm performance creates variation between farm businesses not only in the outcomes but also in the processes used in operating the business. For this reason sample recruitment specifically targeted a range of businesses sizes. The identification of business size was a process of triangulation because measures of farm size do not provide an exact indication of scale effects. Data gained from focus groups was compared with other sources such as ABARES classifications, industry research, academic literature for scale and the opinions of industry professionals to classify a business's size in relation to its respective industry. The size of businesses within the sample are approximated by the classifications provided in Table 1 below:

Table 1: Classification of business sizes by region and industry or subsector¹

Industry	Region/Subsector	Size	Classification
Grains and Cotton	Northern Grains and Cotton	Small Medium Large	≤ 2000 ha planted 2000-10,000 ha planted ≥ 10000 ha planted
	Southern	Small Medium Large	≤ 1500 ha planted 1500-3000 ha planted Equal to greater than 3000 ha planted
	Western	Small Medium Large	≤ 3500 ha planted 3500-6000 ha planted ≥ 6000 ha planted
Grazing	Northern	Small Medium Large	≤ 500 lambs sold or 400 head cattle stocked 500-1000 lambs sold or 400-1600 head cattle stocked ≥ 1000 lambs sold or 1600 head cattle stocked
	Southern	Small Medium Large	≤ 500 lambs sold or 200 head cattle stocked 500-1000 lambs sold or 200-400 head cattle stocked ≥ 1000 lambs sold or 1600 head cattle stocked
	Western	Small Medium Large	≤ 500 lambs sold or 200 head cattle stocked 500-1000 lambs sold or 200-400 head cattle stocked ≥ 1000 lambs sold or 1600 head cattle stocked
Horticulture	Vegetables	Small Medium Large	≤ 200 hectares planted 200-800 hectares planted ≥ 800 hectares planted
	Tree Fruit	Small Medium Large	≤ 50 hectares planted 50 to 500 hectares planted ≥ 500 hectares planted
	Nuts	Small Medium Large	≤ 100 hectares planted 100 to 500 hectares planted ≥ 500 hectares planted
Intensive Livestock	Pork or Chicken (Egg and Meat)	Small Medium Large	≤ 50 thousand birds or 1500 sows 50 to 500 thousand birds or 1500 to 3000 sows $\geq 500,000$ birds or 3000 sows
Sugarcane	Northern	Small Medium Large	$< 20,000$ tonnes of cane harvested 20,000-40,000 tonnes of cane harvested $> 40,000$ tonnes of cane harvested
	Southern	Small Medium Large	$< 20,000$ tonnes of cane harvested 20,000-40,000 tonnes of cane harvested $> 40,000$ tonnes of cane harvested

¹ Measurement of farm size can be taken in many different ways. It is a matter of debate as to which metric best incorporates the scale effects of the farm. The classifications above are a general guide rather than an objective measure and other characteristics of an enterprise may be more appropriate in other situations.

5.3 Sample Selection and Interviews

To recruit interviewees, ‘purposeful’ rather than ‘representative’ sampling was used, as this best fitted the focus of the project. Potential participants for interviews were sought through focus groups and key contacts provided by the Industry Reference Panel. Industry contacts were engaged with farmers in their respective industries through either personal or professional association and could readily identify potential participants. The result was sufficient numbers of participants so that a cross-section of industries could be included.

Two types of purposeful sampling were combined for this research. First, there was an element of ‘intensity’ sampling where examples of good managers are sought so that the data collected can answer the research questions. Similar to focus groups, potential participants for interviews were initially selected from the recommendations of industry professionals. Industry Reference Panel members and professionals had knowledge specifically of farm businesses in their respective fields and locals, and hence, their recommendations could assist in more accurate selection of participants. Following the discussion and implications from Chapter 4, the selection criteria provided to industry professionals by researchers was relatively general. Industry professionals were asked who each felt were ‘good managers of their businesses given the resources available to that business’.

Second, there was consideration of ‘maximum variation’ sampling where a wide range of participants is sought so that if there are any differences between the participants, these will be found. The maximum variation sampling has taken place through a range of industries and geographies being included in the sample and a range of different sized businesses within each of these industries. By sampling with both intensity and maximum variation techniques some depth into farm operators understanding can be achieved and some of the diversity between farm enterprises is accounted for in the results.

Potential participants were approached by either the industry professionals or directly by the researchers by phone, email or face-to-face introduction and invited to participate. Where possible, interviews were held on-farm so that the meeting occurred in a familiar and comfortable context for respondents. Where it was not possible to conduct an interview on farm another suitable location, such as a club, restaurant or café, was negotiated with the participant so that the interview could be conducted face-to-face. For a small number of participants a face-to-face interview was not possible and instead a phone interview was conducted. A total of ten interviews were conducted off-property as well as five phone interviews.

The distribution of producers interviewed for each industry, locality and size is presented in Table 2. A total of 6 interviews or more were conducted for each region (except for intensive livestock where a total of six participants were interviewed). Areas and subsets (be size) of industries were selected from industry literature and the perception of where industries are geographically centred. For horticulture and intensive livestock industries, geography is not a helpful method for determining subsets, because these industries are geographically too dispersed. Horticulture has many different crops and three categories based on these cropping types were chosen so that some variety was captured in the sample. Intensive Livestock have significantly fewer businesses in that industry than the other industries and the reduction in sample size reflects this.

Table 2: Sample numbers by industry, region, subsector and size

Industry	Region/Subsector	Number interviewed	Size	Number interviewed
Grains and Cotton	Northern Grains and Cotton	10	Small Medium Large	4 4 2
	Southern	6	Small Medium Large	2 2 2
	Western	6	Small Medium Large	2 2 2
Grazing	Northern	6	Small Medium Large	2 2 2
	Southern	6	Small Medium Large	2 2 2
	Western	7	Small Medium Large	3 2 2
Horticulture	Vegetables	6	Small Medium Large	2 2 2
	Tree Fruit	7	Small Medium Large	3 2 2
	Nuts	6	Small Medium Large	2 2 2
Intensive Livestock	Pork or Chicken (Egg and Meat)	6	Small Medium Large	2 2 2
Sugarcane	Northern	6	Small Medium Large	2 2 2
	Southern	6	Small Medium Large	2 2 2

There were limitations in relation to participant recruitment. The size of the businesses can change quickly with growth or rationalisation. Second, the use of industry professionals as informants may mean there is inconsistency in the 'criteria' applied to making recommendations. Professionals also come from particular areas of expertise and may focus their opinions more heavily on those areas. Then there is the visibility of participants that may not be reflected in actual farm business performance. While the knowledge of each professional is considerable, they are choosing participants who are familiar to them. Producers who are active within the industry or have prominent businesses are more likely to be selected. Finally, the willingness of producers to participate places a bias within the sample. There are well known problems in acquiring a sample of producers in agriculture, including over-use of surveying, resentment of the research industry by producers, producers who did not feel they fitted the criteria and time constraints on a producer to fulfil their role. Some potential participants were approached to be part of focus groups or interviews but declined.

5.4 Data analysis

Each interview was transcribed verbatim followed by a systematic check to ensure accuracy of the transcription process. The transcriptions were uploaded into NVIVO software to assist the analysis of data. The research team initially discussed schemes for identifying important concepts and for coding the data according to the subject matter of different strategies, tactics and other enterprise traits. The transcripts of audio recording were coded using NVIVO software so that an analysis could be performed. The coding task was undertaken by two researchers to minimise the chance of bias or errors in the coding process. Each member coded a small sample of interviews and the sample was then discussed to compare the importance of concepts raised. Following this a coding scheme was established for the categories and concepts within the data. The analysis was then framed around the key themes from the data to create a qualitative descriptor and the Qualitative Framework for Reflective Practice.

5.5 Qualitative descriptors

The analysis of data was conducted using NVIVO. It allowed the researchers to set up a systematic coding system, which allowed the researchers to develop descriptors of the key variables relating to farm performance. Initially concepts can be signposted on theoretical expectations of the researcher and then developed further as patterns in the data become evident (Bazeley, 2010). By following this method of identifying important concepts, the research increases the opportunity to find many of the relevant concepts within the data.

Following the coding process, NVIVO was used to conduct searches within the data and generate reports based on prominent themes. Two types of analysis are reported: first, a pattern matching analysis based on coding of concepts. Matching patterns within the data creates validity in the findings (Yin, 2009). This looks at the variety of responses for some of the strategies employed by participants. This was achieved by looking at the concept coded then further interpreting the response to see how it was different to other responses. How a participant talks about a concept reflects their understanding of it (Geertz, 1995). By analysing the dialogue in the interview the differences in the concepts held by different producers can be seen.

The second method is analysis based on reports generated by NVIVO which looks at the relative importance of a concept by placing a value on the coding. The process of generating the report for an individual industry subsection was to run a search for all concepts coded in the data for that industry. The list of concepts was then truncated to those concepts coded with more than 30 references for the industry subsector. The search was then re-run with the truncated list of concepts to provide the results. These results were then compared to the dialogue in the interviews so that an explanation of why these concepts are important was developed. The frequency output from NVIVO assists with validity of results as this output is based on the accounts provided by respondents. This is used in the cross industry analysis and the formation of the Qualitative Framework for Reflective Practice to show how producers in each industry prioritise operations within their business.

5.6 Qualitative Framework for Reflective Practice

The Framework for Reflective Practice is based on the findings from analysis. It consists of five sets of questions that have been formulated to help producers reflect on the practices within their farm business in relation to areas of focus of farmers who are perceived as successful by their peers and industry. The reflective questions have been developed from the NVIVO analysis of themes. The themes, as determined by frequency of discussion by participants. Each theme is analysed further from the interview transcripts so that a questions break down the key themes into strategic, tactical, business, operational and social variables. The aim of the questions is to enable a producer to reflect on priority areas of their business from the perspective of participants in this research. The framework can be used to prioritise new areas of focus as producers achieve or update their goals for different aspects of the business.

5.7 Glossary of Nodes

Throughout this report reference is made to the nodes (themes) which have been constructed in NVIVO. NVIVO is a qualitative research management program which enables researchers to group (code) participant's responses. These groupings allow the research team to break large quantities of raw data into manageable collections in order to extract meaning and context. These research themes are designated as nodes in NVIVO. In this study researchers worked together in a team to analyse initial interviews and determine key dimensions. These themes were then used for preliminary coding. At this point the research team evaluated the appropriateness of the themes and developed further coding protocols. Remaining interviews were coded according to these protocols. In qualitative research, nodes are constantly reviewed and discussed by the researchers. As this project proceeded the team condensed some nodes into parent nodes in order to aggregate themes into related topics. Alternatively some nodes were split to highlight subtle differences. The following glossary provides insight into the key elements and attributes of nodes as they are presented in the report. In total over 50 nodes were identified and used. Only nodes that are discussed extensively in the report are included in this glossary.

Accounting References: Use and discussion of anything related to accounting information and activities.

Collaboration: Formal and informal elements of sharing. Encompasses resources, information, labour, contractors, marketing.

Decision Making: Types of decisions made. How decisions are made, people involved in decision making and the contexts of how decisions are made.

Diversification: Making decisions that change and broaden an existing business.

Employees: Discussion of labour and workforce issues and activities.

Expansion: Increasing the size of business. May be historical or a current initiative.

Family: Role of family in business. Traditional conceptions of family farms.

Finance: Aspects of securing capital to maintain or expand business operations.

Growth Strategies: Decisions relating specifically to expanding the size of the business for future. Can involve diversification.

Industry Involvement: Participation in industry or community activities, such as field days, best practice groups or industry bodies.

Innovation: Evaluating or implementing new or different approaches to farm processes or management.

Knowledge: How knowledge is generated and the sources of knowledge sought and used.

Marketing: Aspects relating to selling or advertising products.

Metrics: Use or discussion of performance measurement and proxies.

Ownership: Descriptions of current structure or future plans.

Production: Business activities and processes. Relative to context of business.

Profitability: Definitions and components of profitability. Perceptions of role of profitability. Activities related to profitability.

Relationships: Inter-personal dimension. Both business and non-business related.

Research: Generation of new approaches. Sources of information.

Risk: Perceived threats or difficulties relevant to their business or industry.

Separation of Ownership and Management: Distinctions between family and business structures.

Strategy: Business plans and activities. Long term and short term.

Supply Chain: Relationships with customers and suppliers. Logistical efforts required to efficiently get products to market.

Sustainability: Continuity in profitability, business, environment, production capacity or workforce.

Technology: Adoption of automated, computerised or other innovative processes.

Timing: Effect of seasons, associated costs and commodity prices on decision making.

Training: Investment in skills development for staff or participants.

Value Adding of Process: Activities designed to transform an existing product. Closely related to supply chain activities and marketing.

5.8 Summary of Methods

This research presents a qualitative analysis to provide an in depth understanding of the factors that are seen as important by farmers who are perceived by their peers and industry as 'successful'. Guidance was sought through the Industry Reference Panel who moderated the scope and process for conducting this research. The results reported from the collection of data show some of the variation within the major themes taken from the participant's accounts. It shows that while a general direction can be seen within the sample, there are different concepts and approaches to managing farm businesses which are influenced by the characteristics and circumstances of participants. Producers can consider the perspectives discussed and reflect on possible options for managing their business. The following industry analysis section provides insights into the themes of participants from the industries involved in this research beginning with grazing industries.

6. Industry Results and Analysis

This section provides the responses of participants about how they view farm performance. The interviews were conducted utilizing a semi-structured process where the questions are open-ended and based on a guided format to ensure the same basic lines of enquiry are pursued for each producer. This provides some structural similarity, but importantly having an open ended option allows for individual perspectives and experiences to emerge.

There are themes in common between many of the responses, such as profit, sustainability or productivity, but the definition is often more specific, showing that the definition includes knowledge about the operation of the business as well. This suggests that what a producer is looking for in their enterprise is to evaluate either current or future practices that will have specific characteristics. A level of detail is important in decision-making because the producer is looking at how the decision others make fits their enterprise. To the outsider, certain themes can be easily identified, but to be relevant to the business, these themes have to be structured along the lines of how the producer sees performance.²

6.1 Defining Farm Performance

The definition of farm performance is a topic that is often assumed in publications depending on the subject matter discussed, however, what a producer or manager sees as farm performance often goes unreported. By asking the interviewee how they see farm performance, decision making within the farm business is shown to be rational as they perceive it and others can see with greater detail what is being attempted.

Many of the results pertain to financial outcomes but are answered in terms of how each business has to act to achieve a satisfactory result. Concepts of performance are heterogeneous and must be taken in context leading to two outcomes in the interpretation given by a respondent:

- The meaning of the definition provided as a response is frequently different to the prima facie meaning. For example, minimising costs does not mean that they attempt to minimise costs for the sake of having the lowest costs. The interpretation is that to improve the financial outcome, the producer is looking at the cost structure as the means they must act through to achieve this outcome. The response cannot be simplified entirely because the actual meaning of the respondent is embedded.
- The definition of performance is often reported with several different components showing the depth of knowledge that sits behind the response.

Overall, a financial interpretation can be applied to a range of the responses which implies that the producers consider this to be the most important area for the outcome of their business. Profit is the most common concept suggested followed by cost minimisation. Producers concentrate on different ways to gauge the financial reward, where a specific measure represents the information available to make a judgement. Productivity and yield conceptualisations are also common responses, which suggests a production orientation to the business management. A number of participants postulated that productivity was closely connected to the financial outcome as productivity varied considerably, it is a chief concern of their business. Similarly, production quality and supply chain volumes

² Some participants point out that they are looking for ‘opportunities’ and that this may entail ‘changes’ to the business. Entrepreneurial behaviour means that there is a change from the previous mode of operation, and this represents a different outcome to that discussed around the definition of farm performance.

represent a correlation to the desired outcome. Other points of view on productivity included that because of the structure of the finances in the participant’s specific case, it was difficult to gain an idea of the exact financial position and hence, a known measurement of success was important to them.

6.2 Strategies common amongst participants

In this section we examine three basic strategies applied by the participants. The strategies are usually cyclical and producers may move from one to the other depending on conditions at the time. The most common strategy involves growth of the enterprise, followed by consolidation after a period of growth, and lastly a rationalisation strategy during adverse conditions.

Growth Strategy

Growth has been prominent part of most areas of Australian agriculture since European settlement and has been carried out for a number of purposes and under a number of different banners, whether owning land was prestigious, or from catch phrases, such as ‘get big or get out’, farm businesses in Australia have looked to expand their attributes. Of the participants in this research a high proportion stated that they were either in the process of growing, had goals to grow, or had undertaken growth and were now consolidating their business.

Below in Table 3, we note that the participants develop their enterprise in a number of ways that could be described as a growth strategy. Acquiring additional land through ownership is the most commonly undertaken view to expansion. Some participants suggested multiple areas that they saw as an opportunity for expansion (e.g. value adding of products locally).

Table 3: Area of business focused on in growth strategy

Strategy	Theme Frequency
Owned land	23
Leased land	6
Off-farm asset	6
Management	1
Finance	2
Infrastructure and Equipment	6
Output-Supply Chain	6
New Markets	5
Cost Minimisation	1

Leased land was also a common theme, showing that participants were happy to look at alternative methods of gaining the resources needed to grow the business. This is in line with the substantial number of participants who reported current use of leased land. Other common methods of growth looked directly at the on-farm operations where people were building infrastructure, increasing their output or diversifying into different markets. A number of reasons were targeting less tangible elements of the business such as increasing the management capabilities of the enterprise, attracting investment or minimising costs of production.

In many cases, participants also provided a reason why they were pursuing growth. Most commonly a growth strategy was directly linked to the desire to develop the business further. Other motivating factors were also discussed in Table 4 included succession planning, where the foreseeable need to split resources within the enterprise was driving the need to expand so that individual partitions would be viable. Others felt that expansion lessened the overall burden of fixed costs within the business and

given the low levels of profitability, provided them with sufficient income as they continued to increase. Participants in some industries felt that growth was a strategic need for long run participation in the market. If they did not grow their competitors would out-manoeuvre them in the market place.

Table 4: Reasons given for strategy

Cause of growth	Frequency
Supply Commitments	2
Maintain minimum profit	6
Business Development	10
Economies of Scale	5
Succession Driven	5
Risk Minimisation	3
Market Competition	5
Personal Satisfaction	3

A number of responses put forward suggested that there were key processes involved in the growth of the business, in particular, acquisition of land. Some of these processes were:

- Planning ahead of time, possibly years and includes an attitude that this is where the business must be taken.
- Searching for acquisition includes future possible changes to ownership in the district. Some participants had knowledge about the other producers, such as the other producer’s circumstance to continue managing their property..
- Financial planning to understand implications of increase in size.
- Willing to pay above the market rate for the right block of land.
- Choice of new property has four components to it: water and soil, price, geographic proximity to existing holdings and current state of development of land.
 - Personal preference on whether the land is developed or not.
 - Water and soil have to be sufficient because these are difficult to change.
 - Geographic proximity to existing holdings is viewed as a positive in reducing travel and monitoring costs. Some businesses are using geographic diversity as a means to reduce risk and as such some distance away from current operation is desired.
 - Although participants said they would pay considerably higher than the market for a complementary piece of land, they still believed that the value they would get out of it had to be represented in the price.
- Many participants suggested that a possible strategy was to expand in such a way as to reduce overall risk to the business. This could be geographic or allow diversification of markets participated in, or to provide a key resource that the initial resource endowment of the business was lacking.
- Businesses that expanded often required consolidating of their development. However two businesses suggested that they did not need to. It appears that consistent growth meant that they did not need to.
- Other businesses were able to grow different parts of the business at different times, so that one part was consolidating while other parts were growing. Measurement and planning assists in this type of accelerated growth strategy by allowing greater ability to partition the enterprise.

Growth strategy is consistent with high levels of reinvestment into the enterprise. This also follows that the enterprise is their number one priority in the short run and that family is the priority in the long run.

Consolidation Strategy

Consolidation of growth often follows a phase of growth within the business. As a consequence of the complexity within a farming system, it entails proper formation of the system after a substantial change has taken place. In Table 5 below, twenty seven participants discussed consolidation of their business suggesting that it is a significant strategic need for businesses. Part of consolidation is the recognition of constrained capabilities.

Table 5 The constraints or criteria for consolidation strategy³

Constraint or criteria	Frequency
Financial	9
Infrastructure	1
Labour	3
System Function	7
Management	3
Risk	1
Knowledge	1
Satiation	4
Market Presence	1

Consolidation phase of a business is caused by a number of motivating factors. It appears that system function, management, knowledge are all directly related to complexity. Financial, infrastructure, labour and market presence are all related to constraints. Risk and Satiation are related to personal preferences, although risk could be related to the uncertainty of financial considerations. As shown in Table 6 below, consolidation is undertaken in a number of ways.

Table 6 The factors under consideration during consolidation

How consolidation taking place	Frequency
Change in Labour	2
Change in Land	3
Infrastructure	4
Off farm activity	2
Retiring Debt	4
System Function	3
Maintaining current production system	7
Research and Planning	1
Management Team	1

Two counterexamples were provided who did not consolidate, but remarked that they had consistently growing cash flows. The consistency of growth may preclude the need for consolidation. The need for consolidation arises out of complexity in the system and so if the participant is able to grow from a consistent production process with associated revenue, they may not need to consolidate. One suggested that they prefer consistent growth to a growth-consolidate cycle, stating that planning was

³ Some participants provided more than one reason for why they pursued a consolidation strategy.

easier under consistent growth. It is not a case of planning being able to solely provide consistent growth; it is a matter of knowledge whether the production system can be grown in a predictable fashion so that planning can take place.

Notes on consolidation:

- Some businesses that had a rationalisation strategy also had consolidation. The change in size seems to create a need to stabilise the resources of the business into a system.
- A number of participants had consolidation strategies because of their satiation with the current system. That is they were at a stage in life where they felt that growth was no longer a goal for them and that they wished to maintain their current system.
- Others like intensive livestock, because of the high levels of capital investment, coupled with sophisticated control systems, require systemic change to make each system ‘fit’ the other systems well.
- Finance and system function were the most common features that instigate a consolidation phase, representing the need to meet future obligations and continuing production of the enterprise respectively.

Rationalisation Strategy

A number of enterprises were conducting strategies to rationalise their business. This is in stark contrast to many of the businesses involved in the research which were looking to expand. Table 7 shows six businesses reported rationalising strategies – generally as a result of people being at a stage in life where they wished to contribute less labour. Another has cited changes in their business focus and one reported that the productive units within the business had lowered production levels and similarly profit was lower.

Table 7 The key attributes of rationalisation strategy for businesses in the research

Business	Key attributes of rationalisation strategy
1	<ul style="list-style-type: none"> Less labour due to age of operators Exit from labour intensive industries towards less labour intensive production Expansion into desired industry which requires less labour has barriers Concentrate on low labour industry within current property
2	<ul style="list-style-type: none"> High labour inputs had not resulted in financial reward Reduction of market participation within the industry Change in production methods used less labour Financial reward more stable, labour more personally satisfying Farm infrastructure decreased in steps Diligent high quality change to infrastructure occurs in many small steps Emphasis on quality of output rather than quantity
3	<ul style="list-style-type: none"> Less labour due to age of operators Properties geographically apart Property with lower value productive attributes being sold Operators continuing on production for foreseeable future
4	<ul style="list-style-type: none"> Value of land assets is substantial

	Operator has previously considered selling the business
	New focus on targeting different market means that asset is less important
	Property will be renovated for sale and then sold
5	Age of operators and future succession a factor in rationalisation
	Land remained unused after substantial change within the business
	Further development viewed as unrealistic given the stage in life of operators
	Land is a substantial asset which is unutilised
	Land will be purged in a piecemeal process at an advantageous time
	Productive units have reached a stage where productivity is reduced
	Profit has decreased as a result of reduction in productivity
6	Productive units cannot be quickly replaced to increase production across each property
	Some properties will be sold to realise land value
	Productive units on remaining properties will be reduced in small stages
	Small stages will include subsequent action to reduce erosion

When a rationalisation takes place assets are decreasing. In each account, land plays a central part in the rationalisation. Another rationalisation theme is the small measured steps taken to reduce the size of the business and an emphasis on the quality and replacement of infrastructure or land development. This is in contrast to growth strategies where substantial steps are taken suggesting that a different set of considerations regarding risk and system function are at work. Part of the step by step approach is because the operator is ‘destroying’ part of the business system which is irreversible. Consolidation follows the rationalisation process just as it does in the growth strategy.

6.3 Cross Sectional Analysis of Participant Responses

In this section each industry is individually analysed and further sectioned by region where appropriate. The intention is to give a perspective by industry due to the significant variation in their structure and the responses received. A more complete analysis is included in the appendices by sector and includes numerous supported quotes from participants.

Grazing Industries Analysis

For the purposes of the research the Australian grazing industries were broken up into three major regions, northern grazing with a cattle focused system; southern grazing with a cattle and sheep mix and western grazing with a sheep focus. The northern and southern grazing industries are in line with ABARES’s designation of industries (Thompson & Martin, 2014). The western industry sits within the southern industry by ABARES classification, however the south west area of Western Australia is a geographically distinct area of production (see ABARES 2014) and has been treated as separate industry.

Northern Grazing

Northern grazing is the most extensive agricultural industry by land area in Australia, and is predominately cattle with high *Bos indicus* content. Individual herd sizes are larger than southern and western production (Thompson & Martin, 2014), however rates of fertility are lower and calve mortality rates are higher leading to lower rates of turnoff than in western and southern systems. Northern grazing serves a number of markets including the largest share of the live export market. Proximity to point of sale is a key determinant in market participation by participants.

The analysis below identifies the most common issues raised on a percentage basis by participants as being a key factor in terms of how they perceived business performance.

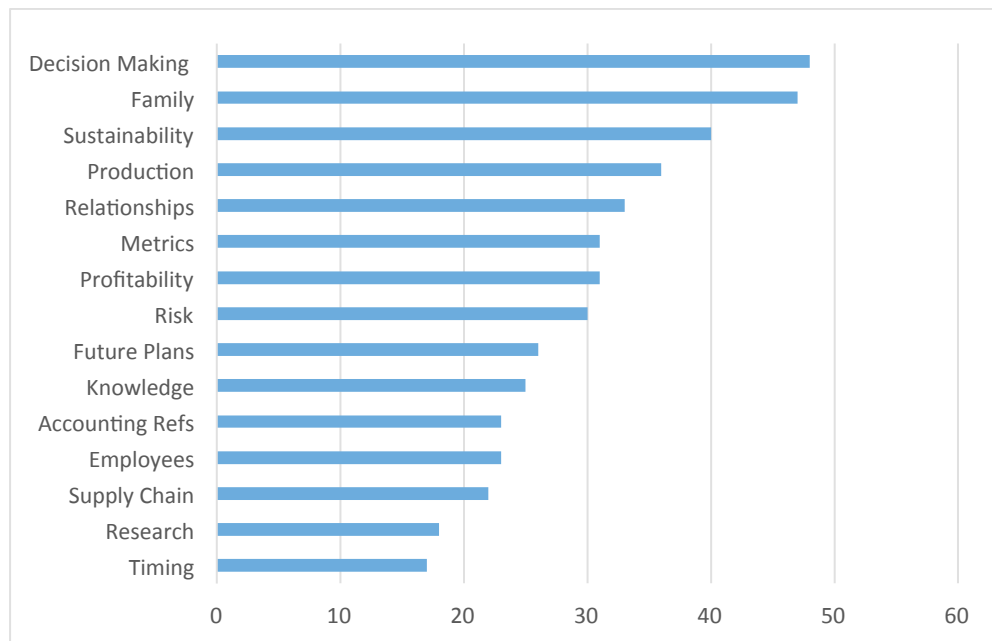


Figure 1: Themes Northern Grazing producers' transcripts

This geographic and industry combination was the only one in which decision making constituted the highest ranking. Investigation of the data coded to this dimension indicates that the decisions the participants referred to primarily involved making judgements as to the best time to buy or offload stock. This was a critical element to their operations as they noted that they were subjected to a number of external influences and a significant factor to success in their industry was to actively manage these as best they can.

As most of these participants were running family farms a key aspect of the business related to continuing the family legacy. However this was rarely a simplistic goal as it often involved decisions around equity and ensuring that all family members had equivalent opportunities.

It became clear that for these participants environmental integrity and profitability were dual objectives that could be accommodated together. Of some interest was that participants often stated that they had no sustainability objective and instead concentrated on resource management strategies. It appears that as a concept sustainability still retains some negative connotations and that the term is out of favour in this region.

Overall the northern grazing sector provided an interesting snapshot of a sector dominated by seasonal trends which required extensive decision making informed by weather patterns and supported by appropriate working capital. Most participants operated family farms and succession planning was an important feature which encouraged consideration of sustainable farming

Southern Grazing

The southern industry is characterised by high numbers of smaller properties running generally cattle, sheep or mixed enterprises with high stocking rates. Smaller properties tend to increase the ability of participants to monitor production and improve the infrastructure to a greater extent. Turnoff and fertility rates are generally higher, resulting in higher per unit land values. Climatic patterns, while still pronounced, are less variable than northern and western systems allowing for production systems to continue all year. The southern industry is characterised with highly palatable pastures and Bos taurus breeds of cattle within production systems.

In contrast to northern grazing it is apparent that the decision making and time dimensions are absent in the top themes for southern grazing. The key themes is therefore reviewed to understand more about this disparity is evident. It is also noted that the decision making and time dimensions are absent in the top fifteen themes for western grazing as well as highlighted below.

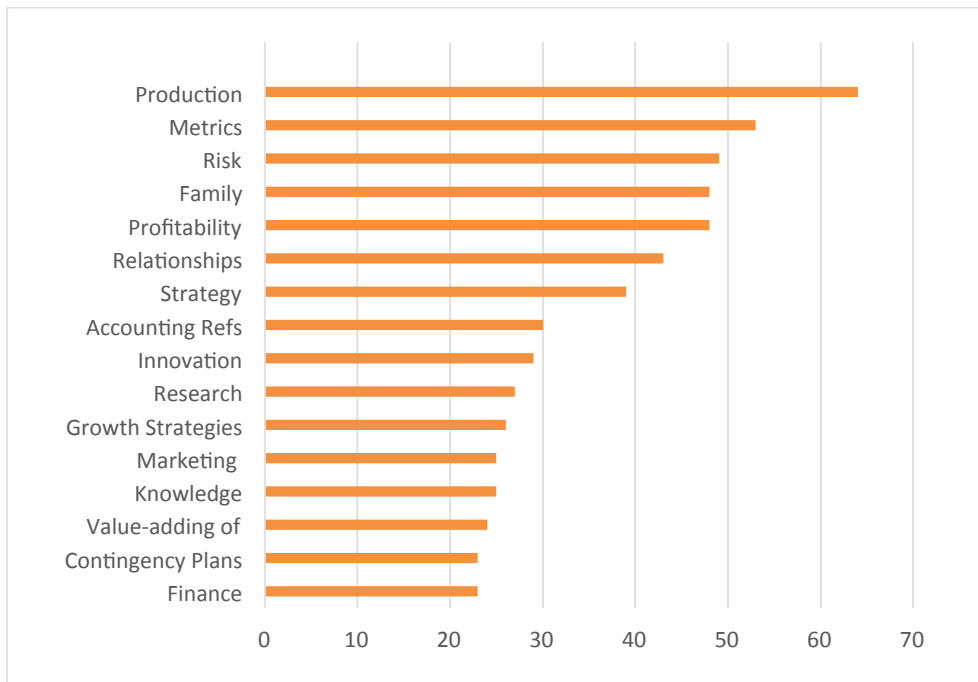


Figure 2: Themes from Southern Grazing producers' transcripts

An analysis of the demographic data suggests that western and southern grazing have different stock characteristics to northern. Whereas northern grazing primarily is focused on cattle, western and southern have a stronger emphasis on sheep or mixed farming. In addition production patterns differ due to weather conditions in these geographic regions.

