On the relationship between financial and non-financial factors: a case study analysis of financial failure predictors of agribusiness firms in Australia

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Structured Abstract:

Purpose – The aim of this paper is to explore the relationship of non-financial and financial factors to firm survival, provide evidence of factors related to financial success and distress for prominent Australian agricultural firms, and improve the predictive capacity of financial failure models.

Design/methodology/approach – The paper utilizes mixed method exploratory case studies across four Australian agricultural firms (two successful and two failed) listed on the Australian Securities Exchange (ASX).

Findings – We found that the use of an Integrated Multi-Measured (IMM) approach provided a higher classification rate for the failed group than those provided by an individual measure. We also discovered that non-financial factors associated with the agricultural organizations studied impacted their success or failure. These factors included managements' involvement in organizational strategy and the composition of the board of directors. It was also apparent that management decision making approaches may become frozen, or at best restricted, in the face of impending failure, dependent upon the stress level within the organization and the management skill base.

Practical implications – The cases studied indicated that non-financial factors of failure occurred prior to any financial predictors, intuitively indicating a relationship between non-financial and financial factors in Australian agricultural firms.

Originality/value – The identification of financial and non-financial factors and sound internal processes which distinguish successful and failing firms can be utilized for the development of an early warning predictor of organizational success or failure.

Keywords: agriculture; Australia; financial failure; management; non-financial factors; organization

Article classification: Research paper

1.   Introduction

In a rapidly changing agricultural economy, knowledge of factors affecting organizational success and firm survival are important for these entities and the businesses that serve them or purchase from them. Financial factors have had some success as historical indicators of organizational failure[1] (Altman, 2000; Altman and Hotchkiss, 2006). However, growing emphasis is being placed on non-financial factors to determine the likelihood of firm survival (Smith, 1993; Steyn-Bruwer and Hamman, 2006; Madrid-Guijarro, Garcia-Perez-de-Lema and van Auken, 2011). Although a dichotomy exists between non-financial and financial factors, a number of studies (Altman, 1968; Beaver, McNichols and Rhie, 2005; Hossari, 2006; Shumway, 2001) have found that a combination of non-financial and financial factors may lead to an improved predictor of success or failure.

Predictors of success or failure in farm and corporate agricultural businesses will become more prominent as the world's expanding population places pressure on food supply. Large agricultural producing countries, such as Australia, may be adversely affected by this growing phenomenon, as the flow on effects of any failures could negatively impact relationships with prominent agricultural trading partners (e.g., Japan, US, South Korea, New Zealand, United Kingdom, China, Taiwan, Hong Kong and Singapore).

Agriculture is a major industry in Australia, with implications involving Australia's total export trade and international markets. Historically, Australia's agriculture exports predominantly consisted of raw products. The Agriculture sector has now developed to a level where the industry attempts to add value to the raw product prior to export including enterprises such as timber pulp mills, olive oil production and wool top-making services. This industry development and vertical integration places additional pressure on the skill base of Australian agricultural management.

Given Australia's important role in global agriculture, it is critical for academics, policy makers, managers, directors and farmers to examine and understand the failures of past Australian agricultural organizations so that similar mistakes can be avoided and predictors of success or failure established. Intuitively one would expect the results of such investigations to be applicable to other western countries operating in agriculture.

Over the past thirty years Australia has witnessed several recession-driven cycles of company failure with the most recent being linked to the Global Financial Crisis (GFC). During this period the Australian agricultural sector has experienced its fair share of organizational failure (e.g., the collapse of prominent agricultural firms such as Great Southern Group and Timbercorp in 2009).

The Great Southern Group is a notable case in point as it had a significant reduction in profitability in the two financial years (t-2) prior to failure. The causes of this profitability reduction have been identified as significant reductions in income for the management services performed on the company's plantation projects, losses on asset disposals, asset impairment adjustments, increases in project activity costs and increased borrowing charges (Jones et al., 2009). Bridging and short term finance lines were in place for Great Southern Group, while the income derived from the agricultural enterprise was long term in nature; thus causing a mis-match of income to finance costs. In conjunction with this timing mis-match, a change in taxation rules created a further decline in potential investor capital, which inevitably led to the company's demise (Jones et al., 2009).

On the other hand (in the face of the GFC), Timbercorp decided to stop its investor program upon which the company had so heavily relied for capital in previous years, leaving a gap in its capital structure similar to that of Great Southern Group. To fill this gap, Timbercorp embarked on an asset sales program with limited success. Ultimately, it was a decline in company agricultural yields caused

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[1] Failure can be defined where the organization's revenues are not able to cover costs and the average return on investment is below the organization's cost of capital (Altman, 1983; Charitou, Neophytou and Charalambous, 2004). The term 'failure' has also been described by the credit watch organisation, Dun and Bradstreet, and expanded upon by Haswell and Holmes (1989), where a business has stopped trading as a result of the following: (1) assignment or bankruptcy; (2) losses to creditors after execution or foreclosure; (3) voluntarily closed without paying their obligations, or has been involved in court actions; and (4) arriving at a voluntary compromise with creditors.

by two consecutive years of drought, a fall in product demand and the GFC impact which compounded the company's capital structure dilemma and lead to their downfall (Korda et al., 2009).

Factors of failure are obviously varied in the agricultural sector, with some attributed, but not limited to, heavy debt levels, high interest rates, declining profits due to recession and/or adverse environmental events (e.g., drought and floods) (Ooghe and Waeyaert, 2004). The cost of agricultural business failure is significant, with capital suppliers, creditors, investors, employees, management, crops and livestock all affected. Pressure of failure is also felt by those associated with the organization's downfall, such as auditors and advisors. The question remains however: Do reliable failure predictors exist for agricultural firms and if so, can they assist in reducing/averting company failures?

In response, a number of prediction studies have been undertaken since Beaver's (1968) initial work, with the majority of these studies using multiple discriminant analysis or variations thereon in manufacturing/industrial contexts (Charitou, Neophytou and Charalambous, 2004). For instance, accounting studies (Beaver, McNichols and Rhie, 2005; Casey and Bartczak, 1984; Murty and Misra, 2004) have examined cash flow sections of company financials[2] through quantitative modeling to establish causes of failure. Despite this research a number of questions have been raised regarding the restrictive statistical requirements imposed by quantitative models (Ohlson, 1980). In particular, there has been concern with the reliability and accuracy of accounting information being used by the organization, which inevitably compromises the analysis being undertaken (Chuvakhin and Gertmenian, 2003).

Research (Beaver, McNichols and Rhie, 2005; Chakraborty and Sharma, 2007; Charitou, Neophytou and Charalambous, 2004) based upon Altman's financial ratio and artificial neural network analyses have also been undertaken in the area of corporate failure. Nevertheless, the ability of these methods to predict the financial solvency of an organization alone within two years of the company's failure does not appear to be reliable (Charitou, Neophytou and Charalambous, 2004). Also, a number of studies on organizational failure (Cressy, 2006; Crutzen and Van Caillie, 2007; D'Aveni, 1999) have tended to be anecdotal at best, and have listed the symptoms of failure rather than the causes (Altman, 2000; Dambolena and Khoury, 1980; Ooghe and Prijcker, 2008).

Use of financial ratios as a single failure prediction tool in previous research therefore raises a number of concerns, including the observation that comparisons between organizations need to be industry sector specific (as different sectors will have varying acceptable ratios) (Altman, 2000; Madrid-Guijarro, Garcia-Perez-de-Lema and van Auken, 2011). If financial statements are the historical scorecard of the organization, and the organization fails, then this performance indicator may not assist in the prediction of failure in a timely manner.

Financial performance ratios and organizational survival has also been discussed at great length in the agricultural finance literature. For instance, Gunderson, Gloy and Rodgers (2009) show that board size and director compensation of U.S. Farm Credit Associations explain little of the variability in performance ratios such as return on equity (ROE) and return on assets (ROA).

Turvey, Lake, van Duren and Sparling (2000), Keef and Roush (2003) and Sparling and Turvey (2003) use a combination of financial performance measures (i.e., ROE, ROA, share prices, the capital assets pricing model (CAPM) returns, and risk) to examine listed North American food processing firms and find limited support for the notion that high economic value added (EVA) firms create wealth for shareholders. Notably, Keef and Roush (2003, p. 252) claim that "[t]he real success in the adoption of EVA is not found in the resultant number per se. It is found in the collateral benefits resulting from the attempts to increase reported EVA".

Katchova and Enlow (2013) also explore the historical financial performance of publicly-traded U.S. agribusinesses and reveal that agribusinesses outperform the median in a sample of all firms in

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[2] Over the last 30 years there are several matters that have impacted the preparation of financial statements including accounting standards which have a fair value bias, an increase in intangible assets importance and a perceived increase in the amount of discretion in the preparation of financial statements (Beaver, McNichols and Rhie, 2005; Stent, Bradbury and Hooks, 2010).

terms of profitability, liquidity, operating efficiency and market ratios, but demonstrate lower liquidity and debt ratios. Similarly, Russell, Langemeier and Briggeman (2013) investigate the impact of liquidity and solvency on cost efficiency for a sample of Kansas farms and show that liquidity and solvency measures have a significant impact on improving cost efficiency. In an international study, Cabo and Rebelo (2012) evaluate the risk of insolvency as a function of financial indicators for Portuguese agricultural credit co-operatives and find that customer resources growth, transformation ratio, credit overdue, expenses ratio, structural costs, liquidity, indebtedness and financial margin are important determinants in helping to explain why agricultural credit co-operatives fail.

To overcome the reported shortfalls of analyses based on financial indicators, researchers (Smith, 1993; Steyn-Bruwer and Hamman, 2006; Madrid-Guijarro, Garcia-Perez-de-Lema and van Auken, 2011) have also considered non-financial factors in co-determining causes of success or failure. Corporate operations, including changes in senior management (Pfeffer, 1981), board positions (Daily and Dalton, 1995; Daily, Johnson and Dalton, 1999; Moulton and Thomas, 1993), management skill and strategy (D'Aveni, 1999; Mankins and Steele, 2005; Hambrick and D'Aveni, 1992), Chief Executive Officer (CEO) characteristics and personal behaviors (Bertrand and Schoar, 2003; Cadenillas, Cvitanić and Zapatero, 2004; Cronqvist, Makhija and Yonker, 2012; Frank and Goyal, 2009; Graham, Harvey and Pari, 2009; Hackbarth, 2008; Malmendier and Tate, 2005; Malmendier, Tate and Yan, 2010) and environmental factors (Moulton and Thomas, 1993) have been considered when predicting organizational success or failure.