The analysis reveals some interesting differences between southern and northern farming operations. Southern participants tended to be more reactive in regards to making production decisions and this may be related to the fact that environmental conditions provided more opportunities to change their farm type. Consequently strategic direction and diversification were more discussed more frequently in this context. There was a still a high emphasis on sustainable production, genetic programs and relationship building.

Western Grazing

Western grazing systems are characterised by strong seasonal conditions, similarly to the northern system, leading to production for gains to take place over the February-December period, while livestock maintenance is practiced over the summer period due to lack of pasture growth. Size of enterprise differs considerably although the enterprises are generally not as large as in the northern grazing sector (enterprises in the north of Western Australia have been placed in Northern industry sector because of the similarity to northern systems and south-western areas of WA have been concentrated on).

In Western grazing there are similar themes to the other grazing regions. The following analysis focuses on the elements were the analysis suggests there are significant differences. There is an elevated presence of metrics in this sector and a relatively high emphasis on challenges and constraints which was not apparent in the other two regions as noted below.

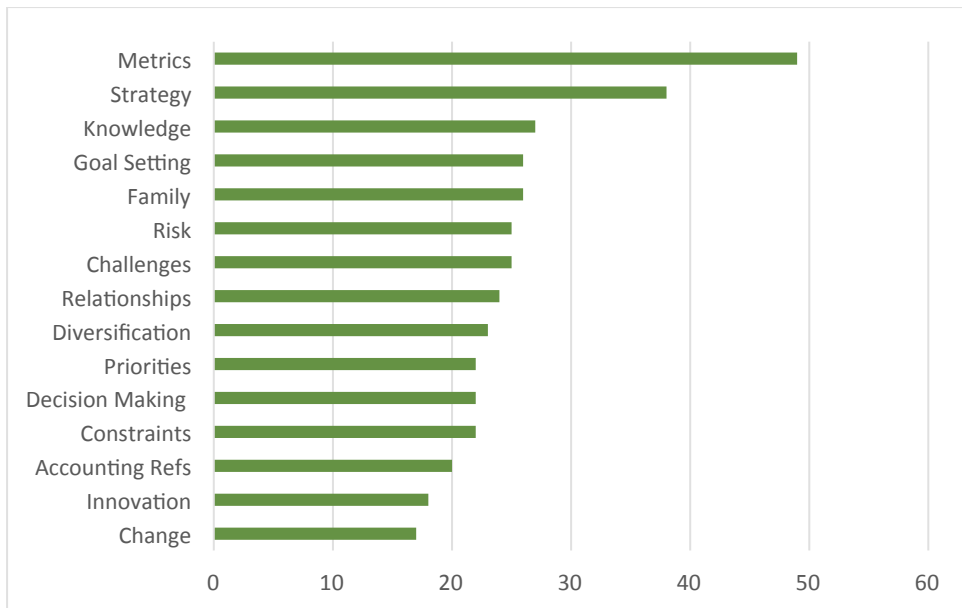


Figure 3: Themes Western Grazing producers' transcripts

Further exploration of these perceptions indicate that the participants in this region gathered a lot of data about their operations. This incorporated a substantial amount of genetic data as well using performance indicators for production such as wool cut per hectare and kilo of meat per hectare. There was also more consideration given to financial targets although this was tempered by the view that that some financial measurements were misleading.

The analysis of the western grazing sectors indicates that participants are highly organised and utilise significant quantitative data in their farming operations. This contrasts with northern grazing where intuition and experience was valued highly. Western participants also tended to leverage against future risk by off farm investments. This was more evident in this sector than the other two grazing regions. Economic conditions in Western Australia may influence this finding. Political change and external regulation also emerges as a key consideration for these participants.

Intensive Livestock Analysis

Intensive livestock industries in this research are the pork, egg chicken and meat chicken industries. Typically, intensive livestock maximises control of inputs into the livestock, requiring substantial investment in capital and knowledge within the business to maximise returns from these inputs. Nutrition and environment are precisely regulated to maintain consistency of turnoff for the supply chain. Often a producer will only supply a small number of suppliers through an established relationship. The high levels of infrastructure require substantial investment and this can depreciate quickly and requires ongoing reinvestment. Supply chains are highly competitive which leads to high levels of technological innovation and protection of information. Production processes are exact and through the large number of replications of production processes small changes can lead to substantial efficiency gains.

The intensive livestock sample has less participants in total than the other categories. This means that the total number of coding references is smaller than for other industries. However the methodology of selecting the 15 most significant themes enables comparability with other industries negating the impact of the smaller relative number of topic themes as indicated below.

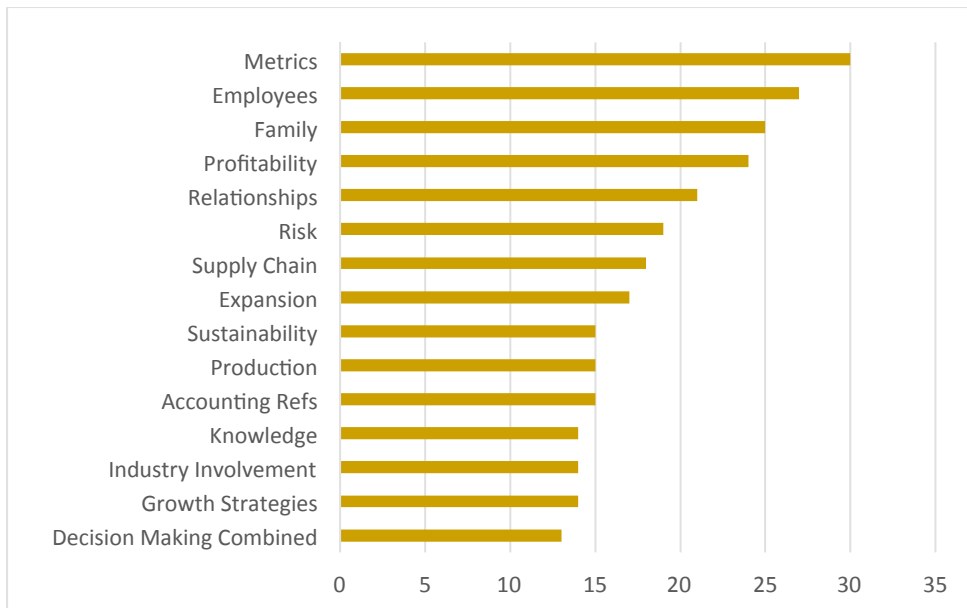


Figure 4: Themes from Intensive Livestock producers' transcripts

The main themes for intensive livestock resemble those discussed for grazing industries however closer analysis reveals some important differences in regards to how these participants manage the performance of their businesses.

Participants in intensive livestock placed a heavy emphasis on target setting and using well defined metrics to monitor day to day performance in this industry. As well as using data to monitor their internal operations these participants were also actively using it to measure their performance against other operators. This was one of the few groups who explicitly talked about benchmarking.

Relationship building was another strong theme in this group and encompassed family and employees. Dealing with employees was discussed at length by these participants and this may be partially due to the large scale of these operations.

The use of formal performance measurement was well established and articulated in the intensive livestock sector. This was done on a more systematic and sophisticated basis than was apparent in the grazing industries. There was also more emphasis on staff management and training in the intensive livestock analysis. Dual themes of animal welfare and compliance with regulation contributed to a higher emphasis on industry involvement. Expansion was more commonly mentioned as a future goal in contrast to grazing where opportunities for expansion were limited by land price.

Sugar industry

Cane is generally cropped as a monoculture on a five year rotation (including fallow crops). The southern cane industry (defined as south of Bundaberg and NSW for the purposes of this research), experiences different seasons to northern industry. Two distinct planting seasons, either Autumn or Spring, are undertaken as they tend to be cooler periods. Supplementary irrigation is needed to a greater extent in the southern sector than in the north. Variation in soil, cane varieties planted, soil conditioning practices and fallow crops occur at the district and individual farm level rather than at the industry level.

As a bulk commodity, vertical integration allows participants to capture some rents from the supply chain as raw output is processed to sugar. A number of the southern industry mills are still owned by grower interests, providing benefits at the milling stage. Other mills, not necessarily participant

owned, participate in collaborative marketing through the QSL pool system, although New South Wales Milling Cooperative markets sugar separately again. This allows participants to benefit from market volume.

The northern cane industry receives higher average annual rainfall than southern industry areas, particularly over summer, leading to later planting seasons (Mareeba and Ayr regions are exceptions to this as they are drier, allowing for earlier planting). The warmer climate allows for later planting to occur with shorter break due to winter than southern systems.

The cane industry is geographically dispersed across small areas along the east coast. The industry north of Mackay (defined as northern for this research) produces the majority of Australian cane output. Milling facilities in the northern sector have moved away from participant ownership, although Mackay sugar is still a participant owned company and has expanded its milling operation with its acquisition of the Mossman facility (Canegrowers, 2015). Currently a number of prominent owners of mills in the northern sector are planning to move away from the common pool marketing provided by QSL.

Southern Cane

Both southern and northern cane industry results have family and production as the two most important themes. In many agricultural sectors, farm businesses have strong family connections where members of the family are involved in the business. Accordingly the southern cane industry shows a consistent pattern with family ranked highly.

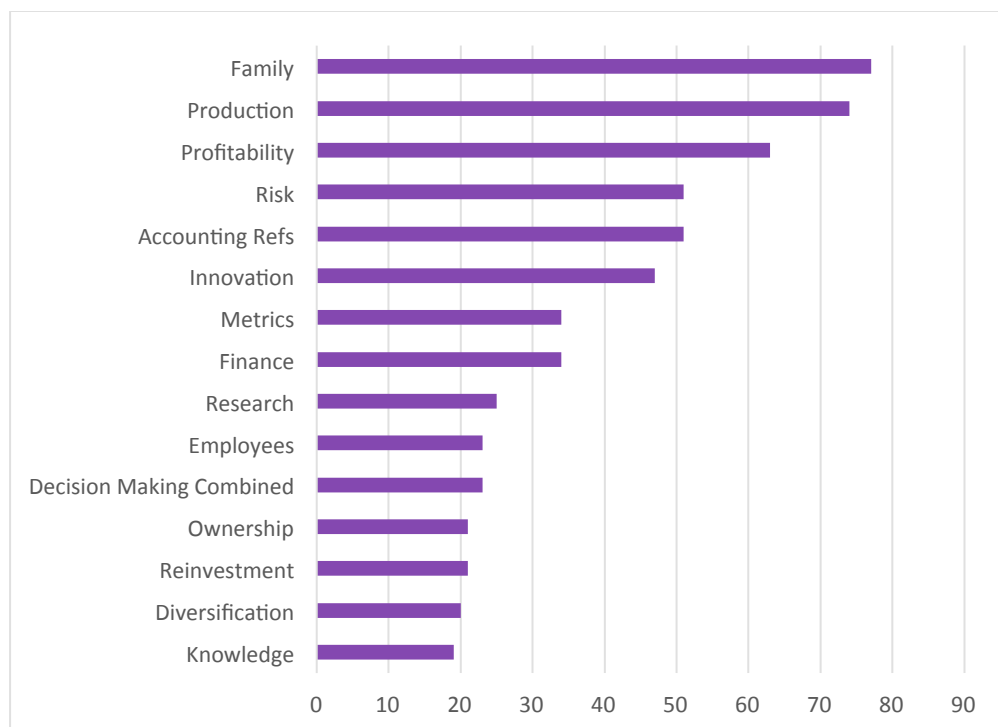


Figure 5: Themes from Southern Cane producers' transcripts

In this industry it was evident that family members were a key source of labour for these businesses. This often was inter-generational in nature and most participants also indicated that there was a division of duties generally along gender lines. The family's continuity in the business was a strong motivation for many of the actions taken. This suggests that while the motivation for running the business may be about the family, production decisions are more closely related to profitability.

Production is discussed in terms of physical conditions and techniques for production. In particular,

the condition of soil, use of water, harvesting and plant physiology as well as common practices such as fallow crops. As fundamental components of the cane growing production system this is expected. Efficiency was a concept in production that participants had designed into their system. It was discussed in a number of ways such as the layout of the crops, the types of equipment used, the level of inputs, and the reuse/recycling of inputs. This also coincides with the emphasis placed on research and innovation concepts. In particular, a number of innovation concepts were discussed where participants had innovated ‘in-house’.

The insights from southern cane portray an industry with many similarities to the grazing sector. Inter-generational farming was common and succession planning was an important element. Profitability in relation to production was emphasised and the collection and use of accounting information was evident. However there was more evidence of research and innovation in sugar cane and the price taking position of growers resulted in a cost minimisation strategy. Accordingly dealing with risk gained more prominence in this industry.

Northern Cane

Interviews from the northern sugarcane industry was strongly dominated by being very production focused.

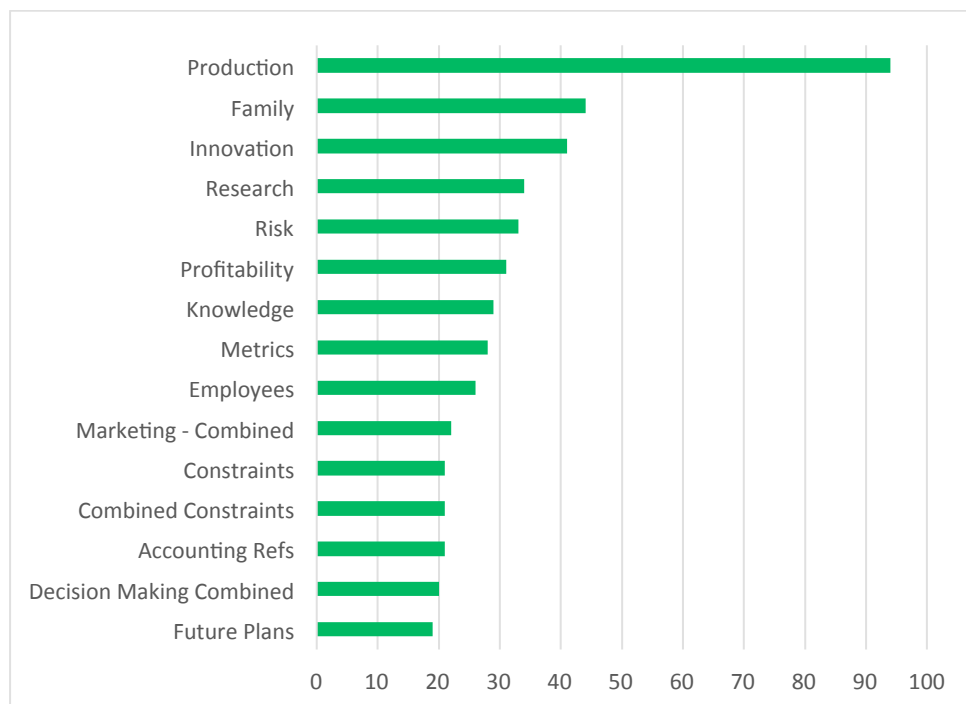


Figure 6: Themes from Northern Cane producers' transcripts

A range of standard production practices were discussed such as trash blanketing, fallow crops and fertiliser regimes. Fallow crops were harvested in the southern industry, whereas many northern participants ploughed the fallow crop back into the soil instead. A further difference between southern and northern cane industries was that soil health was more prominent for northern participants. This may be because of the low yields experienced in recent years by the participants which has meant that soil topics are in the forefront of their minds. Constraints to businesses also included the price of land, weather, and a lack of infrastructure to diversify the business. Despite the lack of infrastructure some businesses had diversified into other crops. Similar to the southern cane industry, competition for residential land was considered an impediment to growth of businesses. Timing of actions is perceived by both northern and southern cane industries as a means to improve efficiency.

Northern cane illustrated that timing in production decisions was an important driver of success in this industry. This was facilitated by sourcing relevant information and incorporating appropriate technology into the business. However participants in this industry did demonstrate a measured approach to technology adoption and were likely to participate in field trials to assess the benefits before committing to new processes or equipment. Tight margins dominated discussion around profitability and risk management was a highly weighted dimension. Similar to other participants in this study issues associated with operating family farms were evident.

Horticultural industries

The horticulture industry is represented in this research by three subsections, which are tree fruit, vegetables and tree nuts. The tree fruit industry, with high demands for water, is situated in high rainfall areas. Some sectors, such as apple and pears, have experienced a sharp decline in the number of growers. However, the decline in output from these sectors has only been slight (APAL, 2015). Other industries such as bananas and mangoes have varied historically, particularly due to climate events affecting these industries. The tree industry faces substantial risk from climatic conditions, although in cases such as hail, measures can be taken to reduce the risk. For other elements, geographic diversity is the means used to minimise climate impacts.

The vegetable industry is diverse in the wide range of products represented. In this research, produce is both field grown or undercover, and similarly, value adding through processing is common amongst many enterprises considered here. Similar to the trees sector, climate and disease represent substantial risks although covered operations may alleviate this.

Consistency in quality of produce is a priority for producers to guarantee supply. Vegetable industries are highly responsive to supply and value chains where market access is all important whether through an open market or contracts to suppliers. This leads to substantial variety competition providing incentives for producers to change varieties as fashion changes. The vegetable industry contains a large proportion of producers who have low turnovers highlighting the concentration of output toward large producers and key supply chains. The vegetable industry requires substantial amounts of seasonal labour.

Tree nuts are a growing area of the horticulture sector with raising values, particularly through export markets, promoting the development of nut industries. Currently, almonds and macadamias are by far the largest proportion of the tree nuts industry. Establishment of tree nut orchards requires substantial investment, with time lags between planting and productive maturity of orchards. Once established, trees will produce for a substantial period of time. Enterprises may value-add to their produce by sorting and processing their produce. Enterprises vary in size providing incentives for producers collaborate to maintain market presence. The industry is forecast to increase production by 44% and double its value by 2025 (Australian Nut Industry Council, 2014).

Vegetable industries

The most commonly coded theme for this industry is Supply Chain. The analysis reveals that this node primarily captures the mechanisms these participants used to meet their customer's requirements.

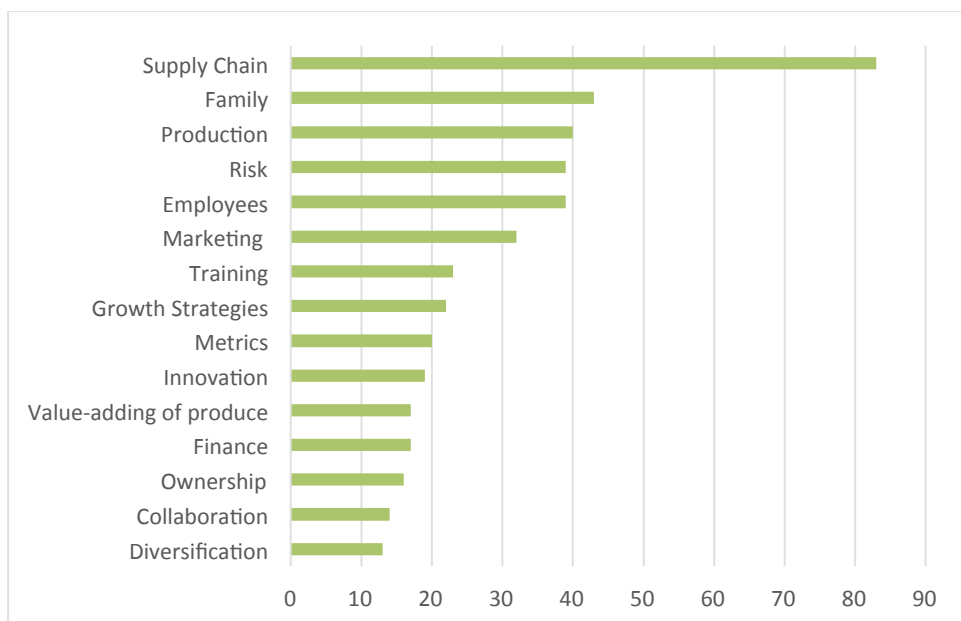


Figure 7: Themes from Vegetable producers' transcripts

The vegetable industry had some specific attributes in terms of selling the produce. Many of the participants had ongoing relationships with customers and primarily supplied large supermarket chains or food service operators. These operators were generally dealing with their customers at the corporate level rather than individual businesses (although for some clients they were dealing with individual franchisees). Thus these operators were focused on larger clients and had established relationships which meant that a key goal of the business was value adding. Thus sourcing new customers was not a focus for many participants. Most were concerned with meeting the requirements of existing customers and improving their own supply chain so that they remained in control.

The relative reliance on machinery meant that although employee numbers were limited all staff had to be carefully trained in operating the equipment. This also meant that the workforce was transforming as employees had to be able to handle the different demands of an automated production environment.

The vegetable analysis reveals some unique characteristics. The structure of the industry was dissimilar to other sectors in this project and this was most evident in the importance an uninterrupted supply chain. The customer base was influential and product demand was stable. Value adding was a key strategy to ensuring sustainable profitability. Innovation ranked highly because of the need to enhance their productivity to meet future customer requirements.

Fruit Trees

The tree fruit industry, with high demands for water, is generally situated in high rainfall areas. Some sectors, such as apple and pears, have experienced a sharp decline in the number of growers. However, the decline in output from these sectors has only been slight (APAL, 2015). Other industries such as bananas and mangoes have varied historically, particularly due to climate events affecting these industries. The trees industry faces substantial risk from climatic conditions, although in cases such as hail, measures can be taken to reduce the risk. In other cases, geographic diversity is the means used to minimise climate impacts.

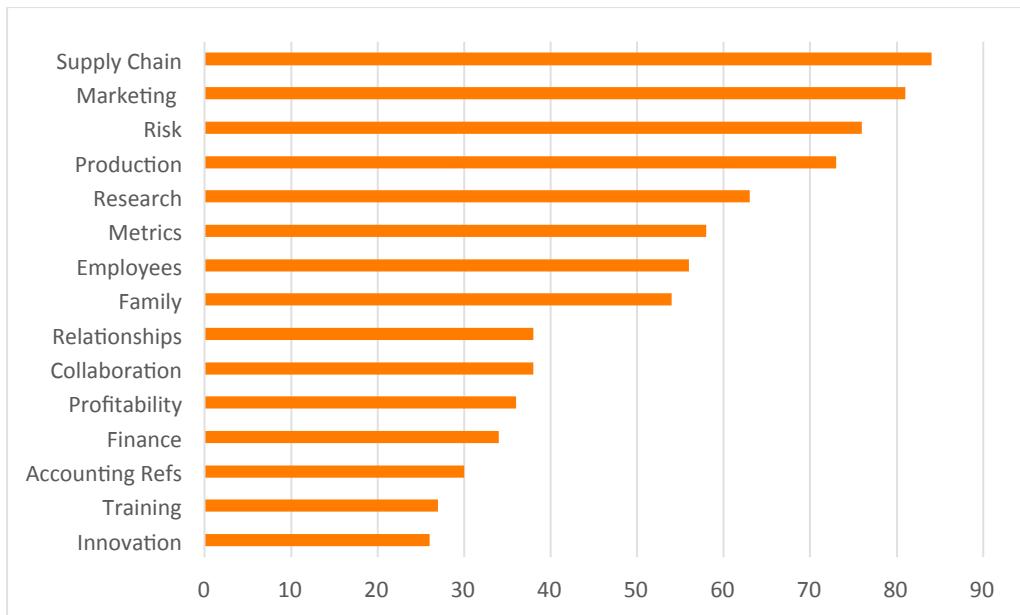


Figure 8: Themes from Fruit Tree growers' transcripts

The fruit tree analysis has some similarities to the vegetable industry with a high emphasis on supply chain. However there are a number of highly ranked themes in this industry with marketing, managing risk, production, research and the social dimensions also featuring. In this regard there was less variation between the relative importance of these dimensions as they all shared high ratings. Supply chain was an interesting element in this industry. Participants that had secured relationships with large chains indicated that these contracts had been pivotal in encouraging them to diversify their business.

Risk was a highly ranked concept for this industry group and was analysed accordingly. Apart from the risk associated with regulatory changes other identified areas were weather patterns and climate change. Another downside of dealing predominantly with large chains also highlighted in this category with participants indicating that staff turnover in the large chains created challenges for their businesses.

High levels of demand for quality produce were key in the success of these participants. Longevity of customer relationships also rated highly as a key driver of performance. These elements were supplemented by collaborative approaches to processing and marketing the products. The key risk to the fruit tree industry was perceived to be adverse weather events and operators worked to minimise this as much as possible. Participants indicated that improving production processes was a constant theme in this industry and that monitoring existing practices was an essential component of continual improvement.

Tree nuts

In contrast to the other horticulture industries, the supply chain is not one of the most significant themes for the Nut industry. There is an increased focus on production in this industry. However many of the remaining themes correlate with the other horticulture industries. As with other industries production in this sector was largely focused on improving capacity and enhancing efficiency as outlined below. For some operators that meant combining resources and acquiring existing properties.

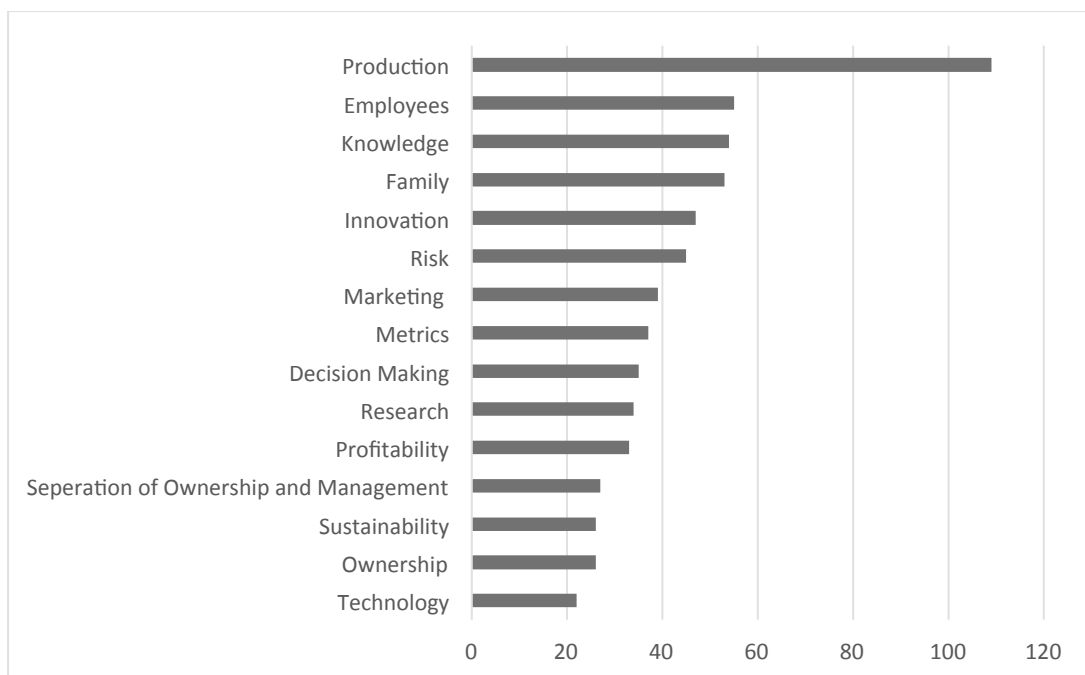


Figure 9: Themes from Nut Producers' transcripts

For these operators the key focus was incremental changes that would eventually lead to profitability gains. Typically these changes related to canopy management, tree removal, irrigation, harvesting decisions, soil nutrition and insect control.

The long term view taken by many of the participants was also reflected in the sustainability dimension. A number of participants recognised their role in maintaining the quality of the land for future productive use.

There is an interesting dimension in this sector revolving around social responsibility which has not been as clearly articulated in other groups. Participants in this industry were therefore conscious of the threat that negative perceptions could pose to the industry. This impacted on their decisions around the governance structure of the business. It is a possible area for future research to more clearly link this social responsibility to performance in this specific industry. In this sector, participants indicated that the volatility of the market for their product as the key form of risk. Many strategies to combat the risk in this industry are familiar. Participants indicated that diversification was an essential strategy and it was evident that this encompassed geographic diversification as well as diversifying through value-adding.

Overall there was more diversity in the ownership structures of these businesses than there was in other horticultural sectors.

Grain and cotton industries

The horticulture industry is represented in this research by three subsections, which are tree fruit, vegetables and tree nuts. The tree fruit industry, with high demands for water, is situated in high rainfall areas. Some sectors, such as apple and pears, have experienced a sharp decline in the number of growers. However, the decline in output from these sectors has only been slight (APAL, 2015). Other industries such as bananas and mangoes have varied historically, particularly due to climate events affecting these industries. For the purposes of the research the Australian broad acre grain and cotton industries were broken up into its three major regions. These three regions include the northern grain including cotton systems, southern grain systems and western grain systems. Each of these systems is in line with a GRDC area of research.

Western Grain region has been defined as the south-west corner of Western Australia. Due to summer climatic conditions, western grains consist almost entirely of winter crops. Wheat represents the greatest volume harvested. Other major grains include canola, barley, lupins and oats (DAFWA, 2015). Eighty percent of the West Australian grain is exported (DAFWA, 2015), substantially more than southern and northern sectors. The average size of crop planted is larger than southern or northern industries.

The northern region encompasses Queensland and northern NSW with broad acre grain as the largest crop, where possible producers also include cotton within the rotation due to its high value. ABARES (2014) states that the northern grain sector has the greatest crop diversity from the three regions investigated with the possibility in some areas of running both a summer and winter crop rotations. Cotton has been include within this section as cotton is a significant component of crop rotations, and in many cases is the most profitable crop.

The southern grain industry (southern NSW, Victoria, South Australia and Tasmania) is heavily reliant on winter crops. Due to the large geographic area within the southern grain sector, production outcomes vary considerably.

Northern Grain & Cotton

Family concepts were rated the highest by northern grains and cotton participants. The family appears to be a key underlying motivation for setting the long term goals for the business. These participants discussed how their businesses had frequently grown from the previous generation’s development and how they had carried this on.