Shukla (2004) suggests that the management of organizations approaching failure may not have the appropriate skill set to deal with the problems besetting the firm, and that the firm may survive if the appropriate managerial skill set is introduced (D'Aveni, 1999; Handy, 2002; Heifetz, Grashow and Linsky, 2009). Continuously monitoring performance is perhaps more important in highly volatile industries, particularly where events outside anyone's control (such as the GFC or environmental events), can render the best plan ineffective. Continuous monitoring can also enable management to develop and deploy effective counter measures when events, even those outside anyone's control, throw plans off course (Ooghe and Waeyaert, 2004). The monitoring process in itself may enable a company to avoid failure if management has the capacity to change direction upon recognition of poor strategy. Of course, if a company is already in a failure spiral then non-recognition of its position could have already occurred, whether being impacted individually or through the combination of non-financial factors of poor systems and management (Sheppard and Chowdhury, 2005).

To ensure a successful organization, the senior management team and the board of directors must have a cohesive and unified function that suites the organization and its life-cycle (Katzenbach and Smith, 2005). As such, the CEO has limited time to achieve goals and needs to possess the relevant skill base for the organization and its position in the life-cycle. For instance, a CEO for a start-up organization needs different skills from the CEO who manages an organization in a mature market. Accordingly, the board would also need to have a different skill set to match the life-cycle of the organization and should complement the CEO's skill set at the time (Shukla, 2004).

Personal behaviors of CEOs can also be valuable in predicting the corporate financial behavior of the firms they manage. Using behavioral consistency theory (i.e., the concept that individuals demonstrate consistent behaviors across various situations) and data associated to CEO leverage in recent home purchases, Cronqvist, Makhija and Yonker (2012) reveal a robust positive economic relationship between corporate and personal leverage. For example, CEOs who do not prefer personal leverage manage firms with significantly less corporate leverage, and vice-versa. This suggests that firms behave consistently with how their CEOs behave in the context of personal leverage choices, particularly when governance is weak. Further, this evidence supports Jensen and Meckling's (1976) work in that CEOs do not always choose debt levels that add firm value.

Research on non-financial factors and firm survival has also received significant attention in the agricultural finance literature. For example, Harling and Quail (1990) claim that managing farm businesses is becoming similar to other types of business and general management principles and decision-making that has been effective for non-farm managers may also prove useful to farm managers. In a multi-country analysis, Howard, Litzenberg, Schneider and Fairnie (1990) investigate

the various skills and attributes managers possess for Agribusiness success in Australia, Canada and U.S. Notably, they show that personal qualities and communication skills ranked the highest, followed by business and economic knowledge, technical, computer and quantitative skills, and experience.

Rosenberg and Cowen (1990) indicate that manager assumptions about worker motivation, regularity of employee performance, feedback, and use of records explained significant variation in U.S. dairy farm operational results; asserting that greater emphasis on organizational and personnel management and strategic planning may improve dairy farm financial performance, as well as that of other agricultural organizations. Additionally Mishra and Morehart (2001) find that farm size, farm organization, level of education, and participation in extension activities are also important factors explaining the ongoing financial success of U.S. dairy farms. Baker and Leidecker (2001) also propose that strategic planning is positively related to the financial performance of the Californian processing tomato industry; finding that tools such as mission statements, long-term goals, and ongoing evaluations are consistently utilized by high-performing firms in the industry.

Using a case-study approach, Escalante and Turvey (2006) find that differentiated start-up conditions for agribusiness and non-agribusiness firms resulted in varied survival strategies. In particular, Escalante and Turvey show that Canadian agribusiness entrepreneurs are prone to execution and skill deficiencies and employ more formal, consultative management styles than their non-agribusiness counterparts. Finally, Mishra, Wilson and Williams (2009) suggest that there is a relationship between age of the operator and financial performance, while increasing the number of decision makers, engaging in value-added activities, and having a business plan can deliver better financial performance for start-up farmers and ranchers in the U.S.

Previous research indicates that a combination of financial statement ratios and non-financial factors may provide the best predictors of failure (Altman 1968; Beaver, McNichols and Rhie, 2005; Hossari, 2006; Shumway, 2001). For example, evidence suggests that internal problems with management and the board are more prominent than environmental or external problems (Filatotchev and Toms, 2006; Lohrke, Bedeian and Palmer, 2004; Hwa-Hsien and Yu-Hsuan, 2010; Purves, 2013). However, given the limited research conducted on non–financial factors in Australia, particularly in the agricultural area, and the perceived importance of such factors, further investigation is warranted.

Therefore, the key motivation of this paper is the identification and combination of non-financial and financial factors which can then be utilized together for the development of an early warning predictor for agricultural organizational failure. Specifically, it aims to provide evidence of factors related to financial success and distress for prominent Australian agricultural firms and improve the predictive capacity of financial failure models by introducing to the agriculture sector the combination of an Integrated Multi-Measured (IMM) approach (Tuvadaratragool, 2012) with non-financial factors. The appropriate theoretical approach for this study is to collate both financial ratios and non-financial factors relevant to business failure prediction, and then examine their influence in an exploratory 'case study' framework. Four Australian Securities Exchange (ASX) listed agricultural companies were chosen for the research; two successful (Australian Agricultural Company Limited and Elders Limited) and two failed (Great Southern Group Limited and Timbercorp Limited). Consequently, with the adoption of a specific industry sector (agriculture), together with the IMM approach and non-financial factors, the paper attempts to improve the predictive capacity of financial failure models. The research question posed is:

'What is the relationship between organizational success or failure and non-financial and financial factors in Australian agricultural firms?'

In response to the research question we further establish two hypotheses:

H$_1$: No advantage is gained from the incorporation of non-financial factors of management experience and expertise, business strategy implementation, or environment in predicting Australian agricultural corporate success or failure.

H$_2$: No advantage is gained from the incorporation of the Integrated Multi-Measured (IMM) approach in predicting Australian agricultural corporate success or failure.

To our knowledge, this is the first study to explore the relationship of non-financial and financial factors to Australian Agricultural firm survival, addressing a noticeable absence in the literature. The paper proceeds as follows: Section 2 discusses the exploratory case study methodology employed; Section 3 presents the exploratory case study results; and Section 4 concludes and identifies opportunities for further research.

2.   Methodology

Organizational success or failure is the end result of the management process which involves the business factors of management, strategy, human resources, and corporate governance (Handy, 2002; Shukla, 2004). Organizational paths to success or failure have no uniform pattern but this study will attempt to search for patterns within the operations of Australian agricultural firms, enabling the research to explore both sides of the equation, that is, success and failure. Although a number of longitudinal methods can be used to observe the process of successful companies, we found these inappropriate for studying the process of failed organizations, since failure is studied after it occurs. Failure also brings with it limitations on access to information and does not capture the dynamic process of failure (Chowdhury, 2002; Hambrick and D'Aveni, 1988). Further, existing management and directors have moved on to other businesses after failure and are difficult to source.

It has been widely accepted by researchers that financial ratios vary across industries and their sectors (Altman and Hotchkiss, 2006; Beaver, 1968; Hossari, 2006). To avoid incorrect interpretation, four Australian agricultural companies were chosen; two successful (Australian Agricultural Company Limited and Elders Limited) and two failed (Great Southern Group Limited and Timbercorp Limited). The two failed companies were chosen because of their failure recognition, (i.e., suspension from trading on the Australian Securities Exchange (ASX)), their coming from the same industry sector and the similar time-frames of their failure.

The successful companies were matched to the failed companies; being from the same industry sector, listed on the ASX at the time of investigation and also being of a similar size in operation and assets. Due to the variance of ratios over different industries it was imperative to match companies in similar industries, thereby enabling the paired companies to be more comparable in terms of their business activities.

Studies employing multi-method design (otherwise known as mixed method design) combine quantitative and qualitative approaches to data analysis (Brannen, 2005). This combination of approaches assists in compensating for the weaknesses of each method, allowing companies to be examined from different perspectives (Jacobs, 2005; Birnberg, Shields and Young, 1990; Gable, 1994). This multiple approach also provides broader and deeper analysis beyond the limitations of a single approach (Pager and Quillian, 2005; Easterby-Smith, Thorpe and Lowe, 1991; Spratt, Walker and Robinson, 2004).

This mixed methods study undertakes an investigation from different perspectives to enable a more comprehensive understanding of the respective case studies. The quantitative analysis undertaken in this study included the use of the emerging market score (EMS) model, comparative ratio analysis and ratio trend analysis, together with a qualitative analysis of non-financial factors. This approach incorporates a combination of sophisticated ratio-based prediction models for business failure with two traditional analytical tools for financial statement analysis, and by inference introduced triangulation to the study. In addition to these quantitative methods, qualitative analysis was also used over the same sample firms and time periods; thereby, developing a richer and comparative analysis of each individual case.

An optimal period of five years has been recognised for any investigation into company failure (Altman, 1968; Hossari, 2006). More frequent data periods over this five year time frame can assist researchers to detect any shifts of an organization towards failure before the end of the accounting period (Coats and Fant, 1993; Dimitras, Zanakis and Zopoundidis, 1996). Consequently, this study

was undertaken over a five year period (January 2004 – December 2008) in half year periods (H_1, H_2, H_3,...H_{10}), thereby reviewing two sets of financials statements per year.

The multiple case study approach was exploratory, sampling logic was not used and the typical criteria regarding sampling size was deemed irrelevant (Eisenhardt, 1989; Yin, 2009). The study was two-tailed, in which cases from both extremes (i.e., successful and failed) were chosen intentionally. This enabled the theoretical replications across subgroups to be complimented by literal replications within each subgroup (Yin, 2009). The cases compared were all designed as embedded case studies, with multiple units of analysis (Yin, 2009). This research design structure enabled the use of a feedback loop via study review, thereby strengthening the positions of data collection and analysis in attempting to address the research hypotheses. Figure 1 summarizes the mixed method research design employed.

[Insert Figure 1]

The specific methods and techniques used in this research are described as follows:

1) data collection for the case studies was undertaken via annual reports, public communications, half yearly financial statements, Australian Securities Investments Commission (ASIC) documents and ASX documents lodged, which included items of general information such as the core organization vision, objectives, and structure;

2) findings that emerged from the initial analysis were used to form the basis of the study review in order to support what had emerged previously from the data analysis;

3) for simplicity and comparability of analysis, non-financial factors (such as age, education, experience, company history, board/management composition and involvement, strategic plans, business plans, training, external communication and regulatory compliance) were grouped together rather than being individually appraised.