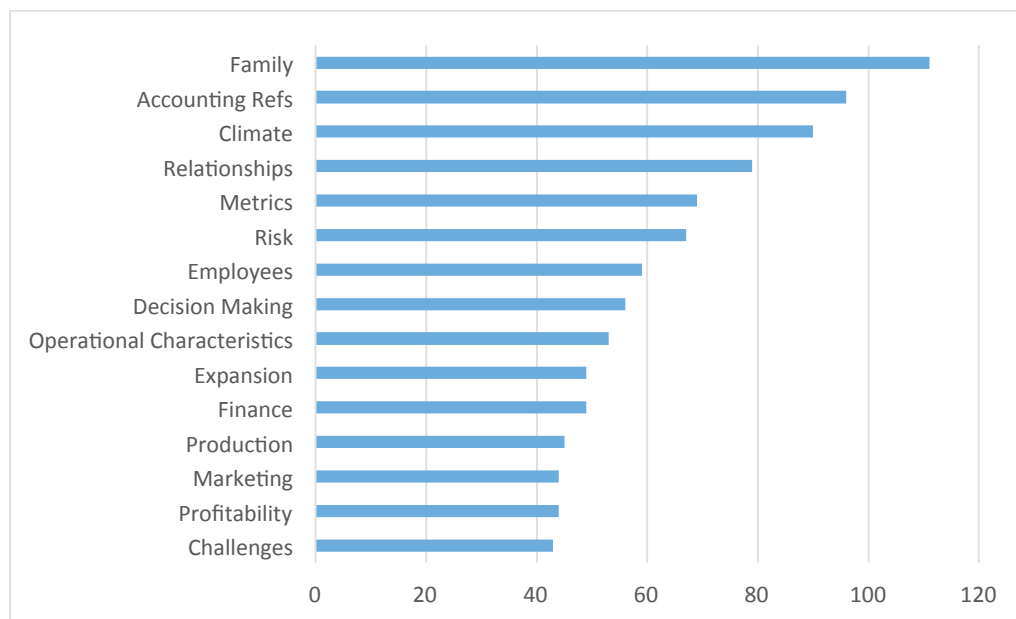


Figure 10: Themes from Northern Grain and Cotton producers’ transcripts

While family was the most important concept, accounting information was the second most important issue for participants. They highlighted the need to maintain a focus on the financial aspects of the business as not paying attention to financial measures can quickly lead to major problems. Participants talked about returns on investment, interest and ‘cash flows’ to service that interest. Despite this, participants used accounts to varying degrees with some regularly calculating and using accounting information to set goals and make decisions, whereas others rely on more on intuition.

Measurement of production and financial variables is undertaken to promote efficient outcomes, but more often the measurements taken are designed to address the problems at hand.

Relationships with key people were discussed by each participant, particularly the need to discuss their business and gather information. These relationships may be with a professional such as agronomists or accountants, or in some cases, other producers.

The northern grain analysis portrayed a high emphasis on family and relationships. Both internal and external relationships were fundamental to the operation of the business. The use of accounting information and performance measurement were also ranked highly. Participants in this sector incorporated both financial and non-financial data in the management of their businesses and the use of professional advisors was common. Climate was a significant theme and linked closely to production due to the characteristics of grain growing. Despite recognising that a number of challenges were present in this industry many participants were interested in expanding their business in the future.

Southern Grains

Southern grains participants like their northern counterparts emphasised the family as an important part of their business. Some participants discussed the role that previous generation had on the management of the business in terms of knowledge passed down and attitude towards production.

Accounting was reported as a method for assisting in decision-making, although many participants deferred detailed analysis of their business to an accountant. Responses from several participants tended to suggest that they ran numbers to get a ‘rough’ idea of the position of their business rather than an exact picture, which is consistent with northern grains and cotton.

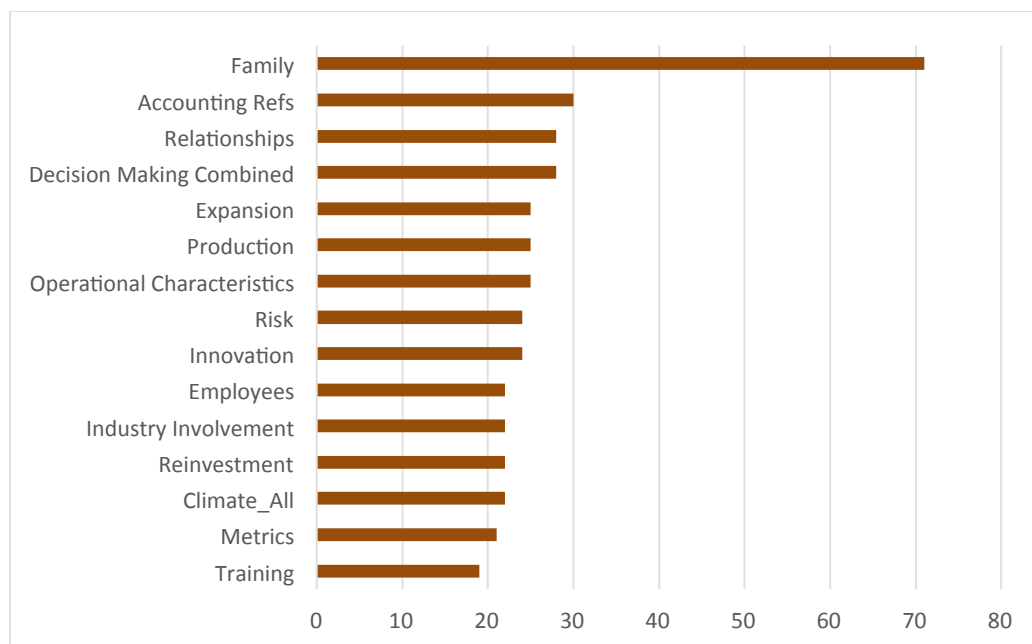


Figure 11: Themes from Southern Grain producers' transcripts

A number of participants discussed their planning, stating that it was flexible and changed as operating conditions changed. Their advice for when financial or production conditions were less favourable was not to ‘stress’ but to continue to make sound business decisions. An important part of this was the undertaking of research to understand the best way to respond and maximise the outcomes, given those conditions. This again was accompanied by an attitude that the numbers such as paddock histories of fertiliser and nutrient levels were used but did not dictate their decision making process.

All the participants in southern grains discussed expansion that had taken place as well as plans for the future. It was noted by some that expansion was to be undertaken sustainably in the sense that

expanding to quickly was not the goal. Others discussed the economies of scale issues with expanding, stating that at some points, capital and labour become less productive at these points.

Participants typically undertake a program of reinvestment that is linked to years where production and financial returns are higher. Some participants reinvest by upgrading their equipment and infrastructure to improve efficiency while others look at investing in other ways such as innovative practices or new technology to minimise costs.

The southern grain sector has a number of similarities to the findings for northern grains. Family was highly rated in both sectors and the use of accounting information was common. However, reinvestment emerged as a key theme for southern participants and innovation was more frequently discussed. Participants in both regions highly rated industry involvement as a key factor in the business success.

Western Grain

The priority production focus for western grains industry is in contrast to the family focus reported for southern and northern grains and cotton industries. This most likely arises from the overarching production conditions which shape the production systems of participants' businesses. The distinct seasonality and the variable fertility of soils means that precision is required to produce viable harvests. This can result in a range of different production practices being required based on the physical characteristics of each farm.

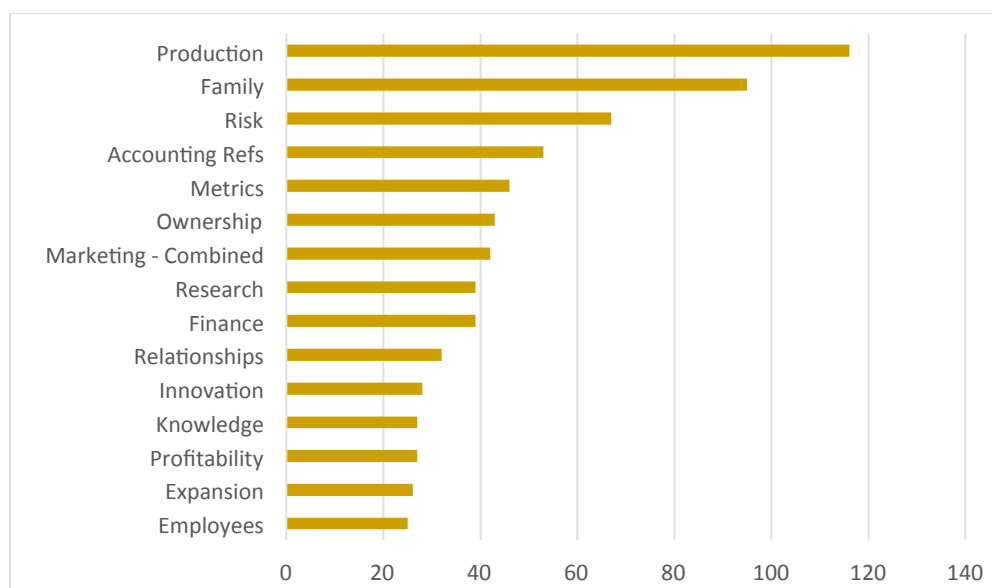


Figure 12: Themes from Western Grain producers' transcripts

Participants in the western grain region discussed the intergenerational side to their families in each business. That is all the participants had family backgrounds to their businesses. Some commented that part of farming was making time for interaction between family members. This was a difficult for some, who indicated that family relationships can be challenging but necessary for business success.

The types of risks raised by western grains participants are similar to those in northern and southern grains and cotton industries. This includes weather and production risk, however, they are perceived by western participants to be more variable.

The responses from participants suggested that the use of accountancy measures tended to be more concise than the northern or southern industries with a greater focus on the use of budgets, financial plans or professional accountants to support decision making.

The concept of ownership is raised in a number of ways by participants. The current management and succession of the business is discussed, but also the possibility of acquiring land to crop through means other than purchasing the land. Leasing the land was considered a possibility for some of the participants where the high price of land or family constraints to purchase meant that they were willing to lease land in addition to their current holdings

Overall production processes are a key feature of the western grain analysis. High levels of variability in soil and weather patterns contribute to this. Specific attributes of the western grain industry such as high levels of exported product and marketing considerations also feature highly. There are similarities to the other grain regions in the use of accounting information and emphasis on family relationships. The value of industry involvement is again highlighted in the western region. This is consistent for all three grain regions.

6.4 Industry scale effects

Introduction

In this section the analysis examines the influence of scale on participants' perceptions of farm business performance. Businesses are classified as small, medium and large relative to criteria for each industry and geographic area. The process for classification of farm business scale is set out in methodology section of this report.

Farm scale has been identified as a factor that influences performance outcomes and can influence the adoption of innovation. This section explores the relative importance of themes from participants across industries according to the relative scale of their businesses. For consistency with the preceding industry analyses, the top fifteen themes for each scale category are considered. While there was some variability in the order of how themes are prioritised by participants, there is very little difference in the themes across small, medium and large businesses. This indicates that the relevance of these dimensions tends to be consistent across different scales of operation and industries. The top five themes for each scale are discussed below.

Small Scale

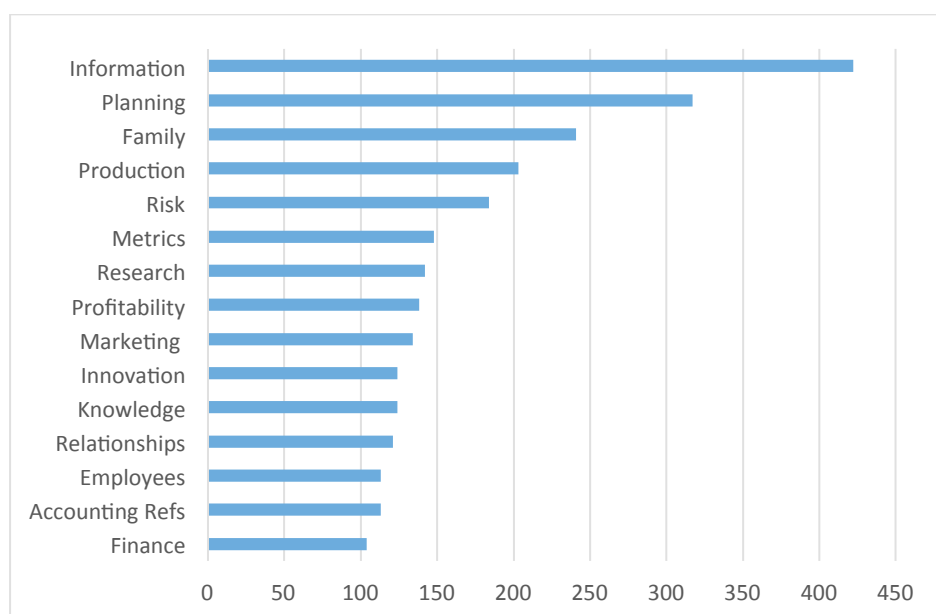


Figure 13: Themes from Small Enterprise producers' transcripts

The most important theme for small businesses is information. Information sought by participants relates primarily to improving the operational aspects of the business. Sources of information include advisors, research, field days, peers as well as production data which underpins short and long term decision making. Information from producer networks were also considered important as this enabled participants to discuss options and compare and improve strategies used.

...there's an affiliation there that means [they] have the capacity to understand the situation and discussions probably get deeper than they would otherwise get [from] people ...outside the industry I suppose [NUTS S1]

The second most important theme for small businesses is planning which is closely related to information. Smaller scale means there tends to be less scope for mistakes as poor decisions may have greater impacts on the viability of the business when compared to large enterprises. Participants were motivated to grow their businesses and reduce their exposure to single markets and production constraints. The primary goal being to make their operations more adaptable to changes in circumstances in the future. Planning often started with a broad focus and as information informed participants' knowledge and skills, were operational plans refined to achieve specific long term goals.

...to me plans are the consequence of your aims and ambitions, and the plans typically ... they start broad and they get very specific. But I suppose I see that as your capacities and knowledge continues to grow your plans tend to build in their detail and ... benefit. [NUTS S1]

The third most important theme is family as this is often the primary source of labour. There is a goal of providing a future for children who may want to take over the business in the future. Hence, securing family goals is closely related to the importance of planning and involvement of children from a young age is common in small businesses. Providing opportunities for children to take over the enterprise presents financial challenges for small farms who look to broaden their income sources either from off farm work, contracting or off farm investment to secure their retirement and provide a good start to children taking over.

...we have three generations working on the farm but two involved actually in the business and we are a family business, family owned. [Name] will be the third generation andhas decided to pursue a career in agriculture and he is obviously a key player in the business. [GN W S1]

The fourth most important theme for small businesses is production. Production is important as it is constrained by scale. As such participants use information and planning to maximise their production. Participants perceive that their costs of production tend to be higher because of their small scale so measures of production and costs are closely monitored with most work being undertaken by family and casual labour employed only when required.

Yeah it's productive but our cost of production is high because we're so small. [NUTS S2]

I see that there's not a single formula for the best output, it's obviously managing a formula that utilises a system that brings together the elements for your particular farm ... best possible way. [NUTS S1]

The fifth most important theme is risk as participants' view that as small businesses they are more exposed to production and financial risks than large businesses as there is less capacity within the business to manage variability. This is highlighted in years of drought or low commodity prices that reduce production and income. As such there is a focus on risk management through expanding the business and planning for known risk factors.

...it's looking at your risk and calculating whether or not you can afford to take it [GR Nth S1]

...this whole evolution is to be less exposed from a risk point of view. [NUTS S1]

Medium Scale

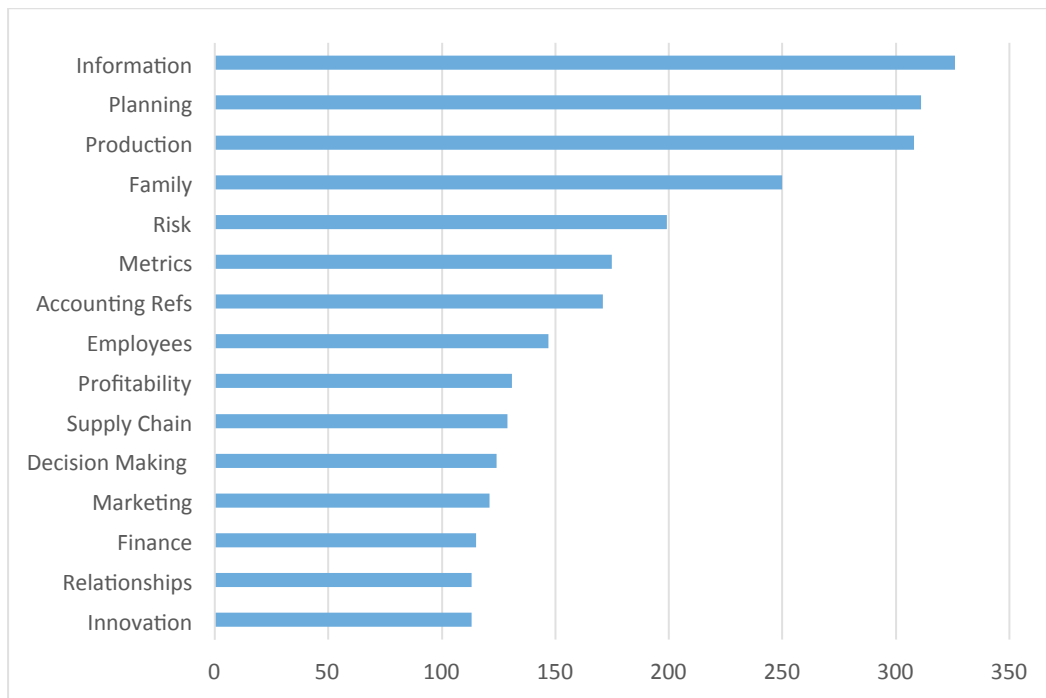


Figure 14: Themes from Medium Enterprise producers' transcripts

Like small businesses the most important theme for medium businesses is information. Participants seek information from the same sources as small farmers, but information sources tend to be more strategic and there is greater emphasis on seeking information from advisors and consultants such as agronomists and accountants rather than seeking the information themselves.

...we use consultants that help advise us ...on different aspects of our business so that's probably how we collect information. [IL M2]

...going on the results of the soil test they give us, fertiliser rates...rates to grow the proper cane and they know what we are capable of growing. [SC Nth M1]

Planning is closely linked to information as is the case with small businesses. Long term and short term plans were frequently looked at and adjusted and adapted by participants to suit the needs of the business as circumstances changed. There is a focus on planning for the next generation so participants are looking at financial plans to provide opportunities for succession. Participants tend to be agile in the way they approach short term planning so as to maximise opportunities as they arise. While planning tends to be less formalised than small businesses, as it is embedded within daily activities.

....we are right at the position now of succession planning because we have three sons ...so yeah we have just sort of I have always had a goal that I would love to be able to give our boys the opportunities that we have had. [GN Nth M2]

... generally our planning is done over a cup of coffee and we make a decision in five minutes because we are out there actually doing it. [GN Nth M1]

The third most important theme for medium sized businesses is production. The variability of production was seen as a critical issue as it underpinned the success of the business and was closely tied to risk. As such participants were focussed on ways to ensure more consistent production.

Yeah, I'd love consistency in production but that never, that's quite hard to achieve [it] ... does jump around a bit when we always have some problem that comes along and ruins it. [GN Nth M1]

Family is the fourth most important theme and is slightly less important to medium businesses than small businesses. While there is still a focus on family involvement in the business, participants in medium businesses highlighted the ability to spend time with family in activities outside the farm as being very important. Participants also noted that where more than one member of the family was part of running the business this can create friction and can lead to a breakup of the business. As such the division of responsibilities is an important issue in managing family relationships. However this creates incentives to expand the business to create enough scale to maintain viable business entities if the business is split.

.... a big part of the business to is being able to spend a lot of time with the family. [GN Sth M1]

... we are not competing against each other we are complimentary. ...I see a lot of farms and a lot of family organisations bust up because they are competing against each other. . [GN Nth M1]

The fifth most important theme for medium businesses is risk and in particular production risk from variable climate. Participants are active in seeking ways to manage risk including diversification, innovative production strategies to reduce their exposure to climate variability. Price risk is also a consideration and as such participants used market information to make production decisions to account for climate and price variations.

...really for risk here to this business it pretty much is production isn't it, production and price in what we actually do. [GN Nth M2]

Whether that's quality, quantity or price. That's – we've got to cover those things. [VEG M1]

Large Scale

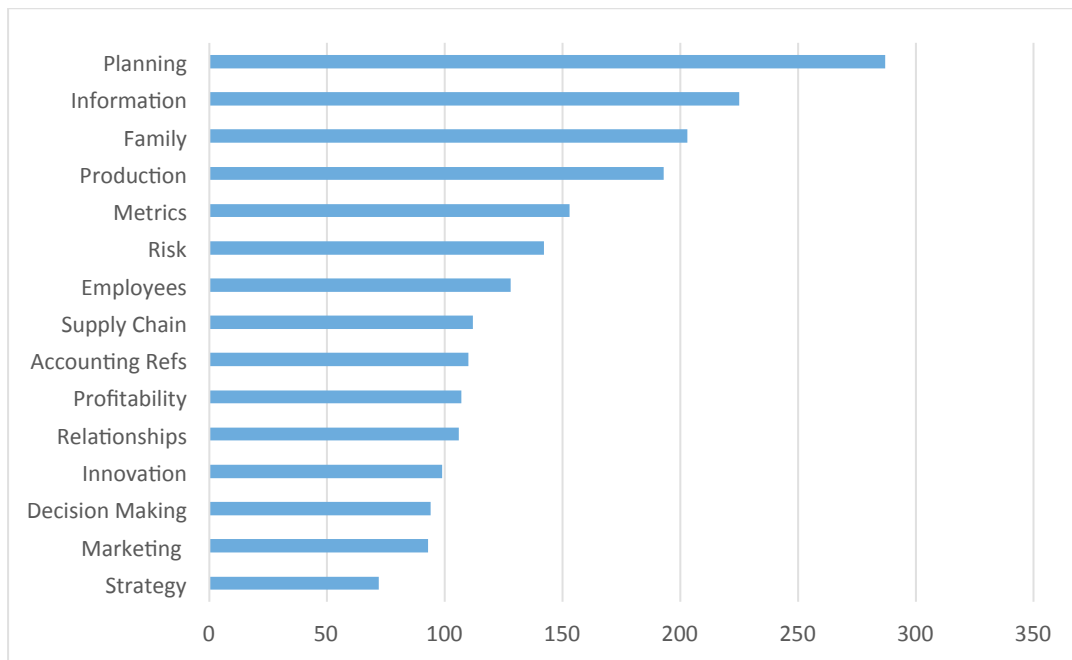


Figure 15: Themes from Large Scale producers' transcripts

The most important theme for large businesses is planning. Participants from large businesses tended to have more formalised planning processes than small and medium businesses. These planning processes were linked to more formal operational activities that underpinned the achievement of efficiencies across the business. More employees also meant that participants focussed on workforce logistics and how they could best plan the use of labour in the business. Employees tended to have defined roles and responsibilities. Succession planning was still a key consideration but not discussed to the extent of small and medium businesses.

Key strategy, I guess well planning is our, probably our number one I would say [GN W L1]

I spend the majority of my time planning and from the big things to the little things to what workers are doing for the week. [GN W L1]

The second most important theme is information which is seen as slightly less important than for small and medium businesses. Participants from large businesses still seek information from similar sources to small and medium businesses, but tend to have more formal ways of managing information as well as seeking advice from advisors and consultants. Often these businesses will employ people with expertise on their farms and thus reduce their need to seek information directly. There is also a perception that there is information overload so participants are strategic in seeking specific information about solutions or innovations for particular aspects of their business. As such while participants approach information differently to small and medium businesses it is still fundamental in informing planning and decision making.

We send staff ...to one of these at least once a year, a lot of that is information gathering. [IL L1]

Managing information [is] pretty difficult, I find there's just so much of it. [GN W L1]

The third most important theme for large businesses is family. Participants highlighted the importance of being able to spend time with family as is the case with medium sized businesses. While large businesses tended to have more formal structures family involvement and succession is still important. However, management is often more strategic and less hands on in terms of being involved in operational activities than small and medium businesses.

.... it gives you the opportunity to have different people involved in the business and people in the family who have fantastic skills but aren't practitioners in the business but still have something to bring and still want to be involved can have an opportunity. [GR W L2]

The fourth most important theme is production for large businesses and is closely tied to risk in line with small and medium businesses. The focus of participants is on increasing production and the avoiding the risk of lower returns to the business if production is not high enough. As such while climate is seen as important it tends to be viewed as something that cannot be managed so production factors that can be managed that accommodate climate variability tend to be the key focus of participants.

Priorities at the moment is fixing unproductive land, land that's not producing equivalent to other blocks, finding underlying issues in there and bringing all that up to 100% production. [SC Sth L1]

The fifth most important theme is metrics. Participants were focussed on measuring the activities within the business and the outcomes from activities. Participants place greater importance on capturing data and measuring production and financial variables. The underlying activities that led to particular outcomes are examined with an ongoing focus on improvement production efficiencies and financial returns.

We do, we do a production benchmarking in the cropping enterprise and the sheep enterprise and so we've got different, indicators there and then we use that to sort of do a whole business analysis. [GR W L2]

Summary of Scale Effects

The same five themes were the top priorities for small and medium businesses, information, planning family, production, risk and family. Four of these five themes were also important to large businesses enterprises, Information, planning, family and production with metrics being slightly more important for large businesses than risk. What can be seen is that the same top four issues were important regardless of scale. While there is a different emphasis on these four themes for different scales the fundamental reasons for their importance were consistent for all business sizes. Production was an issue for all sizes and while emphasised less by large businesses, its importance was of central importance across all themes. As scale increases it is apparent that aspects such as measurement of performance and having clear areas of responsibility for employees becomes more important. Management also becomes more strategic as scale increases with a higher reliance on employed labour and maximising efficiency. Information is important in decision making for all size categories however, the emphasis decreases as scale increases. As the level of information generated increases with the scale of the business, the methods for handling that information also improves and hence, are less prominent in the eyes of producers.

The next step of the analysis was to use insights from these data sets to segment the data to further explore the context and perception of the producers. Thus the word frequency provided a starting point from which to interrogate the full meaning of the words when placed in context. Using word search techniques we explored the farm performance mode more fully and constructed tables outlining the key themes and associated evidence. These are presented and discussed below. Coupled with the industry data eventually three key themes are identified and refined.

Firstly, a strong theme that emerged related to viability and survival. While these are constructs may be sometimes be linked to financial security many of the participants interpreted these in a more inclusive manner. Thus financial security represents one dimension of a broader theme and was supplemented by elements related to family, environment and succession. This broad theme is labelled continuity. Table One shows the key elements derived from the continuity theme and provides exemplar statements to add clarity to the categorisation.

A range of themes concerned with continuity were evident in the data. This construct has a clear but implicit time dimension within in its interpretation. This appears to represent the ability to sustain and produce on an on-going rather than transient basis and favours the long term over short term. Many of the participants were explicitly looking towards future outcomes and were making decisions that would secure production both for themselves and for future operators. The fact that the long term horizon was significant to the participants is of interest. It implies that these farmers were conscious of their place in time and history and aware that decisions made now have infinite implications. This sense of heritage and responsibility was also evident the way that the participants spoke about the social aspect of farm performance (discussed below). These findings were also reflected in the cross sectional industry analysis.

Table 8: Continuity

Elements	Definition	Narrative
Sustainable Profitability	Profit that can be continually made over all time periods as opposed to short and long run profitability.	[It's] consistently returning, the consistent return on your capital. I mean to cover debt and development and future hiccups or whatever, future problems, is probably the key thing I think. (GN Nth L1) Number one we have got to be sustainable we have to be able to sell everything we are growing and I mean our seconds as well as our first everything that we produce we have to be able to sell we have to be able to do that and sustain that model year in and year out. (VEG L2)
Family Welfare / Succession	Family unit continuing to function cohesively and providing for family indefinitely.	Farm performance would be probably positive gross margins and positive family margins. So you've got to correlate and interact them both. There's no point being rich and living here by yourself or vice versa, having 20 kids and not being able to afford them. (GR Wst L1) I'm second generation, my son is now part of this business and he's third generation and I'm hoping that there will be another generation or more generations to follow so we need to maintain our soils in condition that we don't degrade them. (SC Nth L2)
Sustainable Production	Production can be carried out in perpetuity.	Sustainability is probably number one and that goes hand in hand with future developments (IL L1)
Financial Certainty	Financial endurance of the business.	We're conducting an enterprise that's going to bring a return and the return has to come with some certainty. (FT S1) Stability in profitability if there such a thing in farming.(GN Wst M1)

The initial word frequency data indicated that people was a commonly used word. The cross sectional industry analysis had also highlighted the importance of relationships for many participants. Further analysis revealed that there were a number of categories embedded within this theme. The groups of people most commonly referred to were industry, family, employees, suppliers and customers. Looking at these groups together we established a theme related to the social aspects of farm performance. The individual constructs are displayed in table six.

Table 9: Social Dimensions

Elements	Definition	Narrative
Employees	Valuing employees to reduce costs and ensure that appropriate skills were retained in the operation.	Ultimately it's about people. It's about staff turnover, you can have a whole range of different kpi's but it's about a group of 18 guys that ended up in the bar with me last night and they just you can see you can just see that they are part of the business, they want to be part of the business and that's what you want. You want them to turn up the next day. (IL L2)
Customers	Valuing customers and building relationships as a tool to secure and build sales.	We need to make a connection with an end customer and sell the concept to them of what we can do. (VEG M1) Understanding your value offer to your customer and ensuring that you have got control of the process that sits behind it and ensuring that there is a margin there, it's setting something up that is viable and profitable and measuring it of course. (VEG S2)
Family	Family relationships underlie the success of the business and warrant primary consideration.	A big part of the business to is being able to spend a lot of time with the family (GN Sth M1) We talk[ed] a lot about how it will impact on us as a family... [and] the fact that it's going to serve my need on a personal basis which I hope will all have returns for the business overall. (GN Wst S1)

The final key theme to emerge from the data in relation to farm performance encompasses the structure of the business, physical characteristics and strategic intent. We have combined these concepts under the broad construct of business attributes. This is the category where there is greatest variability in responses. Whilst in part this can be attributed to the range of industries and size factors it was evident that it is impossible to partition the participants into defined groups. We therefore describe these categories as encompassing a spectrum of decisions that lead towards certain goals. Recognising that goals transition and change over time participants also tend to move along the spectrum over various time periods. For some expansion was currently a focus whilst for others maximising yield at current levels was important.

Table 10: Business Attributes

Elements	Definition	Narrative
Productivity	The volume of output produced relative to the input required. A strong emphasis on yield and efficiency.	We usually measure inputs so you know we know exactly what we are spending per hectare and exactly what we are getting out per hectare (GN Nth M3) Control your costs, high yield you know look farming is a pretty simple game (GN Nth L2)
Strategic Intent	Recognition of holistic and financial factors in setting goals. Specific to individuals. For some participants lifestyle ranks highly.	A little bit of growth is fine but it doesn't have to be growth every single year in the size of the business it can be we can go through stages were we do consolidation (VEG L2) To me it's continually getting better and working out how to make the job better and easier...and its paying off some of your debt (GN Sth L1) Achieving what we want to achieve, enjoying what we do (GN Nth S4)
Metrics	Selecting relevant measures for the business.	So it's all about measurements and performance and trying to hit those targets. (VEG L2) In terms of chasing a specific rate of return I don't actually look at that we operate in a variable climate, variable collision, variable markets if I can generate more cash to what I have spent to me that's a reasonable outcome. (GN Nth S2)
Physical Characteristics	Working within the physical constraints of location, geography, environment etc.	Farm performance to me really starts on the ground, if you haven't got good ground or you try to look after the pastures the best you can so that you can, you've got a healthy animal at the end of the day it's, your farm's not really performing is it? (GR Nth S1) Basically it's not that good a country and it was covered in trees but it was cheap and it was next door yeah. (GN Nth L1)

Together these three broad dimensions provide structure to the way these participants have experienced and perceived farm performance. Underlying these are the activities and practices that participants engage in to achieve their individual goals. A key objective of this research project was to contribute to existing perspectives on farm performance and make a practical contribution to assisting producers to improve performance. The study therefore utilises the categorisations of farm performance identified in this research to develop a reflective qualitative framework that can be used to guide priority areas to help facilitate improved farm performance. This model incorporates a decision matrix which focuses on key dimensions of performance identified by participants that can be used by operators to identify strategies and practices that they can improve and refine. The reflective framework is set out in the next section.