4) the latest modified version of the Z-score, the EMS, was employed to determine if financial case factors can be used as a predictor of non-manufacturing organizational failure (Altman and Hotchkiss, 2006). Notwithstanding, that the EMS is normally used for emerging markets, empirical evidence supports its use in sophisticated economies, albeit with a warning that different industries may have varying levels of critical scores in sophisticated economies rather than those applicable in emerging markets for success and failure (Altman and Hotchkiss, 2006; Altman, 2000);

5) the predictive ability of financial information was examined by combining two traditional analytical tools, comparative ratio and ratio trend analysis, along with the EMS model, which has been described as the Integrated Multi-Measured (IMM) approach (Tuvadaratragool, 2012). As such, the IMM results test the power of financial statements to signal failure;

6) in the EMS model, where a company scores below 5.85 it is deemed financially distressed, while above 5.85 it is considered financially healthy;

7) the comparative ratio analysis assigns correct classification when more than 50% of the 16 financial ratios (see Appendix 1) for each pair indicate that the failed firm in a pair is showing signs of relative weakness to its successful company pair; and

8) the ratio trend analysis correct classification occurs when the trend for more than 50% of the 16 ratios indicates a conclusion. That is, when the trends in the majority of financial ratios are less favorable for the failed than for the successful firms.

All three methods results are compared (i.e., EMS, comparative ratio analysis and ratio trend analysis), and if two of the three methods classifies firms as failed or successful prior to the actual event of failure or continued non-failure, then this supports the predictive ability of financial statements. The 16 ratios used in this study were selected based upon their use in previous studies (Tuvadaratragool, 2012). The selected ratios are referred to as common ratios and placed under four financial classifications, namely liquidity, turnover/performance, leverage/solvency and profitability (Brigham and Ehrhardt, 2008; Gibson and Frishkoff, 1986; Palat, 1989). Consequently, the ratio-

based measures used enabled the non-financial factors to be benchmarked against and augment the financial predictors.

3.   Results

The analysis of this multiple case study was undertaken through evaluation and interpretation of information from financial statements and external information pertaining to the organizational structure, management skills and strategy formulation and implementation, involving case write-ups for each company chosen. This approach enabled each individual case study to be a stand-alone entity and allows the unique patterns of each case to emerge before the replication process across cases commenced; thus, facilitating cross-case comparisons.

A summary of the main findings for the <u>successful</u> organizations studied were (see Table 1):
1) the Chairman had industry experience, university industry specific qualifications and tenure with the company prior to appointment as Chairman;
2) the CEO had industry experience,university industry specific qualifications, was operating with a Chief Financial Officer (CFO) and was appointed by the board;
3) the original company founders had no involvement with the company;
4) monthly financial statements were reported against and any indicated action taken;
5) strategic plans were undertaken by management and reported to the board;
6) frequent communication was undertaken by the company and all public documents lodged in a timely manner;
7) The EMS model correctly classified one succesful firm at 44%, while the other successful firm did not receive a correct classification during the time period;
8) Ratio trend analysis correctly classified the successful firms at less than 37.5%;
9) Comparative ratio analysis correctly classified the successful firms at 74%; and
10) The combined IMM method correctly classified the successful firms at 53%.

[Insert Table 1]

A summary of the main findings for the <u>failed</u> organizations studied were (see Table 2):
1) the Chairman had significantly less tenure than the respective Chairman of the successful companies prior to appointment and had no university or industry specific qualifications;
2) the CEO had relatively little industry experience or no industry specific qualifications, and were operating with a CFO who had limited industry experience;
3) a relatively small number of non-executive directors were on the board in comparison to successful companies;
4) the original company founders had some involvement with the company;
5) a relatively smaller board size in comparison to the successful companies;
6) the EMS model correctly classified the failed firms at 79%;
7) ratio trend analysis correctly classified the failed firms at less than 37.5%;
8) comparative ratio analysis correctly classified the failed firms at 74%; and
9) the combined IMM method correctly classified the failed firms at 64%.
[Insert Table 2]

The results reject H_1 and H_2, indicating that there could be a difference in the predictive accuracy using a combination of non-financial and financial factors. The analysis of the case studies suggest clear differences between failed and successful Australian agricultural companies both in the non-financial areas investigated of management, board and strategy, and in the financial data analyzed; which is consistent with previous literature (Filatotchev and Toms, 2006; Lohrke, Bedeian and Palmer, 2004; Hwa-Hsien and Yu-Hsuan, 2010; Purves, 2013).

Management's responsibility for the organization's success or failure was apparent from the case studies examined, with competence and skill being key areas (Handy, 2002). Management's competencies and skills had shown up throughout the cases studied, with impact seen on the other study areas such as human resources and strategy. For instance, management's appropriate skill levels for the company's operation were evident in the number of years they were employed in their respective companies.

Evidence of successful organizations in this study supports the view that the board should set the strategies for the company in consultation with management, and that management should test the robustness of such strategies in order to obtain accountability and ownership of the results. However, even with this process in place, reactivity was not guaranteed, which is consistent with Shukla's (2004) study. It appeared in the cases studied that the level and existence of corporate governance on successful or failed organizations had no major effect upon the successful organization, while in the unsuccessful organizations it was looked upon as an impost without value. We also explored the companies' external environment, that is, its regulatory operating area involving corporate governance, ASIC and ASX document lodgments. Although some of the organizations studied had more than the required number of statutory documents lodged, it appeared that there was little to sustain an argument that a company's success or failure was due to this factor alone.

The successful cases examined in this study showed a well-functioning management team or committee was part of the success factor which may protect companies against failure. While a non-functioning management team had been shown to exist in the failed cases examined and may render companies failure prone. The successful companies showed team factors were operational, confirming the findings of Katzenbach and Smith (2005). Analysis of the failed cases also supports Katzenbach and Smith's study by showing the non-existence of teams in crisis positioned companies, and management that did not have the ability to recognize the company's position of crisis. It was also evident that the failed cases studied supported Shukla's (2004) study in that inertia of the decision making process in failing corporations can lead to missed opportunities, such as a non-response to the company's poor financial ratios indicated prior to failure. Notwithstanding using IMM ratio analysis, the failed cases examined exhibited non-financial failure factors well in advance of the financial factors that were indicated at two and a half years (prior to failure).

The company operations and management skill relationships were not analyzed in detail and this should be an area that requires further examination. Management skill must be able to match the company requirements for the company's phase of development and operational characteristics, such as whether the company is mature or developing, or at another stage of its life. However, specific agriculture industry tertiary qualifications were notably absent in the failed firms' board of directors. In the cases studied, the implementation of a rescue program should have given consideration to review of the organizations management, board composition, planning processes, and management's experience in the Agricultural industry (Handy, 2002; Shukla, 2004). No evidence of any specific rescue programs undertaken by the failed firms was witnessed by this study.

4.   Conclusions

The main aim of this paper was to examine non-financial and financial factors to help predict failure in Australian agricultural firms. The study used mixed methods to examine four companies in the Australian agricultural sector, two successful and two failed. The findings demonstrated that the IMM approach provides a higher classification rate for the failed and successful groups than those provided by an individual measure. This is supported by the literature in that no one individual measure is dominant over the other (Altman, 1993; Altman and Hotchkiss, 2006), and that the IMM approach enables a more thorough examination of the predictive ability of financial statements. This study also showed that non-financial and financial factors have a relationship between organizational success and failure in prominent Australian agricultural firms; thus, rejecting both research hypotheses posed.

During the course of this research it became evident that one cause of failure was inappropriate management quality (Handy, 2002). This may render organizations failure prone and it was notable the extent to which personal characteristics affected the company's performance (Quinn, 2005). We also established that the successful agricultural companies were managed by professional managers and <u>not</u> entrepreneurs, who inherently possess a different risk profile. Entrepreneurs may persuade company's management to have different responses to certain situations dependent upon their respective risk profile. It was further demonstrated that both successful agricultural companies had directors on the board who were <u>not</u> founders of the company and that in review of external information, no high risk projects were undertaken by the respective companies, which may have immunized them against failure.

This research has highlighted that fundamental non-financial success factors for agriculture companies are management's specific industry skill and experience; and previous studies have supported these success factors (Handy, 2002; Purves, 2013; Shukla, 2004). The implication of this research for the Australian agricultural sector is that management must not only have corporate skills and knowledge but also specific industry qualifications and experience. Initially this applies pressure on tertiary educational facilities to supply industry specific accredited courses to fill this gap and start the process in assisting companies to be successful.

We also identified time sensitive relationships between financial and non-financial factors and corporate failure or success. More importantly, our findings have established a platform for further examination and the development of more accurate failure predictors inclusive of non-financial factors across a range of industries. Future research directions could include consideration of the development of a combined non-financial and financial factor early warning predictor of success or failure. As such, the timing of a predictor may become imperative for a company's survival and/or success. This conceptual positioning of an early warning predictor is indicated in Figure 2.

[Insert Figure 2]

Preliminary steps, as documented by Figure 2, should include the development of organizational criteria necessary for an agricultural company to be protected against failure such as certain educational and experience requirements for different levels of management. Future research propositions and questions may center upon more specific components of the company's non-financial factors that were examined in this case study, combined with management's expertise and financial ratio analysis (Shukla, 2004). Such research could also explore the personal behaviors and corporate decision-making of agribusiness CEOs (Cronqvist, Makhija and Yonker, 2012). Nevertheless, increased corporate failure has a cost too high to ignore and the use of an improved predictor of success or failure may reduce the number of organizations being ploughed under.

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Appendix 1.
Financial ratios

Category	Ratio
Liquidity	Current Assets to Current Liabilities[2]
	Quick Ratio[2]
	Working Capital to Total Assets[1, 2]
Turnover/Performance	Sales to Total Assets[2]
	Total Equity to Sales[2]
	Sales to Inventory[2]
Leverage/Solvency	Total Liabilities / Total Assets[2]
	Total Liabilities / Total Equity[2]
	Earnings Before Interest and Tax / Interest[2]
	Total Equity /Total Liabilities[1,2]
Profitability	Earnings Before Interest and Tax / Sales[2]
	Net Interest / Sales[2]
	Earnings Before Interest and Tax / Total Assets[1,2]
	Return On Assets[2]
	Return On Equity[2]
	Retained Earnings / Total Assets[1,2]

Notes:
[1] Ratios used in EMS calculations.
[2] Ratios used in ratio trend analysis, comparative ratio analysis and IMM.