8. Qualitative Framework for Reflective Practice

8.1 Overview

In this section the findings from the previous section inform the development of a framework to enable reflection by producers, on business management decision-making. The framework comprises sets of categorised questions that can be worked through. It is not a checklist or decision tree but a way for producers to start thinking about priorities. This framework is designed to prompt a producer to look at practices that producers who are perceived to be successful by their peers focus on, but does not prescribe a specific action to themselves.

The method for constructing the Qualitative Framework for Reflective Practice is informed by the approach of Fernandez et al. (2001). The factors and variables are categorised according to strategy, tactics, business, social and operations, as in the tables in this section, though the divisions between each category are blurred. The strategic focus tended towards activity where the producer focuses on 3 to 5 years. This focuses the producer to consider the long term direction of a business and the environment in which it will operate in order to facilitate planning, as evident in the questions in Table 9. The tactical questions complement the strategic ones, but generally relate to shorter timeframes of one year within the 3-5 year strategic outlook. The business questions focus on production, markets and financial returns. It also looks at what could prevent the producer from furthering their goals.

The social component of the framework allows the producer to consider the people both inside and outside the business. Social relationships, mores and norms assist producers in roles, such as staff management, family, suppliers, buyers, or financiers, by allowing the producer to interact with these people (Table 11). This includes not only interactions with people but also interactions with what these people provide to the business beyond an exchange of goods. The operational questions (Table 12) focus on improving business performance

Table 11: Strategic Questions (3-5 years)

Questions - To what extent have you	Not considered	Considered	Appraised ¹	Initiated ⁴	Implemented or rejected ⁵
• worked at managing family dynamics to pass on the family farm?					
• mapped your long term business growth strategies?					
• begun the succession planning for your on farm, off farm assets and superannuation?					
• considered off farm investment either within the supply or value chain or in other passive investments?					
• undertaken whole farm planning?					
• determined your business goals with your stakeholders?					
• determined the activities required to achieve your business goals?					
• mapped a strategy for the long term viability of your resource base?					
• considered and mapped your future business growth?					
• undertaken analysis of the long term market opportunities for your business?					
• considered value adding options for your business?					
• considered the capital constraints within your business ?					
• considered what your optimal farm size should be?					
• independently valued the business as an asset?					
• considered the use of advisors to add rigor to your decisions?					
• considered your farm as an on farm and off farm wealth generator?					
• seek long term climate information before making long term decisions?					

1. Producer has appraised a question and chosen to initiate or reject
2. Producer has begun to implement a project, tactic or strategy
3. A project is concluded hence not considered in relation to priorities for the future

Table 12: Tactical Questions (annual cycles)

Questions - To what extent have you	Not Considered	Considered	Appraised	Initiated	Implemented or Rejected
• calculated your return on investment and is it greater than your cost of debt?					
• developed a relationship with your banks so that they understand your business?					
• considered alternative funding mechanisms for your farm?					
• actively engage with and manage your outside funders?					
• manage and measure production yield based on comparable metrics such as tonnes and kilos?					
• considered market factors in organising your production system?					
• planned your own professional development?					
• gathered information to identify potential innovation options available to you ?					
• developed a business case for innovation or change?					
• considered alternative plans to account for business risk issues?					
• considered alternative plans to manage debt?					
• considered alternative plans to account for production problems?					
• map your production system and take a whole of system approach?					
• measured and mapped your supply chain (logistic function) for efficiency ?					
• tested your decisions with a third party/ies?					
• develop the business case for possible changes with external advisors?					
• had to actively manage community perceptions?					
• considered the opportunities for developing supply or value chains?					
• considered a shared management style inside your business?					
• determined your ability to reduce capital costs by sharing equipment with neighbours?					
• applied climate forecasts to your farming system?					
• identified the climate modelling that suits your farming system and applied this to your farming system?					

Table 13: Business questions

Questions - To what extent have you	Not Considered	Considered	Appraised	Initiated	Implemented or Rejected
• managed cash flow statement on an activity basis					
• rigorously challenged your financial plans and assessed alternative options and likely outcomes?					
• implemented a procurement management system for your farm?					
• identified, evaluated and implemented market mechanisms to improve business returns?					
• separated family issues from business issues?					
• considered transport logistics and market constraints?					

Table 14 Social questions

Questions - To what extent have you	Not Considered	Considered	Appraised	Initiated	Implemented or Rejected
• questioned the structure of your workforce or subcontractors?					
• questioned the structure of your workforce or subcontractors payments and incentives?					
• developed relationships with your suppliers?					
• engaged with stakeholders to introduce on farm innovation?					
• implemented training and development options to implement your development plan?					
• implemented training and development options to implement staff development plan?					
• sort assistance in developing your management structure?					
• considered alternative labour options for your farm?					
• engaged with your industry organisations at local, state, national and international levels?					
• Shared your growth strategies with stakeholders?					

Table 15 Operational questions

Questions - To what extent have you	Not Considered	Considered	Appraised	Initiated	Implemented or Rejected
<ul style="list-style-type: none"> • implemented a system to apply best practice on farm? 					
<ul style="list-style-type: none"> • implemented a system to measure and evaluate best practice for your farm? 					
<ul style="list-style-type: none"> • determined critical annual activities ? 					
<ul style="list-style-type: none"> • Implemented a production management system to ensure efficient and effective operations? 					
<ul style="list-style-type: none"> • identified your natural resource maintenance requirements ? 					
<ul style="list-style-type: none"> • minimised marketing and transport costs ? 					
<ul style="list-style-type: none"> • implemented market and supply chain strategies on farm? 					

Guidelines for using the framework for reflective practice

A producer is asked to complete the questionnaire and answer the questions based on key areas of importance for their business. This questionnaire is consistent with the method provided by Fernandez et al. (2001), to compare areas of priority. This tool outlines five tables of questions which are refinements from themes observed in the industry data analysis (see Tables 8 to 12). To allow ease of use by the producer, characteristics and actions were classified into 5 tables of questions. This is a subjective evaluation based on individual perceptions. The response categories are:

- Not Considered – when the producer has not heard about or not researched a question;
- Considered – when the producer has research the options within a question;
- Appraised – when the producer has appraised a question and chosen to initiate or reject;
- Initiated – when the producer has begun to implement a project; or
- Implemented or Rejected – when are project is concluded and appraised or was rejected earlier.

Producers get a base rating from answering the questions provided in the framework tables. Different answers to questions constitute a different base rating. By stepping the base rating from 1 to 4 as the producer has increasingly acted in regard to a question, the priority for the producer is reduced as they have attended to that aspect in their enterprise. A rating of zero is applied where the producer has either implemented or rejected a suggestion as it is not be a priority.

Table 16 Rating System for Framework for Reflective Practice

Producer Response	Rating Attributed
Not Considered	1
Considered	2
Appraised	3
Initiated	4
Implemented or Rejected	0

The responses from the qualitative questionnaire are then transferred to the rating sheet (see tables 14-18) which detail the priorities the framework has highlighted as options to consider further. The rating system for these priorities uses the responses from the participant interviews in this research to provide a weighting for each question. Based on the responses from the interviews, a weighting between 0% and 100% is used for each question in the framework. Given the themes identified in the research 100% as base score represents the highest number of references by participants relating to a particular theme. To construct the weighting, the number of references has been normalised to account for different sample sizes for each industry so that the maximum weighting of 100% is comparable across the sample. As such where the number of normalised responses are equal the same base rating will apply.

The producer's rating between 1 and 4 is then multiplied by the base weighting to provide a final rating. The final rating is calculated as follows:

$$Final\ Rating = \frac{Producer\ Rating \times Base\ weighting}{100}$$

The final rating for each of the five areas (tables 8-12) provides a range of prioritised options that can be considered for further investigation. To assist the producer, a 'polygon' is drawn showing prioritised options, as shown in Figure 1. This is then compared to the participants who informed the

model with a band drawn as two polygon's, representing the area that these producers sit within. This provides a visual representation of areas to consider in their business. This enables the producer to evaluate the options presented and consider their priorities in comparison to farmer's who are perceived to be successful by their peers and industry. This is a preliminary model that will be developed further as a part of future research.

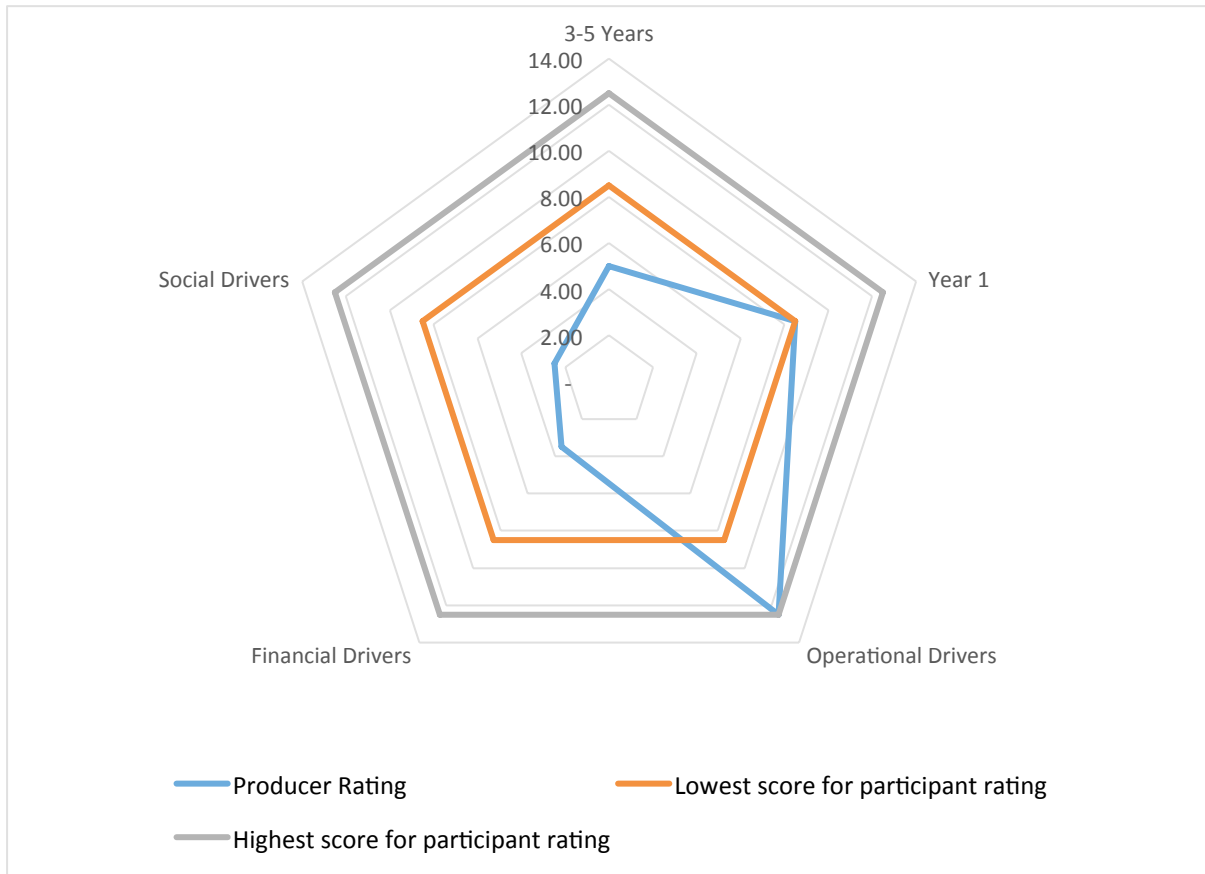


Figure 17 Example of Producer Ratings compared to Participant's Response Range

As producers implement their chosen options they can use the framework to reevaluate their priorities and consider future options. This is an on-going reflective exercise that can be used to assist business development. As Fernandez (2001) discusses, methods of comparison of practices need to be dynamic rather than static because the rules that govern how a complex system such as agricultural production will change over time and the priorities of a producer will change with them. As producers reflect on their progress and update the priorities over time they have to potential to adapt and progress the performance of their business.

Tables 14 to 18 set out the qualitative questions of the framework for reflective practice.

Table 17 Rating Sheet - Strategic questions (3 to 5 Years)

Questions - To what extent have you	Rating	Weighting	Total	Activity Required
<ul style="list-style-type: none"> worked at managing family dynamics to pass on the family farm 		100%		Understanding and managing family dynamics
<ul style="list-style-type: none"> mapped your long term business growth strategies 		74%		Business Growth
<ul style="list-style-type: none"> begun the succession planning for your on farm, off farm assets and superannuation 		60%		Succession planning
<ul style="list-style-type: none"> considered off farm investment either within the supply or value chain or in other passive investments 		60%		Strategic investment off farm
<ul style="list-style-type: none"> undertaken whole farm planning 		60%		Integrated whole farm planning
<ul style="list-style-type: none"> determined your business goals with your stakeholders 		58%		Determining the goals of the business
<ul style="list-style-type: none"> determined the activities required to achieve your business goals 		58%		Knowing the factors that contribute to goal attainment
<ul style="list-style-type: none"> mapped a strategy for the long term viability of your resource base 		58%		Ensuring the long term productivity of the resource base
<ul style="list-style-type: none"> considered and mapped your future business growth 		58%		Growth Strategy
<ul style="list-style-type: none"> undertaken analysis of the long term market opportunities for your business 		58%		Market analysis and development
<ul style="list-style-type: none"> considered value adding options for your business 		23%		Value chain understanding - understanding how and where value can be added
<ul style="list-style-type: none"> considered the capital constraints within your business 		13%		Financial constraints including capital constrains
<ul style="list-style-type: none"> considered what your optimal farm size should be 		13%		Economies of scale
<ul style="list-style-type: none"> independently valued the business as an asset 		3%		Seeing the farm as a viable business
<ul style="list-style-type: none"> considered the use of advisors to add rigor to your decisions 		3%		Business autonomy
<ul style="list-style-type: none"> considered your farm as an on farm and off farm wealth generator 		3%		The farm as a wealth generator
<ul style="list-style-type: none"> seek long term weather information before making long term decisions 		3%		Making decisions based on the signals of weather patterns

Table 18 Rating Sheet - Tactical questions (annual cycles)

Questions - To what extent have you	Rating	Weighting	Total	Activity Required
<ul style="list-style-type: none"> calculated your return on investment and is it greater than your cost of debt 		100%		ROI supports debt requirements
<ul style="list-style-type: none"> developed a relationship with your banks so that they understand your business 		100%		Relationship with debt providers - communication and understanding the business
<ul style="list-style-type: none"> considered alternative funding mechanisms for your farm 		100%		New ways of financing farm initiatives
<ul style="list-style-type: none"> actively engage with and manage your outside funders 		100%		Actively managing relationship with financiers
<ul style="list-style-type: none"> manage and measure production yield based on comparable metrics such as tonnes and kilos. 		100%		Importance of Yield
<ul style="list-style-type: none"> considered market factors in organising your production system 		100%		Managing the business relative to market position
<ul style="list-style-type: none"> planned your own professional development 		89%		Industry engagement in forums and workshops
<ul style="list-style-type: none"> gathered information to identify potential innovation options available to you 		89%		Information gathering
<ul style="list-style-type: none"> developed a business case for innovation or change 		89%		Information management - evaluation and application
<ul style="list-style-type: none"> considered alternative plans to account for business risk issues 		47%		Contingency plans to mitigate business risk
<ul style="list-style-type: none"> considered alternative plans to manage debt 		47%		Contingency plans to mitigate Financial risk
<ul style="list-style-type: none"> considered alternative plans to account for production problems 		47%		Contingency plans to mitigate operational risk
<ul style="list-style-type: none"> map your production system and take a whole of system approach 		31%		System understanding - critically analysis the system
<ul style="list-style-type: none"> measured and mapped your supply chain (logistic function) for efficiency 		31%		Supply chain understanding - the logistics supplying markets
<ul style="list-style-type: none"> tested your decisions with a third party/its 		28%		Test Decisions with external advisors
<ul style="list-style-type: none"> develop the business case for possible changes with external advisors 		28%		Utilize external advisors when making decisions
<ul style="list-style-type: none"> had to actively manage community perceptions 		22%		Managing positive public perceptions
<ul style="list-style-type: none"> considered the opportunities for developing supply or value chains 		14%		Working together to achieve joint goals supply and value chains
<ul style="list-style-type: none"> considered a shared management style inside your business 		14%		Sharing information and a collaborative approach to management
<ul style="list-style-type: none"> determined your ability to reduce capital costs by sharing equipment with neighbours 		14%		Equipment sharing
<ul style="list-style-type: none"> applied climate forecasts to your farming system 		13%		Understanding the risk of weather, its opportunities and threats

<ul style="list-style-type: none"> identified the climate modelling that suits your farming system and applied this to your farming system 			13%		Adapting plans when climatic factors change, work out the options ahead of time
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Table 19 Rating Sheet - Business questions

Questions - To what extent have you	Rating	Weighting	Total	Activity Required
<ul style="list-style-type: none"> managed cash flow statement on an activity basis 		100%		Proactively managing cash flow statement
<ul style="list-style-type: none"> rigorously challenged your financial plans and assessed alternative options and likely outcomes 		100%		Reappraise financial plans and adapt
<ul style="list-style-type: none"> implemented a procurement management system for your farm 		100%		Actively managing controllable costs
<ul style="list-style-type: none"> identified, evaluated and implemented market mechanisms to improve business returns 		31%		Using market mechanisms to maximise price
<ul style="list-style-type: none"> separated family issues from business issues 		14%		From a financial perspective there is a separation of family and business
<ul style="list-style-type: none"> considered transport logistics and market constraints 		14%		Market constraints

Table 20 Rating Sheet - Social questions

Questions - To what extent have you	Rating	Weighting	Total	Activity Required
<ul style="list-style-type: none"> questioned the structure of your workforce or subcontractors 		100%		Understanding and managing staff dynamics
<ul style="list-style-type: none"> questioned the structure of your workforce or subcontractors payments and incentives 		100%		Structuring Incentives
<ul style="list-style-type: none"> developed relationships with your suppliers 		100%		Managing suppliers
<ul style="list-style-type: none"> engaged with stakeholders to introduce on farm innovation 		74%		Mindset to problem solve and innovate
<ul style="list-style-type: none"> implemented training and development options to implement your development plan 		66%		Professional development
<ul style="list-style-type: none"> implemented training and development options to implement staff development plan 		66%		Understand the value of staff training and development
<ul style="list-style-type: none"> sort assistance in developing your management structure 		60%		Management structure
<ul style="list-style-type: none"> considered alternative labour options for your farm 		10%		Labour constraints
<ul style="list-style-type: none"> engaged with your industry organisations at local, state, national and international levels 		5%		Industry commitment
<ul style="list-style-type: none"> Shared your growth strategies with stakeholders 		5%		Commitment to the business and its growth

Table 21 Rating Sheet - Operational questions

Questions - To what extent have you	Rating	Weighting	Total	Activity Required
<ul style="list-style-type: none"> implemented a system to apply best practice on farm 		100%		Apply best practice in the context of the farming system
<ul style="list-style-type: none"> implemented a system to measure and evaluate best practice for your farm 		100%		Evaluate and prove innovative practice
<ul style="list-style-type: none"> determined critical annual activities 		17%		Clear understanding of critical time lines
<ul style="list-style-type: none"> Implemented a production management system to ensure efficient and effective operations 		17%		Each and every operation is conducted on time every time
<ul style="list-style-type: none"> identified your natural resource maintenance requirements 		14%		Environmental risks
<ul style="list-style-type: none"> minimised marketing and transport costs 		14%		Distance to markets/services
<ul style="list-style-type: none"> implemented market and supply chain strategies on farm 		14%		Market expectations including quality of produce and food safety

9. Discussion of results

9.1 Strategy and tactics

A key objective of this research was to identify variables from qualitative data from a sample of farm businesses that are perceived as effectively managing resources to achieve goals by their peers and industry leaders and advisors to this project. The variables analysed relate to farm performance strategies and tactics. Industry and scale differences are explored.

The most common farm performance strategies amongst our participants are growth, consolidation and rationalisation strategies. What can be viewed in the strategies put forward by participants is that the strategies describe how the business currently operates, creates room for planned changes within business and also involves contingencies. Of the participants in this research a high proportion stated that they were either in the process of growing, had goals to grow, or had undertaken growth and were now consolidating their business. Acquiring additional land through ownership is the most commonly undertaken view to expansion. Most commonly a growth strategy was directly linked to the desire to develop the business further. A growth strategy is consistent with high levels of reinvestment into the enterprise. This also follows that the enterprise is their number one priority in the short run and that family is the priority in the long run.

Twenty seven participants discussed consolidation of their business suggesting that it is a significant strategic need for farm businesses. Part of consolidation is the recognition of constrained capabilities, with consolidation often following a phase of growth. Financial and system function considerations were the most commonly cited reasons for a consolidation strategy. A relatively small number of enterprises in our sample were conducting strategies to rationalise their business. Rationalisation is generally a result of people being at a stage in life where they wished to contribute less labour.

Strategy and tactics were analysed using the following twelve industry groupings: northern grazing, southern grazing, western grazing, intensive livestock, southern sugar cane, northern sugar cane, vegetables, fruit trees, tree nuts, northern grains and cotton, southern grains and western grains.

9.2 Across industry differences

There is substantial variation in priorities and tactics within each of the agricultural industries analysed. Notwithstanding this within-industry variation, there are interesting differences between industries that are summarised below across the key research themes identified by participants.

As would be expected, production emerged as a key focus for most industries including southern grazing, sugar cane, horticulture and western grains industries. However there are considerable differences in the aspects of production that are focused on across industries. For southern grazing, this theme centres on mixed farming and having a willingness to change production methods and employ diverse strategies. For southern cane the focus is on using the latest practices and land utilisation, while northern cane producers are concerned with timing, soil health and constraints to diversification. The focus of production tactics for the horticulture industries relates more to increasing efficiencies, production capacity and quality, adoption of innovation, staff capability and disease prevention. This is in contrast to western grains where the focus is on variability of production.

Accounting and performance measurement arose as an important theme for southern cane and all grains and cotton regions, particularly western grains. Accounting measures inform decision making. Several other emergent themes across other industries related to performance measurement and data. For example, western grazing businesses use a mix of financial and non-financial metrics and benchmark against available data. These performance measures are also used in intensive livestock

and are supported by extensive use of targets and indicators. Northern grains and cotton farmers focus on metrics related to constraints.

Profitability is a notable theme for southern cane, with the emphasis on efficiency and cost minimisation while maintaining levels of inputs. A similar theme for northern grazing is business monitoring including financial situation and informal measurement of key business elements.

There are also some differences between industries when growth and capital are considered. Expansion is important for southern grain producers, who tend to use debt to support growing the business for the future. Similarly, northern grazing emphasised the need for sufficient capital to provide the flexibility needed to make timely decisions. For western grazing enterprises, the focus is on diversification and planning for future infrastructure requirements. However a lack of available land poses a challenge. Intensive livestock industries tend to have growth strategies since sufficient scale is necessary to complete while maintaining efficiency.

Risk emerged as an important theme for sugar cane, fruit and nut tree industries and western grains. Market related risks are a key issue across these industries, while policy risk and government intervention are also considerations for northern cane and fruit tree producers. Weather and climate were cited as important risks for the northern cane, fruit tree and western grains industries. In addition, climate is a key theme for northern grains and cotton as well as western grains.

Relatedly, decision making arose as a primary theme for northern beef, and involves managing seasonal trends and making judgements as to the best time to buy or offload stock. This is also an attribute for southern beef, although its focus is more reactive than proactive in comparison to northern beef.

Decision making arose as a notable attribute in the context of southern grains, but in a different way to the beef industries. In this context the focus of decision making is on adoption of innovation. Research and innovation also emerged as key theme for northern cane.

Family emerged as an important theme for the sugar cane, grains and cotton industries. Family considerations provide a strong motivation for business expansion, resulting in an intergenerational build-up of many participating businesses in these industries. There is also a lifestyle aspect to family considerations, but this is not always easy to achieve.

For those industries where family did not emerge as a key theme, the importance of family relationships were often mentioned as part of a broader relationships theme. Relationships emerged as a key theme for the grazing, intensive livestock and northern and southern grains industries. Sourcing information through external relationships is an important aspect for grains producers. Northern and southern grazing enterprises focus more on building long term relationships with customers and suppliers. In the north, engaging with community and using shared labour are also key considerations. Workforce stability is an important motivator for relationships in the intensive livestock industry.

When it comes to environmental management, the focus for northern beef is on ensuring long term viability of land and contrasts with intensive livestock industries where the focus is on compliance and influencing policy. Both of these industries highlighted the importance of managing negative perceptions.

Supply chain management is a focus for fruit and vegetable industries, driven at least in part by large supermarket chains. These industries place an emphasis on meeting customer driven specifications and value adding. Finally, marketing and collaboration are key themes for the fruit and tree nut industries, which tend to work collaboratively

9.3 Scale impacts

Our analysis indicates that scale differences have less impact on strategy and tactics than industry differences. The same top four issues are important regardless of scale. While there is a different emphasis of these four themes for different scales the fundamental reasons for their importance are consistent for all business sizes. Production is a key factor for all sizes. While it is emphasised less by large businesses, its importance is of central importance across all sizes of producers. As farm size increases it is apparent that aspects such as measurement of performance and having clear areas of responsibility for employees become more important. As scale increases management becomes more strategic with a higher reliance on labour and maximising efficiency. Information is important in decision making for all size businesses however, the emphasis decreases as scale increases. Further, as the level of information generated increases with the scale of the business, the methods for handling that information also improves and hence, it becomes less prominent in the eyes of producers.

9.4 Qualitative Framework for Reflective Practice

A further key objective of this research was to develop a reflective self-assessment framework to assist farmers to evaluate their business performance, and prioritise strategy and tactics.

Our results suggest that farm performance may not be a clear cut concept for many people and instead they may require more complex ideas than a conceptual definition to display the ‘outcome’ of their business. Multi-attribute themes for performance are present in many of the responses. However within this context, a financial interpretation can be applied to a range of the responses which implies that the producers consider this to be the most important area for the outcome of their business. Productivity and yield conceptualisations are also common responses, suggesting a production orientation to the business management. A number of participants postulated that productivity was closely connected to the financial outcome because other measureable factors remained reasonably static and that as productivity varied considerably, it is a chief concern of their business.

We identify three broad dimensions of farm performance that provide structure to the way project participants have experienced and perceived it. Underlying these are the activities and practices that participants engage in to achieve their individual farm performance goals. The three themes are:

- **Continuity.** This theme relates to viability and survival. While these constructs are sometimes linked to financial security many of the participants interpreted these in a more inclusive manner. Thus financial security represents one dimension of a broader theme and was supplemented by elements related to family, environment and succession.
- **Social aspects.** The cross sectional industry analysis highlights the importance of relationships for many participants. Further analysis revealed that there were a number of categories embedded within this theme. The groups of people most commonly referred to were industry, family, employees, suppliers and customers.
- **Business attributes.** This attribute encompasses the structure of the business, physical characteristics and strategic intent. We have combined these concepts under the broad construct of business attributes. This is the category where there is greatest variability in responses. It includes a spectrum of decisions that lead towards certain goals. Recognising that goals transition and change over time participants also tend to move along the spectrum over various time periods.

The study utilises the categorisations of farm performance identified in this research to develop a reflective qualitative framework that can be used to guide priority areas to help facilitate improved

farm performance. This model incorporates a decision matrix which focuses on key dimensions of performance identified by participants that can be used by producers to identify strategies and practices that they can improve and refine.

The framework comprises sets of categorised questions, which can be worked through. This is not a checklist or decision tree but a place to start thinking about priorities. These priorities are designed to prompt the producer to look at practices that other producers have found useful, but no specific action is prescribed. The framework provides a range of prioritised options that can be considered for further investigation. As producers implement their chosen options they can use the framework to reevaluate their priorities and consider future options. This is an on-going reflective exercise that can be used to assist business development.

10. Limitations and Implications

10.1 Limitations

This project was limited by the selection of methods and the resources available. The resource restrictions limited the sample size, while case study research has inherent constraints. These include limited data points, potential interview bias and restricted replicability. Qualitative research in general has been criticised for its reliance on the interpretative ability of the researchers. In this project the researchers worked together to achieve consensus on many of the key stages of the research. The research team brought a broad range of experience and skill to the project meaning that a variety of perspectives were present throughout the analytical process. Members of the team had specialist knowledge in economics, farm practice and education, finance, industry experience, qualitative research methodologies, accounting and political theory. The combination of the research team structure and methodological rigour creates a level of assurance about the results and findings. A second limitation is that great care is needed in generalizing from the themes. Because the focus was on the discourses of the producers no fixed definitions were imposed, so that for example, respondents could be thinking of ‘sustainability’ in different ways. It is therefore important to consider some of the context within the interviews as well as the theme summaries.

Consequent on these two limitations, the data described in this project is presented “as an authentic reproduction of daily activities” (Lapan and Quataroli, 2009, p.177) as experienced by the participants. This provides opportunities for learning and change to occur in the broader community (Lapan and Quataroli, 2009) by encouraging practitioners in similar situations to reflect on and transform existing practices. Thus the research provides opportunities for collective change to occur via extension activities or alternatively for individuals to enhance existing practices in a context specific setting.

This project has explored some of the activities that participants in the study undertake on a daily basis. It also analysed their perceptions and experience of the dimensions that contribute to successfully operating their businesses. As is the nature of qualitative research it is not possible to ascribe causality to the findings. However the research does provide a framework that can be assessed and refined by application in the field. Further work can be conducted to evaluate the relevance and practical scope of this model. This has been a comprehensive study with over 4000 pages of data scrutinised from more than 80 participating farmers. The combined contribution is an initial framework for reflective practice to aid farmers in understanding the many dimensions of farm performance. It is designed to encourage users to explore different ways of setting goals and evaluating achievement towards those goals. Whilst it is clear that success is measured in different ways for different participants it is also notable that farmers which are perceived as successful by their peers share similar attributes. Consequently a key contribution of this study is the identification of the processes that these participants undertake to achieve and maintain this success

10.2 Implications

The results of this project show how management priorities vary across industries and in some cases between regions within industries, at least as far as we can see from these samples. Some of the differences seem logical, such as the focus of northern cattle producers on selling decisions and the greater focus on system management in intensive animal industries. Hence, efforts to enhance or support farm business decision-making may need to be tailored accordingly.

Second, though some of the respondents make use of performance indicators, there is still a widespread reliance on ‘instinct and judgement’, although these are obviously informed by experience. Hence, there is some question as to the value of developing formal decision support tools that are primarily based on conventional performance measures.

Third, many of the respondents were conscious of the importance of other parts of the supply chain, reinforcing perhaps the focus of much recent research and policy. In particular, a number of producers were conscious of the need for profits and good relations along the chain, which is contrast to some narratives about unfairness in the chain, especially in relation to producers. Milk retailing is at least an occasional example of that. This may also be an area for advisors to consider further, as some no doubt already do.