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Table 1.

Non-financial factors for Australian agricultural firms

|	AAC Success	ELD Success	GTP Fail	TIM Fail
Chairman industry experience over 20 years	✓	✓	✗	✗
Chairman's age over 50 years	✓	✓	✓	✓
CEO board appointed	✓	✓	✗	✗
Board members at least 70% non-executive	✓	✓	✗	✓
Company founders not involved in management	✓	✓	✗	✓
Board numbers greater than 8	✓	✓	✗	✗
CEO industry experience over 20 years	✓	✓	✗	✗
CEO's age over 50 years	✓	✓	✗	✗
CFO industry experience over 10 years	✓	✓	✗	✗
Strategic plan reported on	✓	✓	✓	✓
Actions taken on strategic plan	✓	✓	✗	✗
Business plan reported on monthly	✓	✓	✓	✓
Staff training available	✓	✓	✓	✓
Company external communication	✓	✓	✓	✓
Timely document lodgment to public authorities	✓	✓	✓	✓
No ASIC Investigation	✓	✓	✗	✗
Matrix Key Yes Count✓	16	16	6	8
No Count✗	0	0	10	8

Notes: AAC = Australian Agricultural Company Limited; ELD = Elders; GTP = Great Southern Group; and TIM = Timbercorp.

Table 2.

Classifications of failure and success for Australian agricultural firms using the IMM approach

Failed Firm	Measure	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
GTP	Comparative		Incorrect	Correct	Incorrect	Correct	Correct	Correct	Correct	Correct	Correct
	EMS		Incorrect	Correct	Incorrect	Correct	Correct	Correct	Correct	Correct	Correct
	Data Trend	Incorrect	Incorrect	Correct	Correct	Incorrect	Incorrect	Correct	Incorrect		
TIM	Comparative	Correct	Correct	Correct	Incorrect	Correct	Incorrect	Incorrect	Correct	Correct	Correct
	EMS	Incorrect	Correct	Correct	Correct	Correct	Correct	Correct	Correct	Correct	Correct
	Data Trend	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect	Correct	Correct	Incorrect	Correct	

- Green: correct classification
- Blue: Incorrect classification

Non-Failed	Measure	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
AACO	Comparative		Incorrect	Correct	Incorrect	Correct	Correct	Correct	Correct	Correct	Correct
	EMS		Correct	Correct	Correct	Correct	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect
	Data Trend	Correct	Correct	Incorrect	Correct	Correct	Incorrect	Correct	Correct		
ELD	Comparative	Correct	Correct	Correct	Correct	Correct	Incorrect	Incorrect	Correct	Correct	Correct
	EMS	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect	Incorrect
	Data Trend	Correct	Correct	Correct	Correct	Correct	Incorrect	Incorrect	Correct	Incorrect	

- Green: correct classification
- Blue: Incorrect classification

	Failed Firms	Non-Failed Firms
IMM Approach	64%	53%

Notes: The time periods used in the above calculations have been broken into six monthly reporting time periods. For example, H10 is the six month period immediately prior to failure.
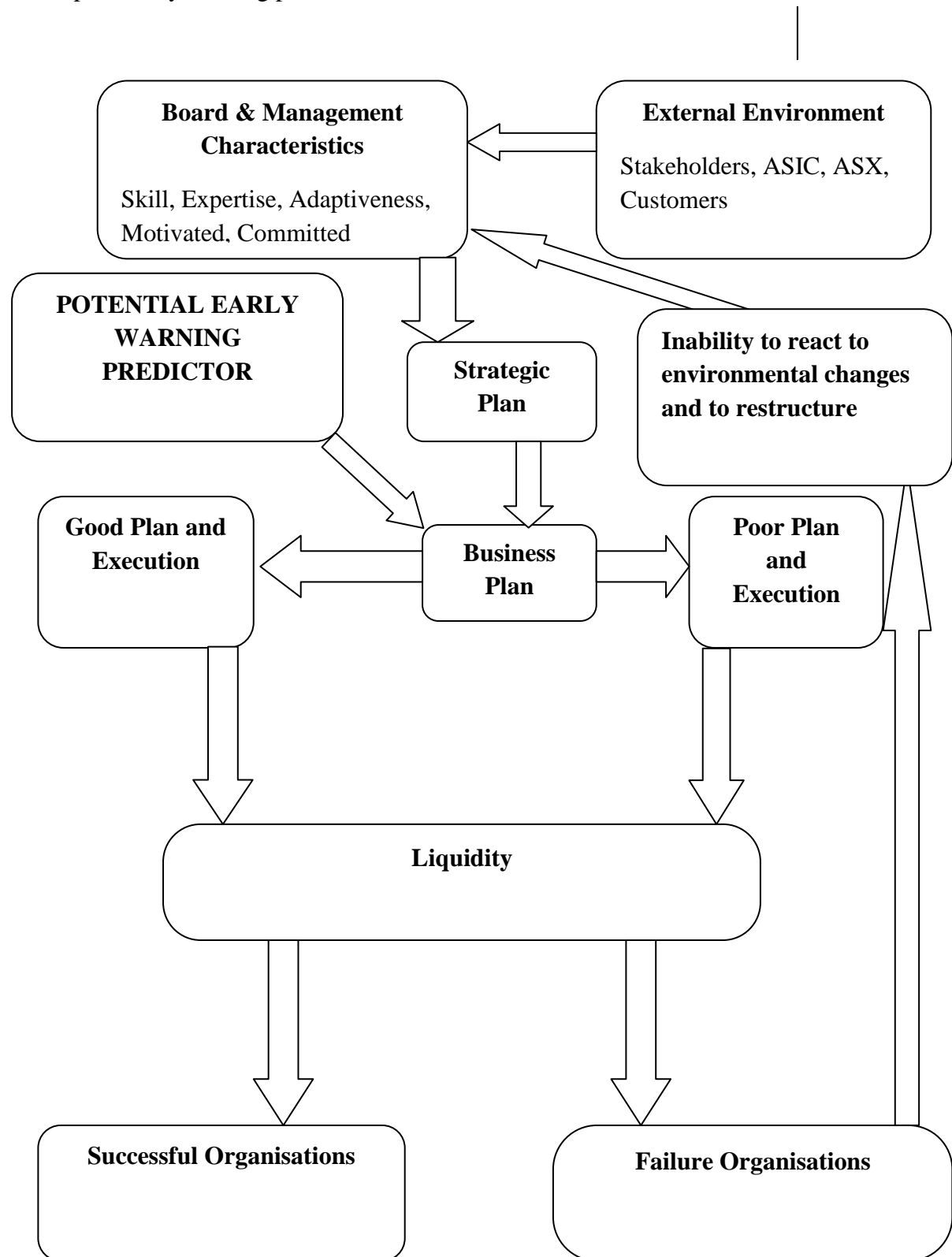
Figure 1.

Research design illustrating data collected, quantitative processes undertaken and feed-back loop
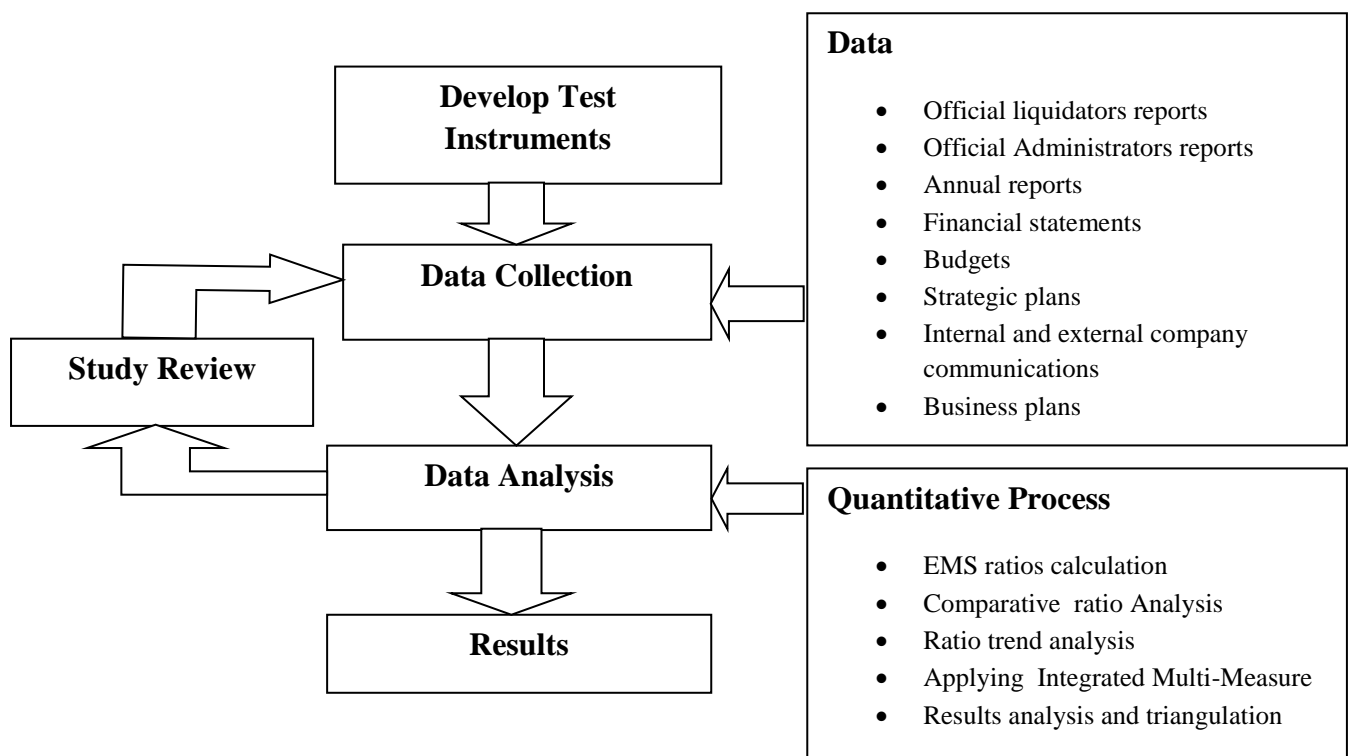
Source: Authors

Figure 2.
Conceptual early warning predictor of success or failure