Fourth, results from this sample suggest that relationships and networks in general are important and while the causal inferences are uncertain, advisors and policy makers could consider the importance of social capital in assessing the situation of a producer or a region and in supporting management capacity.

Fifth, this research suggests the need for some caution in considering increasing scale as a growth strategy. While most of the respondents see the importance of increasing the scale of operation, at times (weather and markets) or at life stages, consolidation and a reduction in intensity (of inputs) may fit with other goals.

Sixth, diversification appears to be an important option for many of the producers but it can be done for a number of reasons and to a greater or lesser extent. There was acknowledgement from some participants that there can be too much diversification, while at particular times there can be enterprise switching. Again, this suggests the need for care and qualification in regard to the provision of advice.

11. Recommendations

The high degree of complexity in farm management coupled with volatile markets and changing environmental conditions means that individual operators have variable levels of success in balancing these elements. Further not all operators aim exclusively for specific financial outcomes as some properties are run to achieve multiple objectives. This means that applying prescriptive tools such as benchmarking or financial modelling is not universally appropriate for diverse farm contexts. There are usually trade-offs in achieving quantitative targets and not all industry standards are relevant nor achievable on an individual farm. Thus quantitative measures are guides to performance but need to be adapted to match individual farm and producer characteristics and circumstances. The purpose of this research was to derive a more generic and producer driven framework that would enable operators to assess their own performance in relation to individualised priorities and objectives. This framework incorporates numerous qualitative elements that are considered by participants to be key factors in managing farm performance. The associated reflective questions are designed to prompt individuals to fully understand and articulate their key objectives and priorities. Individuals can then apply the rating tool to identify tactics and activities to help achieve the personalised objectives. It is anticipated that this process will eventually contribute to improved farm performance across the many dimensions of farm practice.

Recommendation 1: Pilot qualitative framework to gauge validity and refine instrument.

Whilst the framework is a preliminary outcome from this project, practical refinement and adoption is necessary to assess its validity and relevance. In order to achieve this the framework must be presented to potential users in a productive and receptive forum. One avenue for this may be in the form of extension or education. Other possibilities include conferences, networking events and promotion by business professionals. It is recommended that a small pilot study is conducted firstly to assess the useability of the framework from a user perspective. This should be undertaken with the intention of reducing the number of questions to a more manageable and less intimidating amount. Another option for developing the framework would be to select a number of the existing participants and monitor them as they apply the framework to their existing operation. This would allow researchers to incorporate feedback from knowledgeable operators and improve the useability of the framework.

Recommendation 2: Business support programs, advisory services and tools should have implicit or explicit recognition of that producers will be balancing multiple goals.

Recommendation 3: Enhance programs and structures that facilitate supply chain engagement.

Supply chains are an important consideration for many participants, however, understanding of, and engagement with supply chains varied considerably across participants and industries. It may be beneficial to enhance programs and industry organisational structures that build and maintain understanding and engagement along agricultural supply chains.

Recommendation 4: Develop models for collaborative business practices.

Participants in this study had differing approaches to collaboration. Some arrangements were organised very informally on an as needed basis. These tended to be localised in nature and generally effective. Large scale collaborative arrangements were more common in certain industries and participants reported both negative and positive experiences. Further research could inform future models for collaboration that are systemically both effective and productive.

Recommendation 5: Financial literacy and communication skills bridging.

In this project it was evident that there high degree of variance between participants in terms of financial literacy. Most participants demonstrated sound financial acumen and some had completed qualifications that incorporated business or commerce components. However some participants had apparent knowledge gaps in regards to financial terms and concepts. As participants in this group are considered to be successful by peers and industry it is likely that these participants have overcome these deficiencies in financial knowledge by their expertise in operational aspects. It is possible that operators with less financial acumen and less favourable conditions may experience more adverse outcomes associated with poor financial literacy. Future programs could be developed to investigate educational opportunities for financial literacy courses and could explore mechanisms for delivery of such courses.

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Appendix 1: Participant Codes

Industry	Size	Code
Cane Northern	Small	SC Nth S1
Cane Northern	Small	SC Nth S2
Cane Northern	Medium	SC Nth M1
Cane Northern	Medium	SC Nth M2
Cane Northern	Large	SC Nth L1
Cane Northern	Large	SC Nth L2
Cane Southern	Small	SC Sth S1
Cane Southern	Small	SC Sth S2
Cane Southern	Medium	SC Sth M1
Cane Southern	Medium	SC Sth M2
Cane Southern	Large	SC Nth L2
Cane Southern	Large	SC Sth L1
Grain Northern	Small	GN Nth S1
Grain Northern	Small	GN Nth S2
Grain Northern	Small	GN Nth S3
Grain Northern	Small	GN Nth S4
Grain Northern	Medium	GN Nth M1
Grain Northern	Medium	GN Nth M2
Grain Northern	Medium	GN Nth M3
Grain Northern	Medium	GN Nth M4
Grain Northern	Large	GN Nth L1
Grain Northern	Large	GN Nth L2
Grain Southern	Small	GN Sth S1
Grain Southern	Small	GN Sth S2
Grain Southern	Medium	GN Sth M1
Grain Southern	Medium	GN Sth M2
Grain Southern	Large	GN Sth L1
Grain Southern	Large	GN Sth L2
Grain Western	Small	GN W S1
Grain Western	Small	GN W S2
Grain Western	Medium	GN W M1
Grain Western	Medium	GN W M2
Grain Western	Large	GN W L2
Grain Western	Large	GN W L1
Grazing Northern	Small	GR Nth S1
Grazing Northern	Small	GR Nth S2
Grazing Northern	Medium	GR Nth M1
Grazing Northern	Medium	GR Nth M2
Grazing Northern	Large	GR Nth L1
Grazing Northern	Large	GR Nth L2
Grazing Southern	Small	GR Sth S1
Grazing Southern	Small	GR Sth S2

Code Legend:
Industry Sector/Geo/Size/Participant #

Grazing Southern	Medium	GR Sth M1
Grazing Southern	Medium	GR Sth M2
Grazing Southern	Large	GR Sth L1
Grazing Southern	Large	GR Sth L2
Grazing Westen	Small	GR Wst S1
Grazing Westen	Small	GR Wst S2
Grazing Westen	Small	GR Wst S3
Grazing Westen	Medium	GR Wst M1
Grazing Westen	Medium	GR Wst M2
Grazing Westen	Large	GR Wst L1
Grazing Westen	Large	GR Wst L2
Intensive Livestock	Small	IL S1
Intensive Livestock	Small	IL S2
Intensive Livestock	Medium	IL M1
Intensive Livestock	Medium	IL M2
Intensive Livestock	Large	IL L1
Intensive Livestock	Large	IL L2
Intensive Livestock	Large	IL L3
Nuts	Small	NUTS S1
Nuts	Small	NUTS S2
Nuts	Medium	NUTS M1
Nuts	Medium	NUTS M2
Nuts	Large	NUTS L1
Nuts	Large	NUTS L2
Trees	Small	FT S1
Trees	Small	FT S2
Trees	Small	FT S3
Trees	Medium	FT M1
Trees	Medium	FT M2
Trees	Large	FT L1
Trees	Large	FT L2
Vegetables	Small	VEG S1
Vegetables	Small	VEG S2
Vegetables	Medium	VEG M1
Vegetables	Medium	VEG M2
Vegetables	Large	VEG L1
Vegetables	Large	VEG L2

Appendix 2: Grazing Industry Analysis

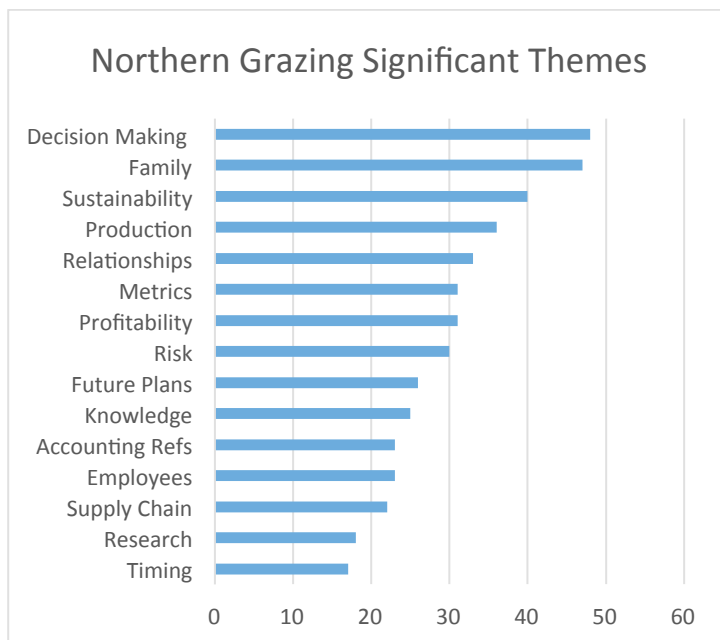
The following section includes the full descriptors and discussion of the participants in the grazing industry.

For the purposes of the research the Australian grazing industries were broken up into three major regions, northern grazing with a cattle focused system; southern grazing with a cattle and sheep mix and western grazing with a sheep focus. The northern and southern grazing industries are in line with ABARES's designation of industries (Thompson & Martin, 2014). The western industry sits within the southern industry by ABARES classification, however the south west area of Western Australia is a geographically distinct area of production (see ABARES 2014) and has been treated as separate industry.

Northern grazing is the most extensive agricultural industry by land area in Australia, and is predominately cattle with high *Bos indicus* content. Individual herd sizes are larger than southern and western production (Thompson & Martin, 2014), however rates of fertility are lower and calve mortality rates are higher leading to lower rates of turnoff than in western and southern systems. Northern grazing serves a number of markets including the largest share of the live export market. Proximity to point of sale is a key determinant in market participation by participants.

Northern Grazing Analysis

The analysis identified the top 15 themes according to the interviews conducted by the Northern Grazing participants. These are displayed in the table below.



This geographic and industry combination was the only one in which decision making constituted the highest ranking. Investigation of the data coded to this dimension indicates that the decisions the participants referred to primarily involved making judgements as to the best time to buy or offload stock. This was a critical element to their operations as they noted that they were subjected to a number of external influences and a significant factor to success in their industry was to actively manage these as best they can.

We're in a land based industry and it basically often does come down to the soil and the grass and the landscape. (GR Nth L1)

These participants also noted that they were very much seasonally based and that it was necessary to plan ahead to ensure that they could meet the demand at the appropriate time but also accommodate fluctuations in sales prices. For some this meant adapting to the current situation whilst actively planning for the next cycle so they were in a position to take advantage of improvements in the environment. Nearly all participants noted that it was important to sustain the quality of the product and this meant ensuring that cost minimisation strategies did not adversely affect the animal because that was the key to being able to maximise their profitability in the next upwards cycle.

Right now we're living in the middle of a bloody almighty drought, and I don't really like the look of this coming season, but at some point in the future, whether it's the end of this year, or the end of next year, or the next year, we're going to probably go into a cycle of four, or five, or six good years here, so, you know, we have to be ready. What I'm trying to do out there now, is to get the place ready for the next good cycle. (GR Nth S2)

I think that comes back down to being well aware of what you can and can't afford to do at the time. So if, if business is not good and the money's just not there, then you really have to tighten the belts, you, you spend money on what you have to spend it on, such as lick for your cattle and so on, you don't ever stop doing those things, you always look after the beast first. (GR Nth S1)

Participants in this region used a number of tools (including spreadsheets to map climate trend data) to help them make these decisions but also relied heavily on instinct, experience and research. A strong element to this was learning from prior experience and the ability to make decisions at the appropriate time. For one participant this ability to interpret climatic and environmental trends and respond quickly to expert predictions in regards to future rainfall meant avoiding the worse consequences of a drought affected year by selling stock off early.

So that left me with a lot less cattle and it was easier on me for management, it was easier on my cattle because they could spread out and have more feed. It was easier on my bank account because I didn't have to feed them, and I had money in the money in the bank earning interest from the sale, and basically it's much easier on the country because it's not being knocked about by having too many cattle. When your stocking rate exceeds your carrying capacity that's when you're in trouble, and I made sure that I reduced my numbers to the point where my stocking rate was still under my carrying capacity. (GR Nth S2)

Grazing participants in this region also stated that a key component of success was the capacity to be flexible in their production. This meant constantly evaluating their decisions and being receptive to opportunities as they became available. This implies that having the financial capital available at the appropriate time is also an important factor in this industry. There was a definitive view that being proactive in terms of decision making meant that the operator was able to control their own situation. However this was dependent of having the financial capacity to be able to do this.

It's a prime example with what's happened with the drought there were so many people that were not in a very good situation to be able to last a drought, just because of the way cattle prices had been. And with the live

export banning, that actually put people on the back foot before the drought even took a hold and once you're on the back foot if business starts going bad, it, it's really hard to get it back. So you have to just try and stay on top of it, and not get yourself into a position where you haven't got the fallback. (GR Nth S1)

There was a strong link between this decision making dimension and another significant theme of timing. These two elements featured highly in these participants perceptions of how to manage their farm performance. For many participants the ability to make the right decision at the right time was a key driver of success or conversely failure.

There's a lot of people around at the moment...there's a lot of people hurting who expanded probably just a bit later than they would have liked to have done. (GR Nth L1)

Despite the emphasis on timing participants acknowledge that to some extent their decision were driven by factors outside their control. Most commonly these referred to the willingness of banks to provide finance, climate factors, supply chain issues and currency fluctuations. Therefore participants attempted to manage these as best they could in order to maximise opportunities when they arose.

I need to be aware of and know as much as I can about those outside things, whether it's the dollar or the supply of cattle that might come on the market or whatever. (GR Nth S2)

One example of this was a participant who attained EU accreditation for their beef but indicated there had been a three year time lag before they achieved a specific outcome from this process. However the accreditation had helped secure a market that they otherwise would have not been eligible for and that this provided a measure of protection against local market conditions. Although committing to the accreditation process had required "time and money" and there was a time lag in terms of return the operator was confident that it had provided a profitable result. The willingness to analyse and proactively seek out these opportunities was a common link amongst these participants.

Another strong theme in the data set related to relationship building and nurturing. Typically the key relationships included the family involved in the business, but also members of the community. A number of participants acknowledged labour sharing was a common strategy with businesses helping each other when needed. Others use contractors on a regular basis and built relationships with particular suppliers. In addition relationships with stock brokers or meat processors was important for the turnoff of stock.

I mean you have to have confidence in who you're dealing with. You have to try to be able to build up a good relationship with them, and if you get greedy it's the best way in the world to wreck it. You have to build up a relationship with the people whereby you respect each other, and there's an old saying that says if you don't leave some fat in the deal for the buyer, he's not going to buy. (GR Nth S2)

It was evident that a mutual respect between industry players was a key component of these operators' success and participants felt that the time and cost associated with nurturing these relationships returned a financial benefit in the long run. A key outcome that was always high on the priority list was return business.

You've got to hope that when he buys your cattle he makes a "motza", because the more he makes on them, the more inclined he will be to come and buy them next time. (GR Nth S2)

As most of these participants were running family farms a key aspect of the business related to continuing the family legacy. However this was rarely a simplistic goal as it often involved decisions around equity and ensuring that all family members had equivalent opportunities. A number of different tactics had been adopted by these participants to manage these outcomes. These included expansion to balance out difference in values and ensure that there was enough to go around all family members.

We had a fairly big period of expansion, in the last 10 or 15 years and then we've divided the business 3 ways. (GR Nth L1)

Others had employed consultants to advise them on the best way to share the returns from the family property. For participants with young families a key element of their strategy was to maintain the land in a suitable state so that there would be a productive asset for future generations. There was one participant who stated that due to the small size of their property the only appropriate succession plan would be to sell it however this was an atypical response. By far the most common theme was to ensure the future viability of the business for generations to come.

The biggest challenge I see at the moment is how to grow the business and make it worthwhile for this next generation to come on board and feel that it's a worthwhile experience for them, and how to grow the business into something worthwhile for them to take on. (GR Nth M1)

Thus the importance of family appeared inextricably linked to the farm business meaning that many of these participants had both intrinsic and extrinsic motivations for ensuring the farm was productive. As most of the participants were conscious of the longevity of their business an emergent change to the mindset of their operations related to resource management. In this data set this was primarily evident in the sustainability and future plans dimensions.

The sort of unwritten plan that has always been that [Named Farm] itself would never be sold out of the family, so if you call that a plan it's a pretty basic sort of premise. (GR Nth L1)

However although land maintenance was often linked with notions of sustainability and providing for future generations many participants offered a more pragmatic view of the role of resource management.

I know for a fact that you can make more money long term if you look after your environment. (GR Nth L2)

Your country and your grass are your goose. If you kill the goose you lose your golden egg. So you've just got to look after that country and improve as much as you possibly can, and that's all about groundcover, pasture species, less runoff, dung, urine into the soil, all of those things, you're not going to get your golden egg if you don't look after this. (GR Nth S2)

It became clear that for these participants environmental integrity and profitability were dual objectives that could be accommodated together. Of some interest was that participants often stated

that they had no sustainability objective and instead concentrated on resource management strategies. It appears that as a concept sustainability still retains some negative connotations and that the term is out of favour in this region. Perhaps one reason for this is illustrated in the following participant quote:

We certainly don't get any credit for it, and I actually saw in the paper, I think it was on Sunday, there was a part in the paper how people got to cut down on eating red beef because it's going to increase our global warming. (GR Nth M2)

Thus there is evidence of uneasy relationship between these participants and the broader community as to how sustainability is translated into practice in traditional farming contexts. Related to this was a number of participants that expressed concern over the publicity that had been associated with live exports. For some participants this was an ongoing tension in their business practices.

The final connected themes that were prominent in Northern Grazing related to accounting practices and the use of metrics to monitor performance. Overall these participants had strong systems for recording financial information as well as collecting non-financial data about their operations. The control and use of information was well documented in our analysis. A number of these participants had a sophisticated understanding of the cost structure for their business and were actively managing their expenses in order to operate as efficiently as possible. For these participants knowing the behaviour of the costs of their business was a fundamental part of ensuring the business remained viable.

The fixed costs are, well they're not really fixed that's the problem, the fixed costs that go up all the time, the things like the rent...because the rentals and the power, things like that, that we really can't do much about...they've been a bit scary in some of the increases in both those things and especially when you, your returns not growing at the same rate. (GR Nth L1)

The demise of a cattle property can be a very slow, a cattle business, can be very slow, you can almost, it's glacial sometimes, you don't even, and I think that's the problem a lot of people don't even know they're going broke, they're very slowly doing it, but they don't realise it. (GR Nth L1)

However financial information was supplemented by other forms of measurement data for these businesses. The critical element of this was that it facilitated the participants making timely decisions that enhanced the farm's overall efficiency.

We do a lot of with the cattle with the yards we weigh everything [so] you know what their daily weight gains are. So you can pick an average and anything's that below that, they still eat the same amount of grass and same amount of lick as a performing animal. So you might as well get rid of them. (GR Nth S1)

Despite the constant measurement of many factors most of the participants denied formally using key performance indicators. They stated that a lot of the measurement was done by instinct or judgement rather than being written down and compared.

Now I'm starting to get a little bit of a gut feel and it says, yes I can get that out of it a bit, I think, and then you just take a ride through it. Because some of the country is so variable it's not as if you can say there's 100 hectares there, and you go and have a look at a patch out there and that's scalable to the whole thing, because some of the paddocks have got some very high carrying area, well moderately high carrying – moderate carrying areas in them, and some have got very low carrying areas in it – same paddock – so, you've just got to try and get a bit of a gut feel then. (GR Nth S2)

[But] spreadsheets are only predicting something that you're putting into the spreadsheet, and like I said before, just because it goes in the spreadsheet doesn't mean it's going to happen, it doesn't mean you're going to get the rainfall, doesn't mean that the markets going to stay where you thought it was going to be. So the spreadsheets are only a guide at the end of the day, so it's slightly better than a rough guess I suppose. (GR Nth M2)

Overall while keeping track of various business elements was a common strategy this was undertaken on an informal and subjective basis.

Overall the northern grazing sector provided an interesting snapshot of a sector dominated by seasonal trends which required extensive decision making informed by weather patterns and supported by appropriate working capital. Most participants operated family farms and succession planning was an important feature which encouraged consideration of sustainable farming.

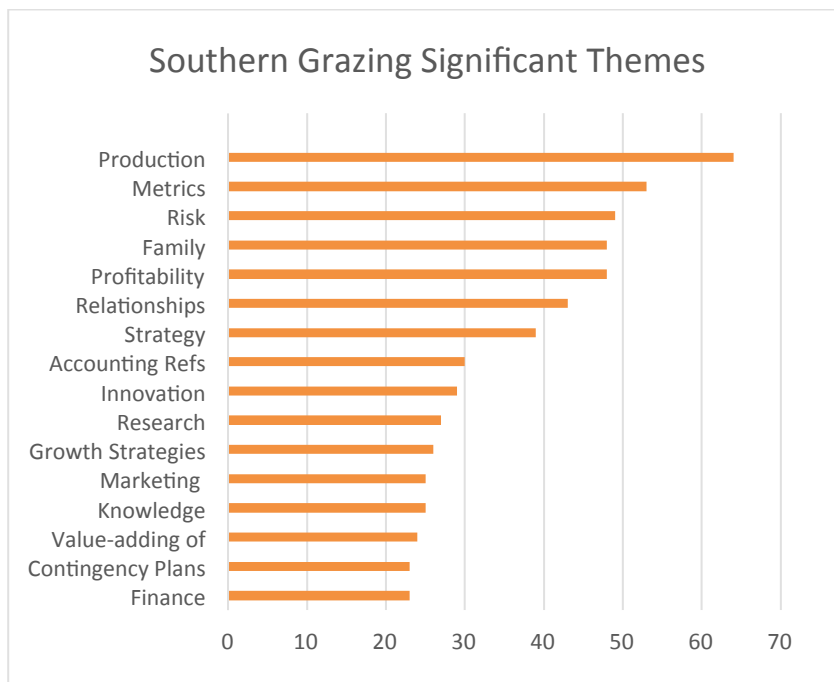
Summary - Northern Grazing

Notable Attributes:

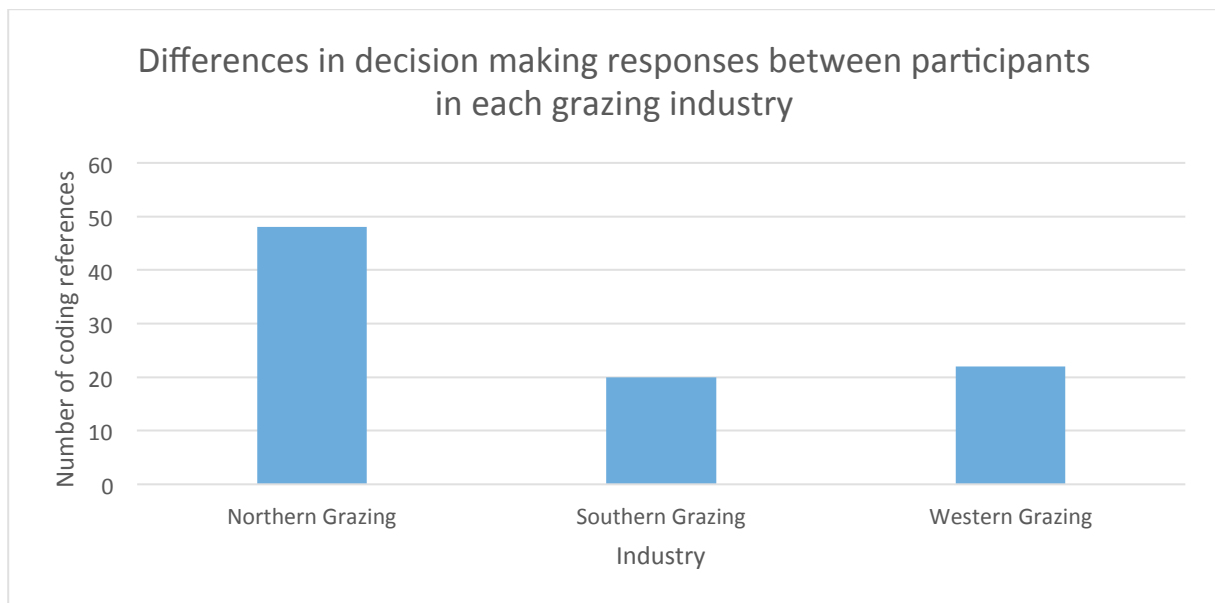
- Decision making
 - Constantly looking forward.
 - Managing seasonable trends.
 - Informed by experience.
- Flexibility
 - Sufficient capital to act decisively.
 - Making timely decisions.
- Relationships
 - Managing family relationships.
 - Using shared labour.
 - Engaging with community.
 - Building relationships with buyers.
- Natural Resource Management
 - Ensuring long term viability of land.
 - Managing perceptions of media negativity.
- Business Monitoring
 - Knowledge of financial situation.
 - Informal measurement of key business elements.

Southern Grazing Analysis

The southern industry is characterised by high numbers of smaller properties running generally cattle, sheep or mixed enterprises with high stocking rates. Smaller properties tend to increase the ability of participants to monitor production and improve the infrastructure to a greater extent. Turnoff and fertility rates are generally higher, resulting in higher per unit land values. Climatic patterns, while still pronounced, are less variable than northern and western systems allowing for production systems to continue all year. The southern industry is characterised with highly palatable pastures and Bos taurus breeds of cattle within production systems.



In contrast to Northern Grazing it is immediately apparent that the decision making and time dimensions are absent in the top themes for Southern Grazing. The coding to this dimension is therefore reviewed to understand why this disparity is evident. It is notable that the decision making and time dimensions are absent for Western Grazing as well.



We note that Southern participants talk less about variables that can be managed and focus on dealing with current conditions. In general this seems to be a more reactive demographic than what was expressed by Northern participants.

Well we can't change a whole lot because our business is totally dependent on rainfall and what happens with that. (GR Sth L1)

The key themes of their decision making related to minimising their own costs and environmental influences were seen as very much external to the business.

[When] the business conditions do change, we try...the only other lever we've got at our disposal is to try and keep our cost of production down and we use that where we can in order to make a profit. (GR Sth S2)

As another geographic region with variable rainfall patterns there is similar sentiment in the Western Grazing data. However, in this subset participants tended to focus on opportunities to minimise their risk (rather than cost minimisation) by diversifying their operations.

I suppose one thing we've done the last couple of years is have a few different plans rather than, a lot of people just had the same plan, that paddocks going in wheat, or that paddocks going to sheep and that, just with the seasons and that, starting to get pretty, working on early rains and that sort of thing, it starts raining you start seeding, but if you have cut off dates and that, doesn't rain then you put in your best paddocks and leave out your worst country. (GR W M2)

Thus it was found that there is some explanation for the difference in this decision making theme that is due in part to the mindset of the farmer possibly caused by weather patterns. Making any further inference is cautioned but highlight this as something for future consideration.

The other prominent themes for Southern Grazing to the key themes in Northern Grazing are then compared which show a high degree of consistency between some themes. Production was discussed extensively in Southern Grazing and this is primarily related to activities related to breeding and selling cattle. The themes of these discussion were similar to Northern Grazing and included

monitoring genetics, rotating stock and utilisation of rainfall. The quality of the land was a key component and participants in this region were also conscious of the need to sustain and improve their pastures to ensure their future productivity.

So you've got to utilise it, you just don't want to grow for the fun of it; it's going to cost you money so you've got to graze it properly...you've got to look after your pastures. (GR Sth L2)

If I can establish a landscape where [under current production] we can really focus on better pastures, higher fertility rates, and we can concentrate on that. (GR Sth S2)

There is a high degree of consistency in themes relating to family and relationships in this category. Again family values and family connections were an inherent part of the business and most participants were operating family farms. Some of the main issues associated with this related to succession planning and dividing up family assets.

We did our succession planning – that was very important...we've sorted our succession planning out years ago and we had meetings with various people, independents and all that sort of stuff so that saved a lot of problems which you hear with other families. (GR Sth L2)

In terms of relationships once again there is a strong theme that building relationships is a critical component of long term success for these operators.

We don't do a deal or work with people that we cannot create a win-win relationship because a win-win relationship is a long-term relationship. (GR Sth M2)

In general these discussions fairly closely aligned with our findings in Northern Grazing suggesting that there is little fundamental difference in the way participants perceived these facets of farm performance. This was the case for the nodes related to accounting and profitability as well.

Key themes that are evident in Southern Grazing but absent in Northern Grazing include dimensions relating to strategy, innovation, growth and marketing. Some of this difference is due to the fact that Southern participants were more likely to have mixed farming operations. In contrast Northern Grazing was almost exclusively cattle grazing. Participants in the Southern Grazing sample were more likely to have sheep or other forms of farming on one property. This meant there was more discussion around various strategies for the diverse parts of the operation. Having the ability to diversify part of the farm was also seen a strategy to manage risk and these farmers were willing to change strategies when they deemed it necessary.

So it was a bit of a weird and wonderful one in the way we virtually just swapped stock...we did sell – we did destock but we virtually swapped our enterprises so we could manage the drought easier. (GR Sth L2)

[Cropping] ...look it filled a hole for a while and it filled a purpose but we've moved on from there. We didn't have cattle trading then. Cattle trading now actually provides a lot of opportunities cropping used to. (GR Sth M2)

This approach to their enterprises flowed through to the themes coded as knowledge and innovation as these nodes also captured this ability to continually assess the best way forward for the business. Many of these participants were therefore utilising genetic and nutrition programs to give them the best information available to assist in decision making within the business.

I will say that there are a lot of other studs and participants in the stud game that employ someone else to do all the choosing of bloodlines, choosing of sires, and we do that all ourselves, and that takes lot of research time, reading, phone calls, analysing calves on the system. (GR Sth M1)

For these participants this not only provided a point of difference for their breeding stock but also facilitated a cost efficiency objective. There was also a notable trend for these participants to seek out external information by attending field days, seminars and using the internet to inform decision making.

The analysis reveals some interesting differences between southern and northern farming operations. Southern participants tended to be more reactive in regards to making production decisions and this may be related to the fact that environmental conditions provided more opportunities to change their farm type. Consequently strategic direction and diversification were more discussed more frequently in this context. There was a still a high emphasis on sustainable production, genetic programs and relationship building.

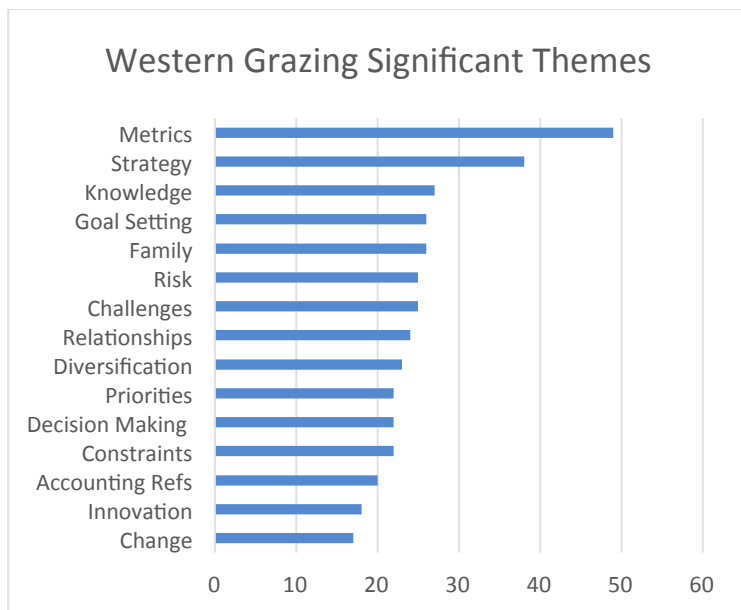
Summary – Southern Grazing

Noteable Attributes:

- Production
 - Mixed farming.
 - Willingness to change up production methods and contexts.
 - Diverse strategies.
- Relationships
 - Managing family relationships.
 - Building long term relationships with customers and suppliers.
- Decision Making
 - Highly researched and informed by multiple information sources.
 - More reactive than proactive in comparison.

Western Grazing Analysis

Western grazing systems are characterised by strong seasonal conditions, similarly to the northern system, leading to production for gains to take place over the February-December period, while livestock maintenance is practiced over the summer period due to lack of pasture growth. Size of enterprise differs considerably although the enterprises are generally not as large as in the northern grazing sector (enterprises in the north of Western Australia have been placed in Northern industry sector because of the similarity to northern systems and south-western areas of WA have been concentrated on).



In Western grazing we find similar themes to the other grazing regions. However we notice the prominence of metrics in this analysis. We also note the relatively high emphasis on challenges and constraints which was not apparent in the other two regions. Further exploration of these perceptions provides the following insights.

Participants in this region gathered a lot of data about their operations. This incorporated a substantial amount of genetic data as well using performance indicators for production such as wool cut per hectare and kilo of meat per hectare. There was also more consideration given to financial targets although this was tempered by the view that that some financial measurements were misleading.

That's all done in gross margins, nothing done in profit, that's the problem, everyone can grow a 3 tonne crop, it depends what you want to feed it, but it's all on gross margin so it's not right and that's why we don't do it. (GR W M2)

There are performance indicators that you're trying to achieve because if you weren't, you'd just have a balmy grass paddock that was complete rubbish. (GR W S2)

Overall the amount of measurements being taken and use of data to inform production was significantly more comprehensive in this sector. One possible explanation for this is sampling error and this will be explored more fully in future. It is possible that the selection of participants was biased towards participants within similar networks who had a particularly systematic approach to their operations.

Strategy ranked highly for Western Grazing and was linked with the mixed nature of the farming in this region. This was similar to the southern region in which participants often looked to manage risk by introducing or developing other forms of farming operations.

Last year and this year if we had of been total croppers we'd be happy, but the previous 5 to that we would have gone broke in a heartbeat. So yeah we need stock. (GR W L1)

Another key element of the strategy dimension for some of these participants was forward planning around infrastructure.

I know what I need to achieve by eight years' time; my cropping rotation, I have got plans to increase my sheep numbers but my water supplies are tripping me up at the moment so water development goes into my infrastructure plan. (GR W M1)

In this region there was also more discussion around developing off farm sources of income as a means of managing the variability of farming.

So at the moment because it's only a small percentage of our total income stream it's not like that paddock didn't go out there so we're going to be broke this year. It does give you more flexibility to do whatever you want really. (GR W S2)

Rather than just having more farmland, [where] all your incomes eggs are all in the same basket, whereas if you can try a few different things, they're not all going to make you money but they can give you a bit of a stopping post. (GR W L1)

This sense of the value of having multiple sources of income was also linked with the higher weighting of risk in this region. Participants seemed acutely aware of the risks associated not only with their primary business but also with the risks of diversifying too much. In general these participants were conscious of taking a measured and cautious approach to diversification and had a clear picture of what they were aiming to achieve through the process.

We're quite diversified already and I think there's a fine line between diversification to reduce risk and diversifying to the point where you're just sort of doing things everywhere all over the place. (GR W L2)

However other participants took a different approach and decided to lease assets rather than purchasing them as a way to hedge against future financial difficulty. This was also seen as a pragmatic response to some particular challenges in this region.

So the biggest risk for us we identified was – so should any of our lease blocks, and given that we're dealing with multiple land owners, should any of our lease blocks suddenly fall in a hole and we need to get the sheep off them, at least we have this block here that we control. It might not be ideal, we might have to go into a feedlot situation but at least we've got an exit clause. (GR W S2)

One of the key challenges that emerged in this data set was the perception that it was very difficult to expand operations in this region. Participants were generally young with tightly held land and the land that was available was very expensive.

That's why leasing is such a – better option for us, because we can pick it up for \$15-\$20 an acre, rather than trying to find the capital to go and, for a million dollars. (GR W L1)

Other specific challenges to this region included being exposed to political risk because the industry is export driven. Some participants had experienced significant loss due to what they termed “bureaucratic interference”.

They cancelled the live sheep trade out of WA, cost us \$100,000 that one decision from government and we're only little. Cause they shut that which meant the feed lotters couldn't turn our animals out and the abattoirs filled up which meant the back grounders couldn't buy the thing which meant that when we wanted to sell we had 3000 lambs to go at that stage, wouldn't take them, we had to sit on them for 2 months, the price went down, feed, horrendous. (GR W S1)

In a similar vein there was significant concern about the level of compliance in regards to meeting external regulations and health and safety requirements.

The analysis of the western grazing sectors indicates that participants are highly organised and utilise significant quantitative data in their farming operations. This contrasts with northern grazing where intuition and experience was valued highly. Western participants also tended to leverage against future risk by off farm investments. This was more evident in this sector than the other two grazing regions. Economic conditions in Western Australia may influence this finding. Political change and external regulation also emerges as a key consideration for these participants.

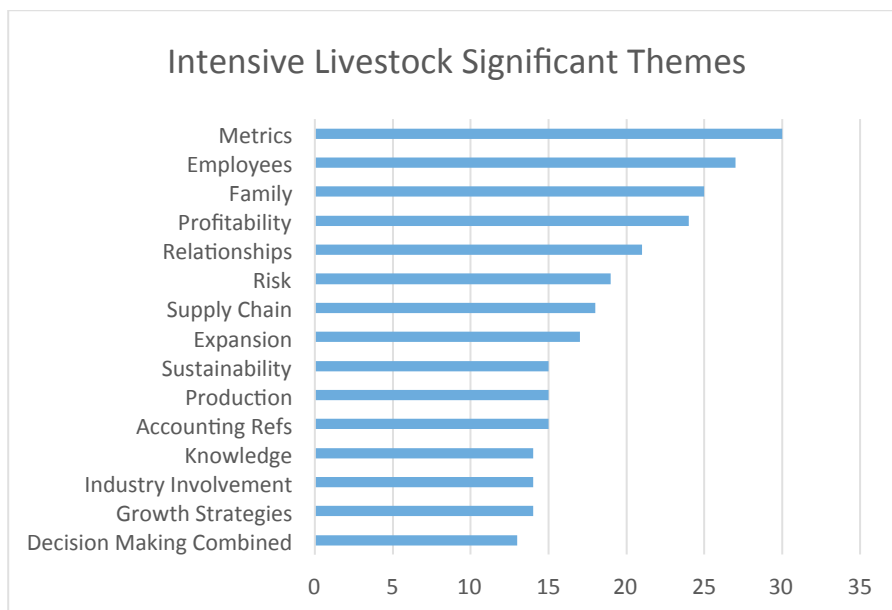
Summary – Western Grazing

Noteable Attributes:

- Measurement and Data
 - Mix of financial and non-financial metrics.
 - Benchmarking against available data.
- Relationships
 - Managing succession planning.
 - Providing for family.
- Strategy
 - Diversifying operations.
 - Planning for future infrastructure requirements.
 - Leasehold land.
- Challenges
 - Lack of available land for expansion.
 - Political decision making.
 - Regulations and record keeping.

Appendix 3: Intensive Livestock Analysis

Intensive livestock industries in this research are the pork, egg chicken and meat chicken industries. Typically, intensive livestock maximises control of inputs into the livestock, requiring substantial investment in capital and in knowledge within the business to maximise returns from these inputs. Nutrition and environment are precisely regulated to maintain consistency of turnoff for the supply chain. Often a producer will only supply a small number of suppliers through an established relationship. The high levels of infrastructure require substantial investment and this can depreciate quickly and requires ongoing reinvestment funded through high levels of turnoff, and substantial revenues generated. Supply chains are highly competitive which leads to high levels of technological innovation and protection of information. Production processes are exact and through the large number of replications of production processes, small changes can lead to substantial efficiency gains.



The intensive livestock sample has less participants in total than the other categories. This means that the total number of coding references is smaller than for other industries. However the methodology of selecting the 15 most significant themes enables comparability with other industries negating the impact of the smaller relative number of coding references. The themes for intensive livestock resemble those discussed for Grazing Industries however closer analysis reveals some important differences in regards to how these participants manage the performance of their businesses.

In contrast to other industries which used targets and performance indicators more informally there was a heavy emphasis on target setting and using well defined metrics to monitor day to day performance in this industry.

Definitely, all that [financial information] is very target orientated. We do compare and we had a meeting about managing it the other day. [We] compare range and other things, but potentially what we do is we run the targets and... then we challenge ourselves why they didn't [meet them]. (IL M1)

As well as using data to monitor their internal operations these participants were also actively using it to measure their performance against other operators. This was one of the few groups who explicitly talked about benchmarking.

We look at how we can improve what we're doing today, but we also spend a lot of time looking at what other people are doing mainly internationally, and try to benchmark ourselves against the international markets or the international industry, and that will mainly come out of Europe and

America. We probably take a lot more notice out of what comes out of Europe because their costs basis is very similar to our costs basis, where America – their cost basis is so much lower. (IL L1)

Measurement in these businesses was a critical component of their operations and there was similarity between participant's responses. Overall it appeared that this was the single most important element of the way businesses in this group functioned. The metrics used were broad and utilised both financial and non-financial data. Some specific examples provided included return on investment, cents per kilo, time before processing, kilos sold per sow, payback periods, feed conversion ratios, average daily weight gain, mortality rates etc.

Relationship building was another strong theme in this group and encompassed family and employees. Dealing with employees was discussed at length by these participants and this may be partially due to the large scale of these operations.

With the scale of our business – that diversity of it – we are very much more reliant on good people and their decisions. (IL M1)

Aligned with this dimension was the ability to communicate effectively with employees and managers and the constant sharing of information. There was also an emphasis on professional development for their staff to ensure they were appropriately trained for their positions with the associated aim that this would lead to a stable workforce.

Human capital. Look it's our number one capital resource, and very much so in keeping the right people in the right jobs and improving those people is number one. (IL L1)

Relative to the other industries in this study human resource management was given significantly more attention in this sector.

What I actually want is to be the best employer in (Named Town) so that other people will leave their jobs to come and work for us. (IL M2)

Family connections were also integral to these businesses but due to the scale of the operations there were more complex than many of the other industries. However most operations still had a family background although there was a tendency for these businesses to be gradually separating ownership and management.

The board is separated from the management style even though I sit and many of us sit on both sides it's quite a distinct decision making process. On the management side we have an independent CEO because of family issues we don't need to bring family issues to a business, so we bought in an external CEO and then from there we have a traditional management structure where we report to the CEO and then separate ourselves when we go into the board room. (IL L1)

For those participants with a more traditional family business structure there was still a commitment to securing an income and lifestyle for future generations. Consequently sustainability was a key dimension for this industry grouping. However one area in which this dimension differed to other industries was in regards to societal expectations around animal welfare. Many of these participants had made specific efforts to demonstrate their compliance with the relevant regulations.

Whilst we disagreed with some parts of it they were very impressed at the professionalism and the way that we run our business and they were very comfortable and pleased that we had taken over this business and we have not seen them ... and we continually – 100% it's ours the stalls. Now we are completely compliant to the stall free industry (IL M1)

Environmentally we've got to be very aware of what people are demanding and the world [is] demanding. (IL S1)

This emphasis on public opinion was a strong theme throughout the sustainability dimension which in part is due to the unique nature of the intensive livestock industry. One way that some operators deal with this element was to become involved with external groups in order to have some influence on decisions in this arena.

By being involved and being centre of mind, you have a reasonable amount of influence over what happens, and certainly over the last 3 to 5 years, I've found that I'm now the go to person for a lot of the people outside. So it allows the industry, and not just our own business, but the industry as a whole to be taken seriously and we're doing good things. (IL L1)

This aligned with the higher level of industry involvement that was evident in this sector. The participants were active in industry events and indicated that they sought out opportunities to participate in conferences etc. One participant indicated that they also tried to build networks with other industries which would assist them in their supply chain.

Once a year I am invited to a grain growers group and I talk about where our business is and what's happening in the markets to give them more knowledge and let them beat up these grain development people who are not giving us what we want. But it empowers them and we have a great relationship with them so if there is a product out there they would rather supply us then our competitors. (IL L1)

Despite the need to be seen to be proactive in environmental issues the participants also acknowledged that a key motivation behind their actions was to ensure sustainable profit.

I like that it's better for the environment and that it reduces our odour and everything else about it is really good but the main driver was the profit behind it. (IL M2)

Expansion and growth were key themes in this industry. When these nodes are analysed it was evident that although scale was an important factor, some of the participants had actually reduced capacity for short time periods in order to build efficiencies. This had allowed them to maintain their profitability and created future opportunities for expansion.

We just sold off one of our sites what we actually ended up doing was we reduced our capacity a little bit but the efficiency that we're probably going to gain from that will be our profitability shouldn't change. We've started to do a little bit more now with less but then again we want to keep expanding. (IL M1)

Alternatively some participants felt that expansion was necessary just for survival.

I believe that in primary industry you either be very big or be mediocre and then have some other investments elsewhere because in primary industry there is too many lows. So if you just put all your eggs in one basket you'll come crashing down [sooner] or later, but that was the main reason – just a numbers game – expanding. (IL S1)

We have to grow our margins, our business is a volume business. Margins are very very skinny and if we stop growing the market will take us over. Our customers demand growth if we don't provide them what they want they will go somewhere else, so growth it is. (IL L1).

The use of formal performance measurement was well established and articulated in the intensive livestock sector. This was done on a more systematic and sophisticated basis than was apparent in the grazing industries. There was also more emphasis on staff management and training in the intensive livestock analysis. Dual themes of animal welfare and compliance with regulation contributed to a higher emphasis on industry involvement. Expansion was more commonly mentioned as a future goal in contrast to grazing where opportunities for expansion were limited by land price.

Summary – Intensive Livestock

Notable Attributes:

- Performance Measurement
 - Extensive use of targets and indicators.
 - Prominence of non-financial and financial metrics.
 - Benchmarking.
- Relationships
 - Importance of keeping a stable workforce.
 - Human resource strategies to find and keep employees.
 - Family businesses but due to size emerging trend of separation of ownership and management.
- Environmental Issues
 - Significant investment in compliance.
 - Managing perceptions of this sector.
 - Industry involvement to influence policy making.
 - Link to profitability.
- Growth Strategies
 - Expansion was necessary to compete.
 - Emphasis on scale of operations but must be efficient.

Appendix 4: Sugar Industry Analysis

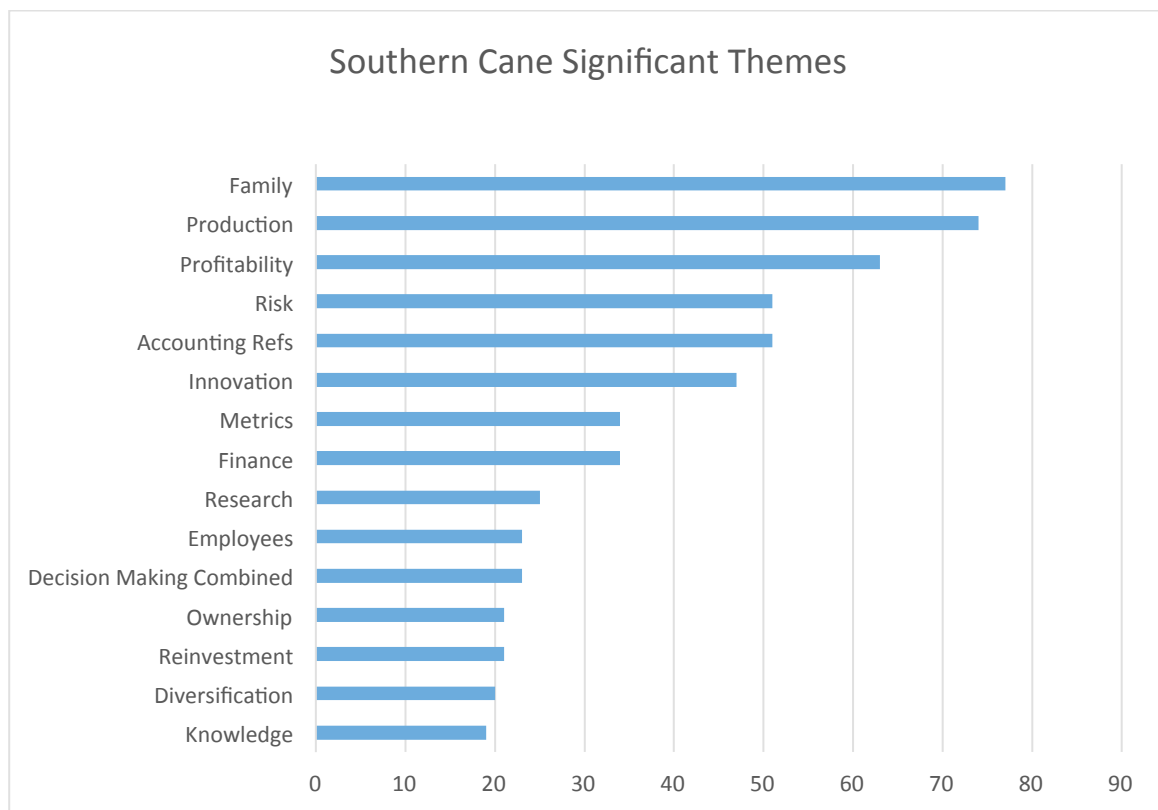
Cane is generally cropped as a monoculture on a five year rotation (including fallow crops). The southern cane industry (defined as south of Bundaberg and NSW for the purposes of this research), experiences different seasons to northern industry. Two distinct planting seasons, either Autumn or Spring, are undertaken as they tend to be cooler periods. Supplementary irrigation is needed to a greater extent in the southern sector than in the north. Variation in soil, cane varieties planted, soil conditioning practices and fallow crops occur at the district and individual farm level rather than at the industry level.

As a bulk commodity, vertical integration allows participants to capture some rents from the supply chain as raw output is processed to sugar. A number of the southern industry mills are still owned by grower interests, providing benefits at the milling stage. Other mills, not necessarily participant owned, participate in collaborative marketing through the QSL pool system, although New South Wales Milling Cooperative markets sugar separately again. This allows participants to benefit from market volume.

The northern cane industry receives higher average annual rainfall than southern industry areas, particularly over summer, leading to later planting seasons (Mareeba and Ayr regions are exceptions to this as they are drier, allowing for earlier planting). The warmer climate allows for later planting to occur with shorter break due to winter than southern systems.

The cane industry is geographically dispersed across small areas along the east coast. The industry north of Mackay (defined as northern for this research) produces the majority of Australian cane output. Milling facilities in the northern sector have moved away from participant ownership, although Mackay sugar is still a participant owned company and has expanded its milling operation with its acquisition of the Mossman facility (Canegrowers, 2015). Currently a number of prominent owners of mills in the northern sector are planning to move away from the common pool marketing provided by QSL.

Southern Cane Analysis



Both southern and northern cane industry results have family and production as the two most important themes. In many agricultural sectors, farm businesses have strong family connections where members of the family are involved in the business. Accordingly the southern cane industry shows a consistent pattern with family ranked highly.

In this industry it was evident that family members were a key source of labour for these businesses. This often was inter-generational in nature and most participants also indicated that there was a division of duties generally along gender lines.

Day to day management of the on farm stuff is actually left to [family member A] and [family member B], I'll do the bookwork (SC Sth M2)

Yeah, well my wife's an excellent bookkeeper, she keeps the books balanced, within reason, except for when she's been away. You know, usually we can go and see what we've got and what we owe and the numbers are there. And sometimes we do naughty things that she doesn't want us to, as far as purchase a piece of machinery. (SC Sth S2)

The history of how the business was built and the future/succession of the business was also a dimension of the family theme. The family's continuity in the business was a strong motivation for many of the actions taken. This suggests that while the motivation for running the business may be about the family, production decisions are more closely related to profitability.

Production is discussed in terms of physical conditions and techniques for production. In particular, the condition of soil, use of water, harvesting and plant physiology as well as common practices such as fallow crops. As fundamental components of the cane growing production system this is expected. Efficiency was a concept in production that participants had designed into their system. It was discussed in a number of ways such as the layout of the crops, the types of equipment used, the level of inputs, and the reuse/recycling of inputs:

... another we've done too is make our rows longer for watering so the water winch can go from this right up to that next house and up at [property name] he's got roads that are about 5 or 6 k long and he gets in the harvester and keeps going and fills up with a day allotment of bins in just a couple of rows you know. It's all efficiency all getting down. (SC Nth L2)

This also coincides with the emphasis placed on research and innovation concepts. In particular, a number of innovation concepts were discussed where participants had innovated 'in-house'

...turned his hand to building anything so if we did something and it didn't work exactly right there wasn't much to do to make it work the way he wanted it to work so we didn't spend money on – a lot of money on buying machinery. We developed stuff we needed ourselves – how we wanted it – for the scale we wanted it. (SC Sth M1)

...we've got recycling dams in there so we catch and recycle all our water on the farm. (SC Sth S2)

This type of behaviour means that although cane growing appears to be similar between businesses, the actual practices undertaken in individual businesses are different.

While family and production techniques are not strongly discussed, profitability and production techniques are. This could be a consequence of the price-taking position of cane-growers who frequently attempt to minimise costs and at the same time increase yields.

We're probably at the stage now like our costs are getting pretty, like there's not too much more improvement we can do in the costs. We're probably at the stage of trying to keep our costs where we are and trying to improve the productivity a little bit more....So we're juggling between the 2 all the time. (SC Sth S2)

Profitability is perceived as an issue in both southern and northern cane industries in terms of the return for the value of land and the rising cost of inputs. Competition from alternative uses of land such as tree crops, small crops or residential development has increased the price of land. In addition, cost-price squeeze is reducing the profitability of production. There is concern that many businesses within the industry will become less viable.

To a certain extent innovation linked with profitability and production:

that's what I think the rural industry – to encourage people to... ..adopt technologies and to do better things is that there's got to be a price incentive to do things like that. (SC Sth S1))

Thus participants were interested in innovation but cautious of adoption without understanding the cost-benefit analysis. Technical improvement, as a subset of innovative changes, was frequently discussed as how cane businesses had developed and as a means for them to remain sustainable.

Use of accountancy by participants included book-keeping, using a professional accountant and relationships with bank-managers. Book-keeping was a method to assist in making decisions because it informed the participant of the financial situation and potential outcome from a line of thinking. Most participants discussed making decisions on the basis of a financial outcome.

I suppose I like to look at our business in about May every year before June before tax time because if there's a thing that we – if we looked at the profit then what we're going to make or what we do and I thought well... ..if there's going to be a taxable profit there can we pay, shift it into super or do we [buy] a machine beforehand... (SC Sth S1)

Records were kept and monitored but detailed modelling of financial situations or alternative scenarios was apparent. In this way, accounting in the cane industry may differ from horticulture or intensive livestock industries.

Finance and accounting were commonly discussed together. Participants tended to meet regularly with their accountants and their bank managers. A point of difference made was that professionals such as solicitors, bank managers and accountants were not kept separate and instead they knew each other and were organised so that they could work in conjunction with each other for the business. Otherwise, emphasis was placed on maintaining the relationship with the bank manager to manage the businesses finance.

The cost-price squeeze has led to a strategy of cost minimisation and acquiring or developing land for production to reduce the impact of fixed costs and remain profitable.

... it's not a really exciting future looking at it at the moment, but then sugar can change in a year anyway, ... the cost of production is the biggest killer, electricity and water and wages and all the other stuff they're just creeping higher and higher and higher and the price issue is just staying (SC Sth M2)

Despite the focus on cost minimisation and the price-taking market position in this industry participants also recognise that they have to utilise inputs to a sufficient level to increase per unit margins. The profitability equation therefore is more complex than a strategy of cost minimisation for a given price. Participant's trade-off between inputs and outputs, as well as investing in infrastructure or techniques, with the hope that this will in the long term improve the overall efficiency.

...he [referring to another business] didn't put anywhere near the amount of water on and he's only got half the crop probably of what we got, and because he saved that bit of – he might have saved \$20,000 on water and electricity but his net income or gross income is going to look the same as what ours did because he grew half the crop and used less water/electricity or is ours going to be a lot better, because we used that extra water and electricity and maybe picked up another 10 tonne per hectare over and above what it actually cost, whereas he could have had a deficit year because what cane he cut and the amount he did spent with all his fixed costs included would have put him in the red. (SC Sth M2)

Risk is an everyday occurrence within southern cane industry similar to all agricultural industries. The risk of adverse weather and pathogens within a crop is discussed as a matter of course and there is acceptance that agriculture is inherently a risky pursuit.

Well I guess farming is a risk every day. I always say we're the biggest gamblers in the world. (SC Sth L1)

However, there are several types of risk that are specific to cane growing. Firstly, risk in terms of breakdown of current marketing arrangements. The current integration of the sugar industry in terms of milling and pooled marketing is viewed favourably by many participants relative to self-marketing. However this is not unanimous as some participants market their own sugar, but some view the ability to collaborate to gain significant market presence as an advantage. Risk in terms of world prices and the policy of competitor countries, such as Brazil, are considered to be real threats.

The high price of land also represented a risk in terms of succession planning. All participants had succession plans. However, some admitted that succession was a real challenge to the business because they did not wish to break the business down for different family members. As multiple family members had potential claims on the business, the high price of land places a burden on the current management to find ways to either make the business indivisible, such as setting up trusts, or putting resources aside so that family members can be bought out if need be.

The measurement of production variables as soil nutrients was common amongst participants. While some participants kept records themselves, others used an external agent to supply and keep the records. This is matter of preference as it shifts the cost between paying for a service and internalising the cost in the form of administration. One of risks raised by a participant addressed a risk that it is possible to lose the data and programming of systems within the business.

We've got one of those little hand held computers you can carry around in your tractor, it's got GPS technology hooked up to it and you do all our spray records on it and I was mucking around with it this year and I'd start doing a job and I'd put down, and I'd say I stuffed it up and it would come up, this is an unfinished job do you want to cancel or do you want to continue, I didn't want to continue because I stuffed it up and put the wrong, I want to cancel it, and I went into unfinished jobs and I said do you want to delete and I said yes, and what did I do, I deleted the whole bloody project, I wiped all the records. (SC Sth M2)

The research undertaken by participants in the southern cane industry included information searches for newest technologies and practices from trade journals as well as being involved in research groups.

You've got access I suppose to researchers and those type of people where you always get some ideas from here and there it might not necessarily fit into something you're doing at the time but it – it might help you later on something. (SC Sth M1)

Another characteristic was the proclivity by participants to undertake experimentation and development themselves. For example:

We designed and built our own 4 row cane planter (SC Sth L1)

... things that we tried had never been tried before because I think the mentality come from dry land farming at... and somebody wrote a text book forty years ago. (SC Sth 1)

This development within the business represents considerable construction of knowledge which has led to greater yields and efficiency for the business. Many participants also shared their knowledge and innovations in the hope of creating stability in the industry.

The businesses interviewed relied on family labour which was often accompanied by permanent staff in larger operations. The low number of permanent staff and intergenerational orientation of family labour means that labour is less emphasised than grain and horticulture industries. Labour is also sourced from contractors. The number of permanent employees is generally low except if alternative crops such as small crops are grown, which tends toward casual labour. Participants reported that they train their staff and involve them in the industry such as meetings and field days.

Some southern cane participants have diversified their production systems into tree crops improve utilisation of different the land types or simply to engage in another market. In these cases diversification is seen as a means of increasing profit. Another participant discussed consolidation of their business, noting the labour required to run a diversified enterprise is more compared to growing sugar cane alone.

What makes you know it inside out is how fine the lines are between making money, making a small profit. 30 years ago there would probably be no need because the margin was double what you were spending so there was probably not great need to know the business inside out because at the end of it there was going to be money left over. These days we need to know exactly what it costs for every time. (SC Sth L1)

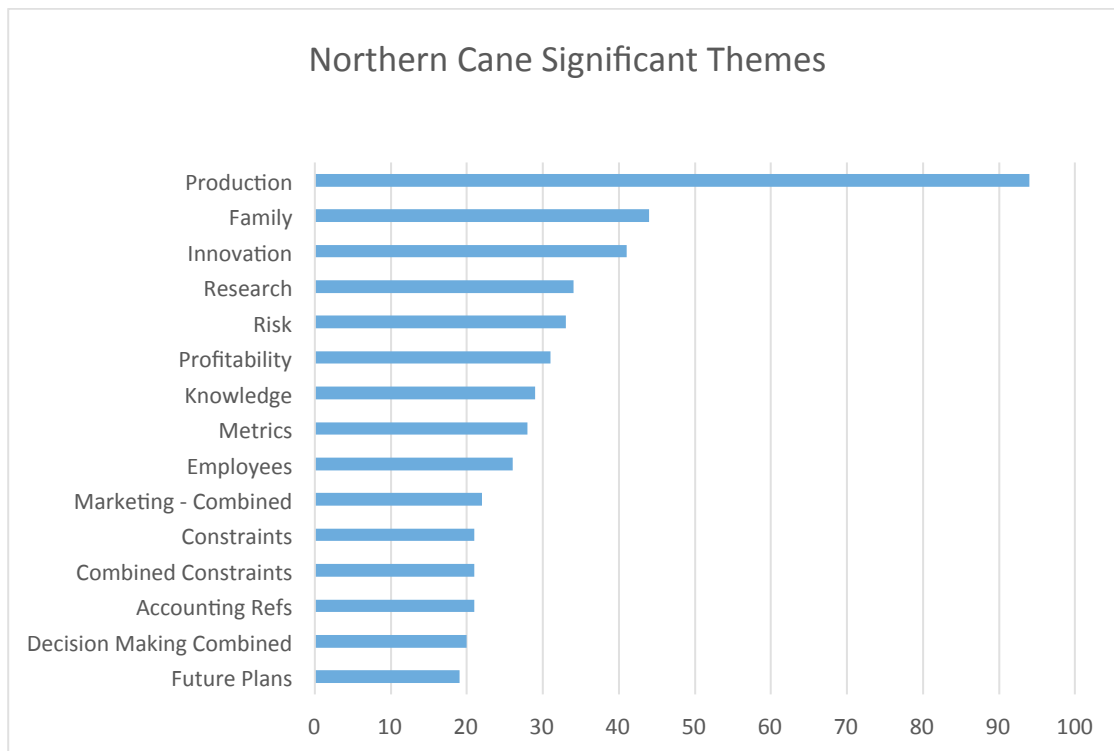
These insights from southern cane portray an industry with many similarities to the grazing sector. Inter-generational farming was common and succession planning was an important element. Profitability in relation to production was emphasised and the collection and use of accounting information was evident. However there was more evidence of research and innovation in sugar cane and the price taking position of growers resulted in a cost minimisation strategy. Accordingly dealing with risk gained more prominence in this industry.

Summary – Southern Cane

Noteable Attributes:

- Family
 - Substantial history behind businesses
 - Focus on intergenerational growth
 - Succession of business
- Production
 - High focus on using latest practices
 - Utilising land for most productive outcome
- Profitability
 - Profitable production system is not simple
 - Efficiency is required in farm structure and equipment used
 - Cost minimisation is important but so maintaining levels of inputs
- Risk
 - Pooled marketing breakdown
 - Overseas competitors policy
 - Competition for alternative land uses
- Accounting References
 - Decisions are made on the basis of financial position
 - Relationships between Participants and professionals

Northern Cane Analysis



Interviews from the northern sugarcane industry were production focused. A range of standard production practices were discussed such as trash blanketing, fallow crops and fertiliser regimes. Fallow crops were harvested in the southern industry, whereas many northern participants ploughed the fallow crop back into the soil instead. A difference between southern and northern cane industries was that soil health was more prominent for northern participants. This may be because of the low yields experienced in recent years by the participants which has meant that soil topics are in the forefront of their minds.

Constraints to businesses included the price of land, weather, and a lack of infrastructure to diversify the business. Despite the lack of infrastructure some businesses had diversified into other crops. Similar to the southern cane industry, competition for residential land was considered an impediment to growth of businesses.

Timing of actions is perceived by both northern and southern cane industries as a means to improve efficiency.

Yeah well any farming I think is all about timing; it's about spraying at the right time, irrigating at the right time, fertilising at the right time and there's definitely productivity gains just by timing, there's probably more gained by timing than well even – we're trying to improve soil health and maintain that but timing has probably got a bigger effect on yield than virtually any other practice. (SC Nth S1)

Timing can be considered not only a case of acting at the right time during the production cycle but also having the capability to react to the situation quickly. Part of this conception of timing is to make the decision, and also having sufficient equipment or machinery to enact it. The ability to make such decisions was related to information about available technology.

So you need to be able to make decisions on the go but you need to best possible information available to you and that's where you get to communications, you know you need to keep your finger on the

pulse so to speak and you know have that technology in place so that you can make informed decisions but be able to make them when they need to be made to maximise any potential productivity gains or income so to speak. (SC Nth S2)

Innovation was centred on production techniques and machinery. The modification of existing equipment was an aspect of innovation regularly undertaken by some participants. These participants had substantial knowledge of mechanical concepts which they utilised to rebuild or repurpose machinery or equipment to improve efficiency.

...we've always done all our own repairs, we've just always done that, that's just how it is, it's not something we woke up one day and said "Let's start building things", we've always built things and modified things you know. (SC Nth L1)

Other participants emphasised the uncertainty of innovation with the attitude that they were going to trial something before implementing it across the business.

...but he's always been up to try things so we always only try a paddock first, like we just don't go fully into it, you always just try it and see how it goes and then as soon as it looks right well then do it. (SC Nth S1)

Northern cane participants discussed the financial aspects of implementing and innovation, as well as the technical side where an innovation has to 'fit' the production system.

Participants are also involved in research as of the process to develop their business. This includes information collection and participation in field trials.

....we've got a couple of trials going as we speak actually on our properties (SC Nth M2)

And I learn a lot more from that than a lot of other things I go to, it's, you learn off people, learn to look at other industries and we are machinery free, so we, I try and go to a few, I didn't go to any this year but I love field days, looking at new gear. (SC Nth L1)

This is followed by an attitude that participants wanted to learn from each other and develop knowledge. As with southern cane these participants were willing to share what they knew with others and participate in industry events.

I've actually been asked to present at that so as part of that presentation I've had to put together a presentation obviously but they've also asked me for like a two or a three page document that is filled with take home messages and the crux of what you're trying to say for your presentation. (SC Nth S2)

Participants noted that some producers attended industry events but held an attitude that they would not act on the information, even if it was useful. As contributors to these industry events, it was a source of frustration for participants in this research that this occurred.

Northern cane participants had mixed views about price risk over the long term. They note that the present prices for sugar were adequate but that exposure to world prices is a source of risk.

So the business of sugar is a very marginal business and a very volatile business because of its nature and the fact we export 85% of what we produce out into the world market gives us that volatility. (SC Nth L2)

Sugar price has been alright, we've been on a forward price so at good prices so the sugar prices have been – that's taken one risk out of the business... (SC Nth S1)

Most of the discussion of risk was on weather and pathogens however, policy risk was also of interest. The long term focus and family orientated businesses meant that they are particularly vulnerable to policy risk.

So I really feel that I've got some time to finalise how we're going to do this going forwards, keeping in mind that the government changes and when it comes to succession planning there are only certain things that you can set in concrete. Because of change of government, like things like superannuation, who knows what it's going to be like in ten years compared to what it's like now. (SC Nth S2)

Profitability was viewed as a challenge for northern cane participants. The margins for production costs and revenues are slim. The ability to repay debt was reduced from 10-years earlier. Some participants emphasised the need to grow the size of the business to create economies of scale, while others were looking for opportunities to value-add to increase profit.

I think, you know the exciting part is when we can start turning our cane into fibre and value adding our sugar, that's going to make us very profitable... (SC Nth L1)

Another approach being investigated by participants was the possibility of product differentiation through either green accreditation or food heritage. It was felt that the strong management of a business and the story of how food was delivered was something that consumers might pay a premium for.

Currently, most northern participants' cane is milled through the grower owned Mackay Sugar Ltd. and marketed through the QSL pooled system. Participants perceive that only a small percentage of cane producers in the area sampled are marketing their own produce. This may vary from other northern production regions because the Mackay mill is grower-owned and the mills in other areas are not grower-owned. However, the long term future of the pooled marketing is questioned by participants, with mixed opinions about the outcome for participants.

The measurement of production and accounting variables is usual practice. Participants have the equipment to take measurements or access to people who provide the agronomic service and provide the information to them. Despite participants having these measurements recorded, they do not use key performance indicators (KPIs) in their business. A possible explanation for this is the variability in the production makes comparison difficult between seasons. Instead, participants use the information to vary their decisions rather than making the decision to match the numbers.

Additional casual and short term labour is used during peak times, such as for cartage, but is then reduced for down times. Most participants reported having one to two permanent staff, however, the long term trend in employment is that additional labour is being reduced. This is because of the cost of labour is too high to be employed in many superseded production techniques. Improvements in technology have made machinery relatively cheap and more effective at carrying out undertaken tasks.

so you can grow more cane if you've got more men per head too but it's about getting the cost – cost efficiency there like we're running myself, one way for 20-22,000 tonne of cane. Ten, fifteen years ago the farms that we bought there would have been eight people employed so that's all about wider rows, centre pivots for irrigation, bigger gear, just – yeah just efficiencies that way, because if you had to employ eight people now at the wages that they are well you couldn't do it. (SC Nth S1)

Northern cane participants also emphasised the family structure as central to the business. The historical development of the business is family orientated, but discussion also included more on the lifestyle of farming. For example, being able to go on holidays, the number of hours worked and the attitude towards farming.

And that's a lifestyle thing, it might seem trivial, but to me that's the downfall of a lot of family farms when they just get sick of working. (SC Nth L1)

Discussion also centred on family and with more than one generation or siblings involved in day to day production. It is interesting to note that even if some family members have become less prominent in the decision making of the business they still work within it. This shows that succession is often not

as clear a break as it is made out to be. Different generations within the family may have an important, although not necessarily as prominent a role in the business's operation.

Northern cane illustrated that timing in production decisions was an important driver of success in this industry. This was facilitated by sourcing relevant information and incorporating appropriate technology into the business. However participants in this industry did demonstrate a measured approach to technology adoption and were likely to participate in field trials to assess the benefits before committing to new processes or equipment. Tight margins dominated discussion around profitability and risk management was a highly weighted dimension. Similar to other participants in this study issues associated with operating family farms were evident.

Summary of Northern Cane

Notable Attributes:

- Production
 - Timing of decisions and actions
 - Soil health
 - Constraints to diversification
- Family
 - Lifestyle aspect to operation
 - Several generations of family involved
- Innovation
 - Technical 'fit' of an innovation to the production system
 - Uncertainty and so trials are needed
 - Some Participants looking to value-add
- Research
 - Participation in industry events and programs
 - On-farm trails
 - Attitude to use information
- Risk
 - Production centred risk such as weather or pathogens
 - Exposure to world markets
 - Policy risk

Appendix 5: Horticulture Industry Analysis

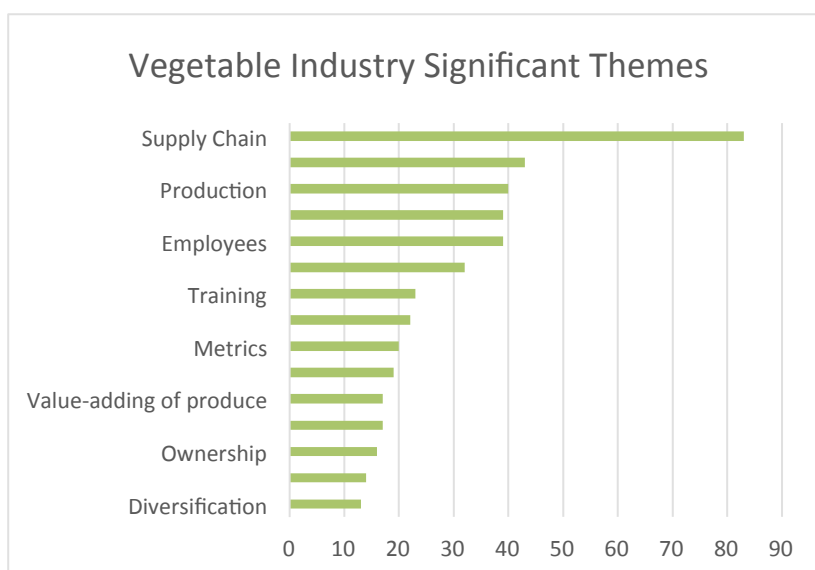
The horticulture industry is represented in this research by three subsections, which are tree fruit, vegetables and tree nuts. The tree fruit industry, with high demands for water, is situated in high rainfall areas. Some sectors, such as apple and pears, have experienced a sharp decline in the number of growers. However, the decline in output from these sectors has only been slight (APAL, 2015). Other industries such as bananas and mangoes have varied historically, particularly due to climate events affecting these industries. The trees industry faces substantial risk from climatic conditions, although in cases such as hail, measures can be taken to reduce the risk. In other cases, geographic diversity is the means used to minimise climate impacts.

The vegetable industry is diverse in the wide range of products represented. In this research, produce is both field grown or undercover, and similarly, value adding through processing is common amongst many enterprises considered here. Similar to the trees sector, climate and disease represent substantial risks although undercover operations may alleviate this.

Consistency in quality of produce is a priority for producers to guarantee supply. Vegetable industries are highly responsive to supply and value chains where market access is all important whether through an open market or contracts to suppliers. This leads to substantial variety competition providing incentives for producers to change varieties as fashion changes. The vegetable industry contains a large proportion of producers who have low turnovers highlighting the concentration of output toward large producers and key supply chains. The vegetable industry requires substantial amounts of seasonal labour.

Tree nuts are a growing area of the horticulture sector with value of the industry increasing over time, particularly through export markets, promoting the development of nut industries. Currently, Almonds and Macadamias are the largest proportion of the tree nuts industry. Establishment of tree nut orchards requires substantial investment, with time lags between planting and productive maturity of orchards. Once established, trees will produce for a substantial period of time. Enterprises may value-add to their produce by sorting and processing their produce. Enterprises vary in size providing incentives for producers collaborate to maintain market presence. The industry is forecast to increase production by 44% and double its value by 2025 (ANIC, 2015).

Vegetable Industry Analysis



The most commonly coded theme for this industry is Supply Chain. On analysis this node is primarily capturing the mechanisms these participants used to meet their customer's requirements. The vegetable industry had some specific attributes in terms of selling the produce. Many of the participants had ongoing relationships with customers and primarily supplied large supermarket chains or food service operators. These operators were generally dealing with their customers at the corporate level rather than individual businesses (although for some clients were dealing with individual franchisees).

So we do not grow anything specifically for the fresh market, and we do not grow anything specifically for retail. It's all for value added food service customers. (VEG M1)

Aside from that we have very, very small customers that come here and pick up we try and discourage that because we can't scale down that easily. (VEG L1)

Thus these operators were focused on larger clients and had established relationships which meant that a key goal of the business was value adding. The key concern was not in sourcing new customers but meeting the requirements of existing customers and improving their own supply chain so that they remained in control. Some operators had expanded their capacity either by purchasing property or entering into contracts with suppliers.

We needed to have secure supply of product and we were running out of capacity on this property to do that. So the process there was, well we've got these customers and they're good customers and if we do things well there's a reasonable profit in it. so we wanted to keep that business going, so yeah that's what buying that property was really all about was securing the product. (VEG M1)

One strategy that participants had adopted to value-add was to expand their range of products to existing customers. Alternatively other participants looked at transforming the product that they were already supplying by offering fresh cut options.

So we're cutting the ones where technology allows us to maintain the quality and have 10 days of shelf life and deliver it, whereas some products like tomatoes and capsicums, they're certainly better done in store as a fresh product. (VEG M1)

The emphasis on value adding was clearly a critical element of retaining their market share. It was also notable that these participants were concerned about their supply chain and often sought to minimise the risks attached to this. One element of this was putting contracts in place with suppliers and in some cases collaborating with other operators to secure their supply chain.

It's not price that makes them go somewhere else, its supply. Its problems with supply and quality that make them go somewhere else. (VEG M1)

Most important is the continuity to supply you have to have the gear 52 weeks of the year where you can (VEG L2)

This linked with the theme of production for this industry. Participants were constantly assessing their production capabilities to ensure that they could meet their customer's requirements.

You really do have to maximise every plant you put out in the field, you have to make the most of every single one of those. (VEG M1)

[X Supermarket Chain] are very big on making sure that you are keeping obviously up with quality standards and but they also want to constantly [question] your ability to grow with them and their main concern is that you can't keep up (VEG S1)

In this regard these participants were very concerned with measuring their production activities. This had a dual purpose in this industry. One was to make sure they were running efficiently but secondly to ensure that they had the capacity to meet the demand. Unlike other industries the participants in this

industry had less concern about being able to sell their product. In order to achieve these dual goals some participants had invested in automated machinery to enhance their efficiency and productivity. Others were looking at the most modern technology available with a view to implement it shortly.

Now I am going around the world looking at robotics (VEG L1)

Training was another important concept in the vegetable industry as training assists with the operation of plant and machinery. The relative reliance on machinery meant that although employee numbers were limited all staff had to be carefully trained in operating the equipment. This also meant that the workforce was transforming as employees had to be able to handle the different demands of an automated production environment.

We're entering a more complex business and we, some of the guys we've got will evolve and some won't be able to. (VEG M1)

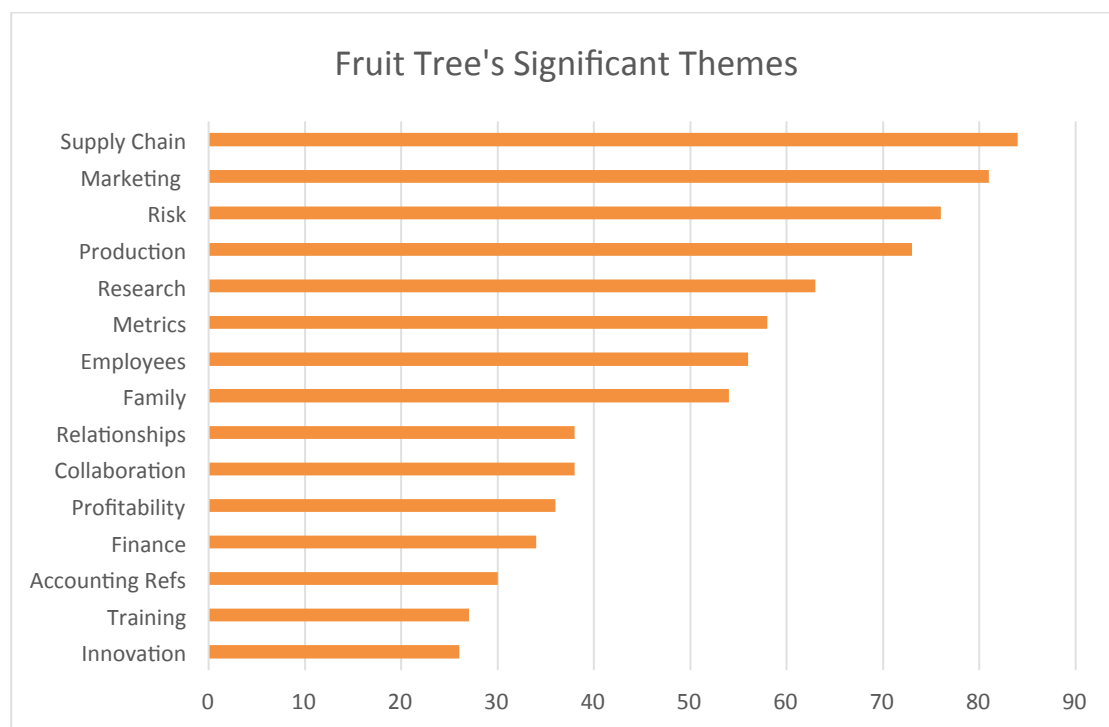
The vegetable analysis reveals some unique characteristics. The structure of the industry was dissimilar to other sectors in this project and this was most evident in the importance an uninterrupted supply chain. The customer base was influential and product demand was stable. Value adding was a key strategy to ensuring sustainable profitability. Innovation ranked highly because of the need to enhance their productivity to meet future customer requirements.

Summary Vegetable Industry

Notable Attributes:

- Supply Chain
 - Large corporate clients.
 - Emphasis on supply chain management (upstream and downstream)
 - Value Adding rather than expanding product range.
- Production
 - Monitoring efficiency of business.
 - Ensuring capacity for meeting customer demand.
 - Adopting innovations to improve production
 - Training to ensure staff capability.

Fruit Tree Industry Analysis



The fruit tree analysis has some similarities to the vegetable industry with a high ranking on supply chain. However there are a number of highly ranked themes in this industry with marketing, managing risk, production, research and the social dimensions also ranking highly. In this regard there was less variation between the relative importance of these dimensions as they all shared high ratings. Supply chain was an interesting element in this industry. Participants that had secured relationships with large chains indicated that these contracts had been pivotal in encouraging them to diversify their business.

We have worked closely with (Supermarket Chain) since 1988 actually as a business and they asked us to get in and have a look at strawberries. Strawberries were driving them nuts...they had a myriad of suppliers as in literally hundreds of growers all different brands all different quality it was a nightmare for them. So they said have a look at strawberries and see what you can do with it. But yeah we saw it as an opportunity to make a difference in that space. (FT L1)

This had led to the participant becoming involved in other fruits and managing to secure contracts with a range of supermarket industry businesses. It also meant that they could avoid taking their produce to markets in which the margins were much smaller. There was also less financial uncertainty with these types of business arrangements as payments were made on a regular basis. However not all participants shared the same positive relationship with larger chains.

The supermarkets are really, really frustrating especially with these specials they have all the time like every second week. (FT M1)

Some participants felt that the behaviour of the larger chains was manipulating consumer purchasing habits and this had a negative effect on the ability to supply to other markets. In addition supplying to the large chains meant that their product was graded harder (more product rejected) which affected their profitability. Participants also commented that the large chains generally wanted to minimise the amount of people they dealt with so that forced the growers into using processors which added an additional cost to their business. This collaborative approach was also evident in their marketing. However participants perceived that this collective approach sometimes created concerns over reputation and quality.

We know of other growers who just, whatever they throw out goes to the processors and sometimes it's too bad to be used, and therefore it gives that part of the industry a bad reputation and it puts pressure on the processor because he's got to spend extra money to sort it out. (FT S1)

Concerns over the need to maintain high quality product was also present for the participants who supplied top end individual stores. While they had secured a niche market for their product they were conscious of the fact that they could not afford any reduction in quality.

You will never supply enough if you have the right product [but] it's the hands down if we make a mistake we have got a headache for 12 months trying to sell it. If we get it right we just can't pack enough fruit. (FT S2)

In general these participants were positive about the supply chains they had established and there was an air of confidence about this industry relative to some of the other sectors in this study. This perception stemmed from the role that these businesses performed in supplying a product which was in demand by both large and niche retailers.

Because we're such an integral part of their business ... to them our continuity of supply is important to them. (FT L2)

Overall the participants had strong supply chain relationships and that had proved a successful element of building their businesses. These relationships also facilitated good relationships with their finance providers because of the perceived financial success of the customers.

We have got long term commitments from both of them that I can I can show to the bank, that I do show to the bank, it gives my bank comfort that the end of the day we have got a customer that wants to buy. (FT L1)

However one participant did comment that if there was one threat then that would relate to government intervention which could change that playing field if more importation of product was allowed into Australia. However some operators had sought to discharge this risk by ensuring a diversity of product.

From a risk management point of view, that was going have an area of my business which was never going to get exposed to [the] over-supply of imports. (FT M2)

Risk was a highly ranked concept for this industry group and is analysed accordingly. Apart from the risk associated with regulatory changes other identified areas were weather patterns and climate change. Another downside of dealing predominantly with large chains also highlighted in this category with participants indicating that staff turnover in the large chains created challenges for their businesses.

What changes is the staff within supermarkets, so [the] buyers are continually changing. You just build up a rapport and getting them trained or they get you trained on the how they operate and then suddenly they are off and going with their career and you have someone who doesn't know fruit from dog food or batteries. (FT L1)

However weather was the common theme in terms of risk and many participants had countered this with physical barriers such as hail nets and cyclone proofing or buy purchasing property in areas where certain weather patterns could be avoided. A less common theme was associated with the risk of introducing new varieties of product in to the market place and the risk that the product might not be successful. This was generally minimised by the staggered introduction of new varieties and simultaneously retaining successful products.

Whilst marketing was a prominent trend in this industry analysis, when this theme was deconstructed it was apparent that marketing was generally not a key area of concern for these participants. Some commented that although they had marketing support in place, their customers still wanted to deal directly with the grower.

We have a team of marketing people, but both those businesses and most retailers want to meet the grower, so there's always one of us committed to dealing with that particular person ...that particular business. Because we're the face of their business. (FT L2)

Collaborative marketing was also a strength in this group as many growers had joined networks to assist with marketing their product. Being part of a successful group had led to significant opportunities for some participants but all agreed it was important to identify the right group.

[They] invested a whole lot of money and they're the biggest growers so they just didn't say let's do it but you guys do it, they put their own money where their mouth was, so they were fully committed. So a strong marketing group also was committed to the variety themselves. (FT M2)

However there was some concern in certain product lines that 'lone wolf' operators could threaten the collaborative marketing system and this could result in negative consequences industry wide.

Where particular growers get big enough to have enough of their own momentum to be able to want to just look after themselves, and therefore then they become competitors with the other avocado growers. And what that tends to do is fracture the industry and it tends to put pressure on the marketing system (FT S1)

There were also elements of production that were collaborative in nature within this sector. Some participants had arrangements with suppliers to provide them with particular varieties of their product.

How did we choose them? Very good question. They were literally chosen, we put out expressions of interest and then went and interviewed every single one of them before they were given a licence to see it whether [they had] the ability to build a product to a specification but just as importantly was their ability to be able to fit in with a team environment. (FT L1)

This had generally been successful in these industries but participants noted that the greatest difficulty related to maintaining certain standards of quality. However when this was accomplished these arrangements provided efficiencies for the participants.

We want a certain quality of fruit so we advise them on that [and] give them some advice on how to grow what we want. It's a bit of a battle sometimes but normally you can get them to do the right thing. (FT S2)

This emphasis on quality also pervaded the production dimension for this sector. In this group production was focused on monitoring weather patterns, preventing disease via the application of pesticides and ensuring soil quality. A related component was ensuring the product was safe for sale as these producers were providing a fresh product to the end consumer. These attributes on production were reflected in the key theme of research which provided these participants with the ability to continually improve and protect their product. It was notable that many of these participants conducted extensive study trips overseas and within Australia to generate idea of how to enhance their production practices. Again in this element of the industry there was a strong feeling that sharing information would be beneficial to the industry as a whole.

We're at the stage with quite a few growers now, we're really starting to share sensitive information. (FT S3)

This information shared helped these participants determine what processes and infrastructure would improve their businesses. Although adopting technology and innovation was a common theme in this sector participants were also cautious about inappropriate change.

We have been doing most things long enough now that it's a tweak so whenever we are looking for improvements. We actively encourage people who are out there doing it day in and day out to come up with ideas. (FT L1)

We try and keep up with the best technology in the world, we try and continuously plant new trees so we can keep up with the new varieties and new systems. (FT M2)

Many of these participants collected comprehensive data for their operations and this was a fundamental component of their decisions to upgrade any aspect of the business.

I might be over doing the measurement and under doing the utilisation of the measurements I think but yeah we have got a series of spreadsheets to determine what our fruit numbers should be on each tree. (FT M1)

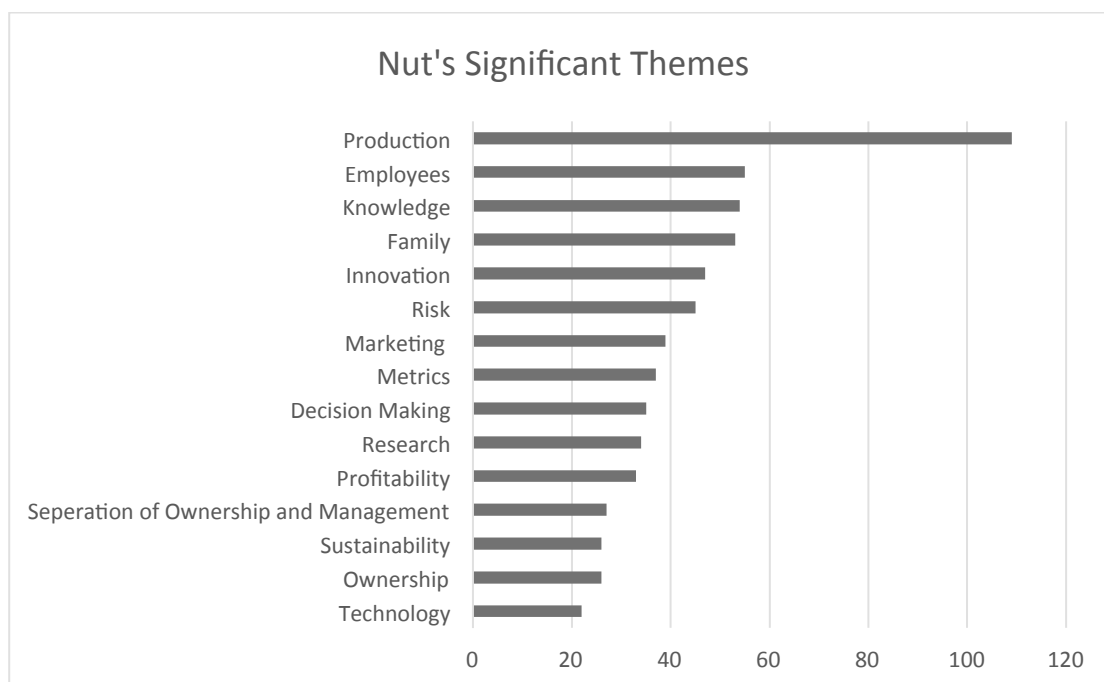
High levels of demand for quality produce was a key factor in the success of these participants. Longevity of customer relationships also rated highly as a key driver of performance. These elements were supplemented by collaborative approaches to processing and marketing the products. The key risk to the fruit tree industry was perceived to be adverse weather events and operators worked to minimise this as much as possible. Participants indicated that improving production processes was a constant theme in this industry and that monitoring existing practices was an essential component of continual improvement.

Summary Tree Fruit Industry

Notable Attributes:

- Supply Chain
 - Dichotomy of customers – large supermarket chains or smaller high end retailers.
 - Emphasis on meeting customer driven specifications.
 - Nature of customers provided financial security.
- Collaborative Strategies
 - Marketing and processing were collective activities.
 - Research and information collection were often done in groups.
- Risk
 - Weather patterns and climate changed ranked highly.
 - Government intervention.
 - Market risk from relationship with customers with high staff turnover.
- Production
 - Focused on disease prevention, climatic factors and safety for end use.
 - Consistent quality was key factor.
 - Innovation and research was essential.

Tree Nuts Industry Analysis



In contrast to the other horticulture industries, the supply chain is not one of the most significant themes for the Nut industry. There is an increased focus on production in this industry. However many of the remaining themes correlate with the other horticulture industries. As with other industries production in this sector was largely focused on improving capacity and enhancing efficiency. For some operators that meant combining resources and acquiring existing properties.

So to me the aspiration is the production side and leveraging the capacity, the combined capacities, intellectual capacities, that is, of experienced operators and networking them. (NUTS S1)

However other participants were applying new farming practices to existing properties to leverage small gains in productivity.

I believe we are doing as much as we possibly can to get the best value out of our productivity and that's the point. That's what we can manage and that's why we're doing the sorts of things we're doing (canopy management). (NUTS S2)

If you can manage to increase your unit returns of productivity for your inputs, you can then weather the price decrease or increase a lot better, the variation in price. (NUTS M2)

I believe you haven't actually got to grow a greater yield to make a better profit. (NUTS L1)

For these operators the key focus was incremental changes that would eventually lead to profitability gains. Typically these changes related to canopy management, tree removal, irrigation, harvesting decisions, soil nutrition and insect control. However, participants indicated that such changes may not have an immediate positive effect of productivity and were realistic about the time lag and possible reduction in productivity associated with initiatives, such as tree removal or pruning to reduce orchard crowding.

Trying to take action to better our performance I suppose, in that regard, it's not a performance that makes you dollars, it's a performance that secures your future more than anything else, or tries to anyway. (NUTS M2)

The long term view taken by many of the participants was also reflected in the sustainability dimension. A number of participants recognised their role in maintaining the quality of the land for future productive use.

We've got a custodial role to the land that we work. As financial circumstances have permitted we've done restoration work, reforestation of particular areas, and I suppose that to me is still the way to progress. (NUTS S1)

With macadamias we grow our trees from the seed down here; you put the little trees out, we graft them, we care for them, we plant them all by hand and you can go up there now and our 25 year old trees and you can walk around and hear the birds and stag horns growing on the trees and it's just absolutely glorious. (NUTS M1)

This connection to the land and desire to preserve its integrity was an integral theme in this sector. Whilst to some extent participants were conscious of their legislative responsibilities most participants indicated that they had an intrinsic desire to do the right thing for the community now and for future generations.

We have seventeen and a half kilometres of riverfront, so water views all the way around. We share that part of the environment with every local that lives either side of that river, being ourselves and themselves. We are bound by the Water Resources Act on what we should and shouldn't do with that. We are conscious at all times that we're not the owners of the environment. We're simply leasing it for a period of time; we have the use of that. So we are careful but we're not taking out of it more than we should and we're making sure that we're putting something back into that. (NUTS L2)

This is an interesting dimension in this analysis as such strong views on social responsibility have not been as clearly articulated in other groups. It is a possible area for future research to more clearly link this social responsibility to performance in this specific industry.

The prominence of risk management in horticulture continues in this sector. In this sector, participants indicated that the volatility of the market for their product as the key form of risk. Many strategies to combat the risk in this industry are familiar. Participants indicated that diversification was an essential strategy and it was evident that this encompassed geographic diversification as well as diversifying through value-adding.

While we're just growing macadamias you could say that we've diversified by value-adding and selling our own product. Whilst within the same industry it helps you get through that period of downturn so that's how basically we've manage it. (NUTS M1)

The value of diversification was reiterated in the marketing dimension. Some participants had built a strategy around delivering a premium product. This had provided flexibility in their production and enabled them to utilise more of their raw product by sourcing appropriate processors and marketing to higher end users.

Since we went for this high quality product, technology at the processor end has changed and so now we don't sort – we send it straight off. We de-husk it; take the ... damage off – anything that's black and send it straight to the factory because one of the issues of sorting all your own products is you can actually take off quite a lot of good stuff as well as the bad stuff. (NUTS S2)

For the participant quoted above this had the associated benefit of increasing their yield without increasing orchard size. It was also notable that in contrast to the fruit tree industry many participants were not engaged in collaborative marketing. These participants primarily operated independently of other producers. However two producers were involved in group marketing plans. There were differing views about the value of these organisations. One participant voiced significant concerns about the effectiveness of this involvement.

We don't gain a lot from the advantages, possibly some of the other smaller growers get the advantage of being part of a group. They get their product processed, they're getting a group rate, so they're getting a discount on some of their costs. We don't gain that at all, so we are part of the group, probably not as supportive of the group as we used to be because we just don't quite see that we're gaining a lot of benefit from it. (NUTS M2)

In contrast the other participant expressed satisfaction with the opportunities that collaborative marketing had provided.

It's the collateral you get from having one marketer to six. And the six marketers all living in different continents and the six marketers all having a different feel for global markets because we're in a global playing field and that's the reality of it. (NUTS L2)

Despite the disparity in marketing strategies there were strong parallels in the decision making dimension. Participants were aware of the need to act decisively in this industry and this was dictated primarily by the volatility in market conditions.

I suppose with higher price comes interest [so] you can ideally expand your influence easier, and that gives the opportunity to get some extra deals and economic revenue streams. (NUTS S1)

At the end of the day you've got to still look after the health of that tree because you know it's no use having a tree that's not producing [because] when the price does return...so you might have to ride out that cycle as best you can (NUTS M1)

Another element that participants felt contributed to market volatility was food safety. Although this was also evident in the fruit tree and vegetable industry analysis in the tree nuts industry this had different implications. Food safety in fruit trees and vegetables related to the integrity of the product once it reached the end consumer. In the tree nut industry it was related to primary product.

We grow nuts and nuts are a safe product. You could eat them off the ground and not be sick. But there's been a real change in perception by the consumers as far as allergies go with nuts. And primarily it started around peanuts. It was around peanuts but it's moved from – the perception has moved from peanuts to tree nuts. (NUTS L2)

Participants in this industry were therefore conscious of the threat that negative perceptions could pose to the industry. This impacted on their decisions around the governance structure of the business. Participants also indicated that the relative immaturity of some parts of the industry meant that diverse perspectives were needed to drive the business. This meant that participants were keenly aware of the need to canvass various viewpoints.

The other participants in the operation are people who have other farming interests. So there's ... - there's an empathy and sensitivity to the situation, certainly they're coming from different backgrounds and farming principles, but there's an affiliation there that means that it's a lot easier to build a [consensus] (NUTS S1)

There's other shareholders involved that – and I'm also considerate of their wishes. I am conscious that we all think of these things differently and that's so when in a boardroom you had the opportunity to put your view forward. (NUTS L2)

Some participants were engaged in transforming their businesses with different ownership structures to provide future security.

We went from a family owned business to a business of families. So the business now operates significantly different because we're not owned by one family, so there's three of us that are inside that. So culturally we've had a major structural change within our own business that was very stable for the first forty years. (NUTS L2)

Overall there was more diversity in the ownership structures of these businesses than there was in other horticultural sectors.

Summary Tree Nuts Industry

Notable Attributes:

- Production
 - Maximising capacity or leveraging incremental adjustments.
 - Lag period before gains in profitability.
 - Balancing social responsibility with production.
- Risk
 - Market volatility.
 - Diversification and value adding.
 - Perceptions of food safety.
- Marketing
 - Collaborative or independent.
- Ownership Structure
 - Accommodating different perspectives.

Appendix 6: Grains and Cotton Industry Analysis

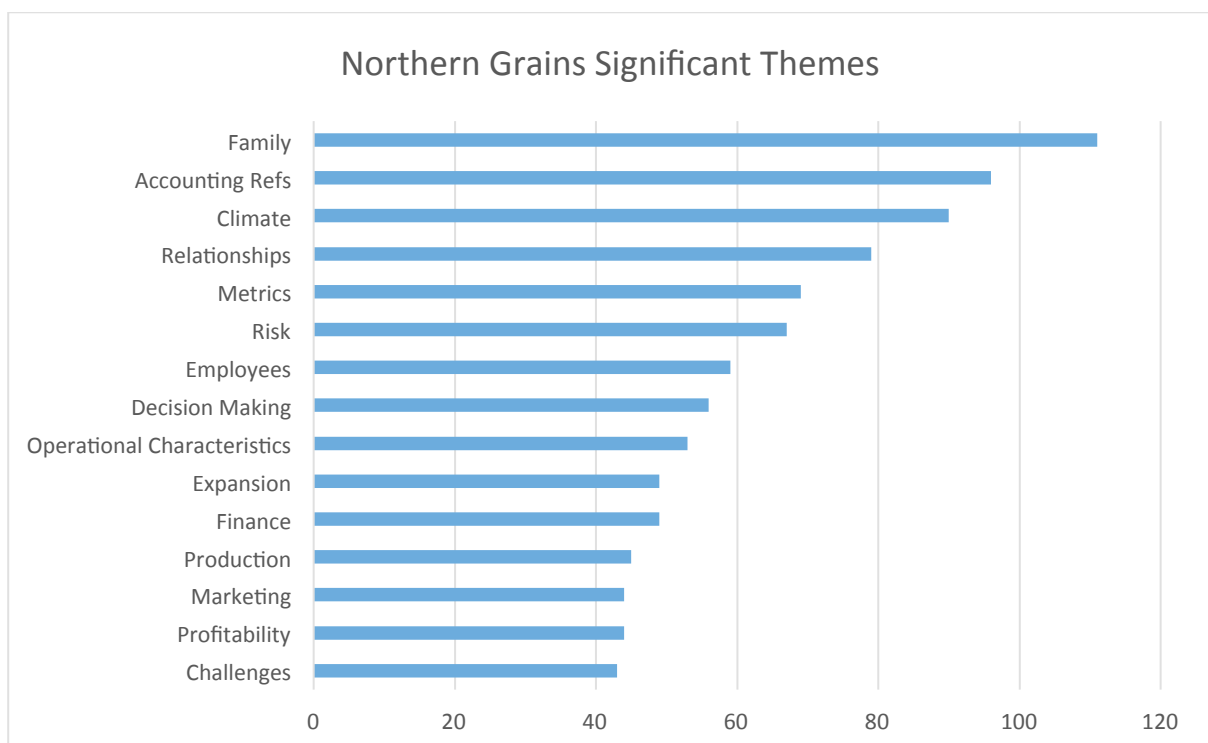
For the purposes of the research the Australian broad acre grain and cotton industries were broken up into its three major regions. These three regions include the northern grain including cotton systems, southern grain systems and western grain systems. Each of these systems is in line with a GRDC area of research.

Western Grain region has been defined as the south-west corner of Western Australia. Due to summer climatic conditions, western grains consist almost entirely of winter crops. Wheat represents the greatest volume harvested. Other major grains include canola, barley, lupins and oats (DAFWA, 2015). Eighty percent of the West Australian grain is exported (DAFWA, 2015), substantially more than southern and northern sectors. The average size of crop planted is larger than southern or northern industries.

The northern region encompasses Queensland and northern NSW with broad acre grain as the largest crop, where possible producers also include cotton within the rotation due to its high value. ABARES (2014) states that the northern grain sector has the greatest crop diversity from the three regions investigated with the possibility in some areas of running both a summer and winter crop rotations. Cotton has been include within this section as cotton is a significant component of crop rotations, and in many cases is the most profitable crop.

The southern grain industry (southern NSW, Victoria, South Australia and Tasmania) is heavily reliant on winter crops. Due to the large geographic area within the southern grain sector, production outcomes vary considerably.

Northern Grains and Cotton Analysis



Family concepts were rated the highest by northern grains and cotton participants. The family appears to be a key underlying motivation for setting the long term goals for the business. These participants discussed how their businesses had frequently grown from the previous generation's development and how they had carried this on. Participants often see the business in terms of the connection to family

events such as getting married, having children, the age of those children now and potential role they may have in the business in the future are often how.

Family is everything to us and you can probably see [that] from what you have drawn out of us. (GN Nth M1)

While family was the most important concept, accounting information was the second most important issue for participants. They highlighted the need to maintain a focus on the financial aspects of the business as not paying attention to financial measures can quickly lead to major problems.

We were driving around one day and dad said 'we do this for more than just money' and I said 'no way, not this black duck...', ...because the moment you start thinking like that... You will go down the spout quick smart, so you got to always be focused on the finance. (GN Nth M1)

Farmers forget that finance is the most important part of the business.... (GN Nth L1)

Participants talked about returns on investment, interest and 'cash flows' to service that interest. Despite this, participants used accounts to varying degrees with some regularly calculating and using accounting information to set goals and make decisions, whereas others rely on more on intuition.

...on my spread sheets that I run and ones that I aim for is profitability per hectare then I look at that's on an actual paddock by paddock basis. Yeah I will do paddock by paddock and then from that data then I will run a full crop one. Then I will run [a] multiple crop one so I am still breaking it down, and I will run even fallows so I tried to break down my goals and I set myself goals and I right them up and put them on the wall is on my input side this year. (GN Nth S4)

Measurement of production and financial variables is undertaken to promote efficient outcomes, but more often the measurements taken are designed to address the problems at hand.

...we have had plenty of land [but] lack of water probably you know so we have always been trying to make the most out of every drop of water not every acre of land as such. (GN Nth S4)

However, one participant provided a warning about the appropriate use of measurement for making decisions:

...that's the trouble with numbers you got to analyse what drives the numbers before you can make a decision based on the numbers and we have got enough [numbers]. (GN Nth L2)

Relationships with key people were discussed by each participant, particularly the need to discuss their business and gather information. These relationships may be with a professional such as agronomists or accountants, or in some cases, other producers. One participant, was part of group of producers who sat down on an infrequent basis to discuss and compare their operational activities and outcomes. Involvement within this group was considered valuable by the participant as the activity allowed them to compare what they do and what works and what does not.

The production risk for crops is well known in grains and cotton industries and is primarily driven by weather dictating the levels of water available for successful crops.

You obviously get seasonal conditions that you have no control of but that is the game we are in. (GN Nth M2)

moisture is the single most limiting factor it probably I guessdrives our entire business we strive for soil health, nutrition and all the other things we'd like to keep them at a base to adequate level such that if the moisture scenario changes it is the bit that changes. (GN Nth S2)

Other weather based risks discussed by participants in northern grains and cotton industries included drought, floods and hail. Participants raised the issue of crop insurance with some stating that they did

not use insurance whereas some use it frequently or opportunistically. One participant's view was that insurance cannot be used opportunistically.

...you either have to do it all the time or not at all. You can't sort of pick and choose your years because you will get it wrong. (GN Nth M1)

Price risk was recognised by most participants as a major issue that compounded production risk. The use of marketers and contracts is commonplace in the grains and cotton industries across Australia to manage price risk. While some producers acted strategically in terms of holding commodity until they could sell it at a higher price. Others used marketers and contracts as a means to hedge their commodity price. Attitudes to contracts and hedging for price risk management ranged from 'make a decision to hedge and maintain a price position in the market', to others who are more speculative and may attempt to improve a price outcome with further hedging transactions.

...when the market moves you can be a long way in or a long way out but you must remember it's never actually a balance sheet entry until you close. (GN Nth S2)

...one of the things we do in our marketing right before my cotton goes in the ground I want to be around 60% hedged (GN Nth M1)

Most participants interviewed reported that their employees had been working for the business for considerable time. This was an advantage because these employees had substantial experience in working in those particular businesses and often included in the business decision making and made to feel a part of the business.

...we include them in the business they feel [the] wellbeing of a family run business [and] that they are part of the family. (GN Nth M1)

Similarly the relationships with contractors are strongly maintained and participants recognised that small gestures were important.

they get paid on the job on invoice we just transfer the funds into the[bank] I mean in fact the other night the guy that's out there on the tractor right now he said oh geez he said thanks very much for that money like it means a lot to them you know (GN Nth M2)

The overall trend for participants was a strategy to expand their businesses. They had expanded in the past and were looking to continue to expand in the future:

...if you are not growing you are going backwards so I think it's to grow the business, so growth. It's hard to just well it goes hand in hand with profitability I suppose I would like to think I would like to think we could lift return, return on asset, ultimately that is what you are farming is return on asset. (GN Nth L1)

There is an attitude that holding debt is necessary to support the goal to expand. As such producers were willing to hold debt to finance land acquisition.

I'm not afraid of it, like I'm more than happy to use debt and you know we're heavily indebted now with the last few purchases we've done. (GN Nth S1)

the debt to me is it's a means to an end somewhere along the line if you want to have ten thousand acres if you own it there is an ownership costs which is perhaps about the costs the current cost of interest which is about the current cost of leasing... (GN Nth S2)

Participants had the view that decision making within the farm business should not change simply because a debt has been taken on. The goal in these participants' minds is to produce profit regardless of the debt situation. However, there was caution in taking on too much debt.

... I do some work in, on other farms where that does have a big play ... you end up making the wrong decisions, because you're making it for the banks and not for the farms, so then you compromise profit and you'll need a lot of the time. (GN Nth S1)

Participants suggested a range of challenges for their businesses. Including competition from international markets. With cotton, the challenge also extended to substitutes such as synthetic fabrics. Other producers felt that expansion in a market with over inflated land prices was going to be challenging.

...it is hard you know we need ...guys like these [name of another business], these [name of another business] to keep the land values up. It also makes it hard to purchase it because his land values keep increasing so it's in a no win situation I guess. (GN Nth M4)

The northern grain analysis portrayed a high emphasis on family and relationships. Both internal and external relationships were fundamental to the operation of the business. The use of accounting information and performance measurement were also ranked highly. Participants in this sector incorporated both financial and non-financial data in the management of their businesses and the use of professional advisors was common. Climate was a significant theme and linked closely to production due to the characteristics of grain growing. Despite recognising that a number of challenges were present in this industry many participants were interested in expanding their business in the future.

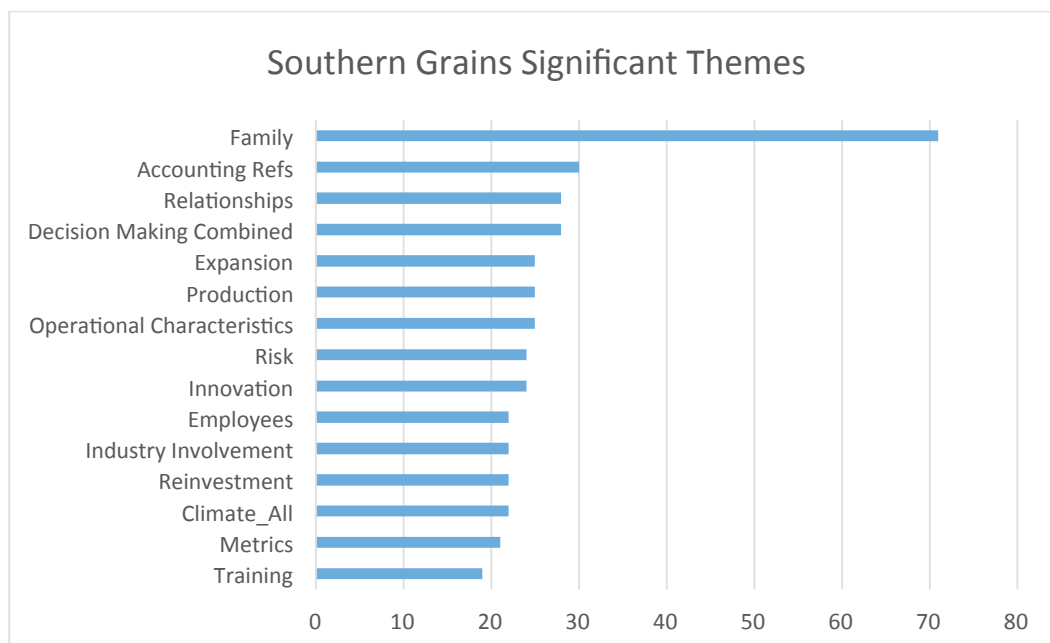
Summary Northern Grains and Cotton

Notable Attributes:

- Family
 - Intergenerational build-up of many participating businesses
 - Strong motivation for expanding the business
- Accounting
 - Use of accounting measures vary from occasional to frequent depending on personal preference but important for decision making
 - Very similar focus to southern grains participants but less focus than western grains participants
- Climate
 - Number of climatic risks including hail, flood and drought
 - Some participants use irrigation, others use dryland systems
 - Moisture available for plants determines production choices
- Relationships
 - As participating businesses are family owned, the ability to maintain relationships between family members is viewed as necessary.
 - All participants had information sourced through external relationships
- Metrics
 - Producers had numerous measures but made decisions based on those relating to constraints

- Numbers were not explanatory in themselves and producers use them only after understanding what practices they referred to.

Southern Grains Analysis



Southern grains participants like their northern counterparts emphasised the family as an most important part of their business. Some participants discussed the role that previous generation had on the management of the business in terms of knowledge passed down and attitude towards production.

They were and probably still are really hardworking, lean operators and they were really sharp about knowing if things were turning bad when to pull the reins in. (GN Sth L2)

Other participants discussed how they were assisted by their parents or they were assisting their children to become established.

[Son's name] is currently not involved in the business as a business partner he has come home to the business as an employee and we pay him as an employee but obviously he has skin in the game so and we have sort of helped him out with a few little projects that he has had on the go... (GN Sth M2)

Accounting was reported as a method for assisting in decision-making, although many participants deferred detailed analysis of their business to an accountant. Responses from several participants tended to suggest that they ran numbers to get a 'rough' idea of the position of their business rather than an exact picture, which is consistent with northern grains and cotton.

You know the old profit and loss statement of course and you know you have got all the bits and pieces but it's really hard to sort of sit down and get a rough idea of how the year has been because you know you are withholding stuff or you have shovelled funds here and shovelled funds there... ..so once again there are too many contributing factors. (GN Sth S2)

Despite accounting information being used as a guide, participants had a philosophy that the decision has to reflect the broader needs of the business to go forward not just the financial numbers at the time.

...why I think I have been successful is that I have had those two years in the industry where you are making decisions in a business sense rather than an emotional sense or whether or not you have got

the money in the bank or you know whether or not you should be spending that much oh you take from a business sense to say that for my business to go forward and to operate in a more efficient manner you know this purchase is necessary sort of thing. (GN Sth M1)

A number of participants discussed their planning, stating that it was flexible and changed as operating conditions changed. Their advice for when financial or production conditions were less favourable was not to 'stress' but to continue to make sound business decisions. An important part of this was the undertaking of research to understand the best way to respond and maximise the outcomes, given those conditions. This again was accompanied by an attitude that the numbers such as paddock histories of fertiliser and nutrient levels were used but did not dictate their decision making process.

All the participants in southern grains discussed expansion that had taken place as well as plans for the future. It was noted by some that expansion was to be undertaken sustainably in the sense that expanding to quickly was not the goal. Others discussed the economies of scale issues with expanding, stating that at some points, capital and labour become less productive at these points.

...I think like if we go from 10,000 acres to 12,000 acres you can create yourself an issue that you are actually a little bit under man bit over stretched so the last 20% doesn't get done so well... (GN Sth M2)

well the parameters for me are management if I can't manage it the way I am managing it now don't do it... ... about 3000 acres for one full man and one employee. (GN Sth S1)

Participants typically undertake a program of reinvestment that is linked to years where production and financial returns are higher. Some participants reinvest by upgrading their equipment and infrastructure to improve efficiency while others look at investing in other ways such as innovative practices or new technology to minimise costs.

Southern and northern grains and cotton participants, emphasised production to a lesser extent than western grains participants. This is largely due to perceived relative safety of these areas in terms of seasonal conditions and in some cases irrigation that provides greater certainty of production. Greater flexibility in timing means that producers have more options to choose from for their production decisions and a variety of crops to be sown.

Risks discussed by southern participants were similar to those in the northern industry. Although seasonal conditions are different, with generally one crop being sown annually rather than two crops in the northern industry, weather is still perceived as a major risk for southern grains participants.

Another perceived risk identified by participants was the loss of a principle person managing the business or could not continue their role. If a person (owner or key employee) who has specific knowledge about the operation is removed from the business, this is viewed as a setback for the enterprise and may cause a major disruption.

...no doubt that one of the risks of the business is that if I happen to fall over is that, yeah, a lot of it is up here [in the participants mind] and we lose a labour force... (GN Sth M1)

A range of innovations was discussed ranging from the use of different fertilisers, air seeders, and GPS systems. In some cases, the impetus for an innovation came from a neighbouring business who introduced the innovation first. Some participants felt that the initial price of the innovation was expensive to begin with but proceeded to adopt as they observed the benefits.

...they are a big operation so obviously they could justify it even though it was a lot of money for them they could justify it but for me it was like you blokes are on drugs you are mad because the technology supersedes so quickly it's unbelievable and this GPS technology I was thinking at the time well there has got to be more to come so we sat back for 3-4 years... (GN Sth S1)

The decision to implement or invest in a new innovation is a financial one that also has timing considerations. While the implementation of innovation plays a fundamental role in developing efficiencies within the business, people will often wait for further development of new technologies before they will invest.

...we always said that we wouldn't purchase a new sprayer until we could have this sort of technology on it and when it come out and off the back of last year we thought well now is the time and actually it is in its infancy and we are in the pilot program there are sort of ten or so of us in this area sorting it out for them. (GN Sth S2)

The involvement in industry by participants fulfils a need to gather information that will assist them in their business. Attendance at conferences, field days, workshops, being members of producer groups, groups of friends or holding positions within the industry were common ways to gather information to inform decisions.

Well I have got three or four blokes that I have grown up with and we you know value each other's information and we don't span it around and if we find something good well we get onto it and sometimes it works for someone but not for the next person. (GN Sth S1)

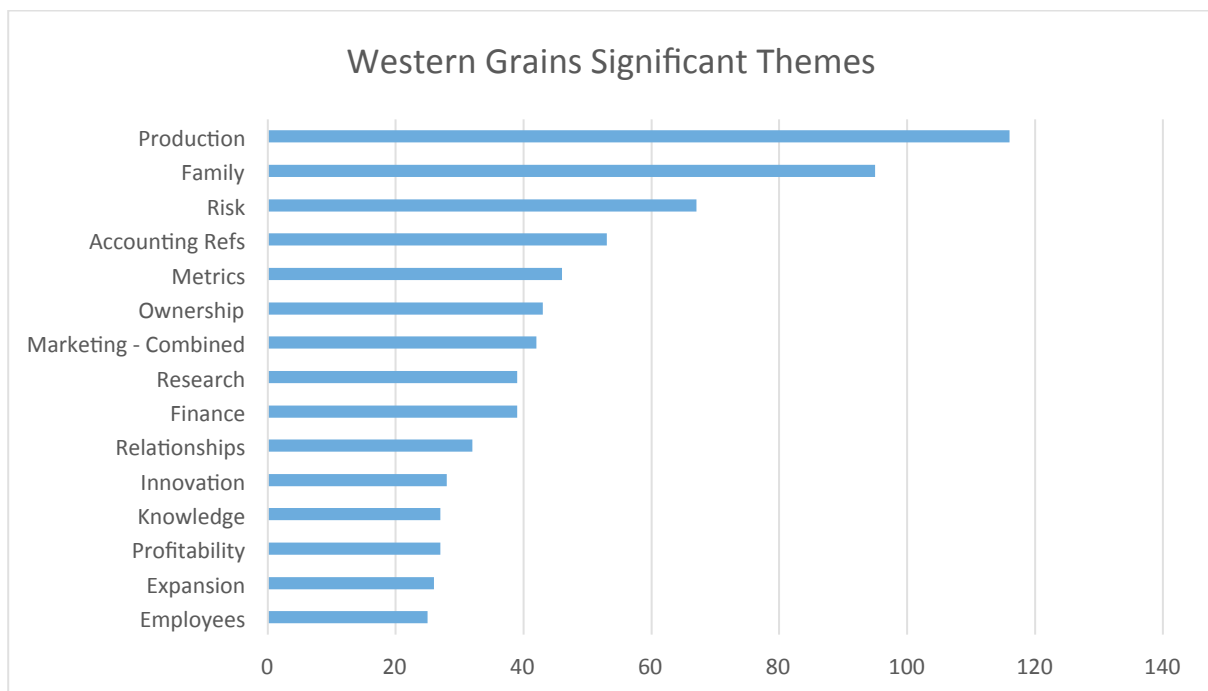
The southern grain sector has a number of similarities to the findings for northern grains. Family was highly rated in both sectors and the use of accounting information was common. However, reinvestment emerged as a key theme for southern participants and innovation was more frequently discussed. Participants in both regions highly rated industry involvement as a key factor in the business success.

Summary Southern Grains

Notable Attributes:

- Family
 - Intergenerational build-up of participating businesses
 - Strong motivation for expanding the business
- Accounting
 - Use of accounting measures vary from occasional to frequent depending on personal preference but are important in informing decisions
 - Very similar focus to northern grains and cotton participants but less focus than western grains participants
- Relationships
 - As participating businesses are family owned, the ability to maintain relationships between family members is viewed as necessary.
 - All participants had information sourced through external relationships
- Decision making
 - Decision making involved employees and family
 - Adoption of innovation informed by success of peers in using new technology
- Expansion
 - Focus on growing the business for the future
 - Use of debt to facilitate expansion

Western Grains Analysis



The priority production focus for western grains industry is in contrast to the family focus reported for southern and northern grains and cotton industries. This most likely arises from the overarching production conditions which shape the production systems of participants' businesses. The distinct seasonality and the variable fertility of soils means that precision is required to produce viable harvests. This can result in a range of different production practices being required based on the physical characteristics of each farm.

There's, well there's differences between here and 10ks away and that's, and that's what works for one and even on a paddock, a paddock basis. (GN W L1)

...I do have a lot of variation in our soils... (GN W S2)

Participants discussed the intergenerational side to their families in each business. That is all the participants had family backgrounds to their businesses. Some commented that part of farming was making time for interaction between family members. This was a difficult for some, who indicated that family relationships can be challenging but necessary for business success.

I worked incredibly hard during that period but I also worked incredibly hard to spend some time with my children so I think that's part of that balance. (GN W S2)

...personally, it's also that family relationship is a big challenge. (GN W S1)

The types of risks raised by western grains participants are similar to those in northern and southern grains and cotton industries. This includes weather and production risk, however, they are perceived by western participants to be more variable.

It's so diverse, yet so volatile that we can make a plan for 5 years time that we're going to have our equity's going to grow so much percent and we can do so much with this money ...but at the end of the day we could have 2 or 3 droughts in a row. (GN W L1)

Participants indicated that while planning was important for long-term success, variability also led to opportunistic decision making in order to try and maximise favourable seasonal conditions.

I think we strike while the iron's hot sometimes, if we've got those funds there then we are, we do something with it. (GN W L1)

The responses from participants suggested that the use of accountancy measures tended to be more concise than the northern or southern industries with a greater focus on the use of budgets, financial plans or professional accountants to support decision making.

I think we lack in our long-term planning and that's because it's hinged on succession, but as far as an annual, cropping rotation, we do a budget every January, get an accurate position financially of the business. We will have a rotation plan, that's already been done, that'll get done in September/October so we know all, how much seed is needing to be kept. We have a plan A, plan B pretty much. Good start to the season this is what we expect ..., and then if the seasons not coming off these are the paddocks that come out. So we know which paddocks we're confident on... (GN W L2)

This usage of accountancy measures was often tied directly to the impacts of production decisions on crop yield and financial returns

It's a rotational. The best gross margin, 90% of WA is wheat on wheat on wheat on wheat on wheat but it's not [sustainable]. (GN W M2)

I think we can improve a bit more on just monitoring that, so we do it, I think we do a really good budget, we're pretty comprehensive on that, but how much we follow it, like do we check it in July, probably not as much as we should, certainly on a poor year we hone right in on it. So I think we could improve on that. (GN W M2)

While western participants are more focused on measurements of production variables to inform decisions than southern and northern participants, they place more importance on the measurement of financial performance.

...we use individual paddock records and we record yields from the header per paddock, and I have paddocks performing you know, and the consultant does the gross margins and horrible things. And you know the things I really look at is the farm year profitability... ...taking into account you know point in value of stock or all those type of things those are the things I really go off. (GN W S1)

The concept of ownership is raised in a number of ways by participants. The current management and succession of the business is discussed, but also the possibility of acquiring land to crop through means other than purchasing the land. Leasing the land was considered a possibility for some of the participants where the high price of land or family constraints to purchase meant that they were willing to lease land in addition to their current holdings.

Like the southern and northern grains and cotton industries the western grains industry exports a high proportion of its produce. The method of selling is consistent with southern and northern grain participants. Some participants get regular price offers from marketers and make a decision to sell at a given price, while other participants use derivatives to hedge and manage price risk.

...marketing and being proactive with marketing is definitely a major component. (GN W S1)

I do think that's something that we, where we're lacking is marketing, that's probably one thing I'd like to look at closer... (GN W L2)

The participants from the western grains industry sought information from a range of sources consistent with southern and northern grains and cotton participants. This included attendance at field days, conferences and trade journals and in some cases research on developments and performance of customers' industries.

Sometimes I try and pick up things that would benefit us in, in any machinery that might be more efficient or but also have an interest in other industries, the dairy farming, we sell our grain to dairy farmers. So [I] always want to make sure they're doing well, it flows onto us. (GN W L1)

Production processes are a key feature of the western grain analysis. High levels of variability in soil and weather patterns contribute to this. Specific attributes of the western grain industry such as high levels of exported product and marketing considerations also feature highly. There are similarities to the other grain regions in the use of accounting information and emphasis on family relationships. The value of industry involvement is again highlighted in the western region. This is consistent for all three grain regions.

Summary Western Grains

Noteable Attributes:

- Production
 - Strong focus on production and measures of production
 - Variability of production leads to opportunistic production decisions
- Family
 - Intergenerational build-up of many participating businesses
 - Focus on spending time with family but difficult to achieve
- Risk
 - Risk factors of weather and price similar to northern and southern participants
 - Greater perceived variability in risk factors than northern and southern participants
- Accounting
 - More concise use of accounting measures to inform decisions
 - Accounting measures tied closely to impacts of production decisions
- Climate
 - Number of climatic risks including hail, flood and drought
 - Some participants use irrigation, others use dryland systems
 - Moisture available for plants determines production choices



NATIONAL RURAL ISSUES

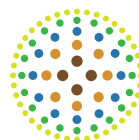
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