Financial Management and Dairy Farmer Satisfaction with Performance

Dr Jennifer L. Harrison
Lecturer
Division of Business,
Southern Cross University
Tweed/Gold Coast Campus
PO Box 42
Tweed Heads NSW 2485
Australia

Telephone: [61-7] 5506 9324
Facsimile: [61-7] 5506 9301
E-mail: jharriso@scu.edu.au

ISSN 1816-2495
www.ifmaonline.org

Financial Management and Dairy Farmer Satisfaction with Performance

Abstract

This paper reports on a study aimed at identifying financial management practices important in explaining farmer satisfaction with their business performance in the dairy farming industry in the state of New South Wales (NSW), Australia. Principal components analysis was performed on survey data from 204 NSW dairy farming businesses measuring the extent to which a wide variety of financial management practices were undertaken. This analysis identified five financial management dimensions: appraisal practices, environmental accounting, budgeting, aid use and analysis practices. Regression analysis, including control variables, indicated that greater emphasis on financial management was associated with greater satisfaction with business performance. Appraisal practices, including calculating the payback period for investments and assessing the relevant costs and benefits of decision alternatives, were found to be particularly important in explaining satisfaction. The emerging techniques of environmental accounting were also found to have a unique relationship with farmer satisfaction. The findings provide further support for prescriptions in the literature that farmers should invest time and effort into financial management.

Introduction

The farm management literature has been described as ‘long on theory and prescription but short on descriptions of how farmers actually manage their businesses’ (Gasson 1989, p. 127). This comment still applies to the area of financial management. Knowledge about the financial management practices of farmers and the benefits of these practices is limited and heavily reliant on anecdotal evidence. However, it is an important topic for farm business management practitioners. This is illustrated clearly by the results of a recent study of 200 Australian family farm

ISSN 1816-2495
www.ifmaonline.org

businesses in which farmers ranked financial knowledge as the number one skill they required for changing current practices (Bone et al. 2003). These farmers, and their advisors, would gain from research indicating which financial management practices might be most beneficial. Therefore, the study reported in this paper aimed to identify financial management practices positively associated with farmer satisfaction with their business performance.

The focus of the study is dairy farms in New South Wales (NSW), Australia. Around 91% of Australian dairy farm businesses are classified as small (Australian Bureau of Statistics 2001) and 99% of all Australian broadacre and dairy farms are owned and operated by individuals or families (ABARE 2002). Industry deregulation and a general trend towards fewer, larger farms with increasing production efficiency have put pressure on dairy farm businesses to either grow or exit the industry (Davidson 2001). However, a study by Davey and Nettle (1997), based on 10 dairy farms in Tasmania over a six-year period, suggests that success (in terms of increased profit, net worth and personal satisfaction) from expansion is not assured. What seems to be required is a concomitant focus on business management, with Davey and Nettle (1997) suggesting expansion should be guided by more relevant management accounting and careful budgeting. Given the challenges facing the dairy farming industry in Australia, further investigation of the potential benefits of financial management practices is warranted.

Previous Studies

A limited number of studies have investigated the financial performance benefits of financial management in farm businesses but, as in the broader small business management literature (see, for example, McMahon & Davies 1994; Nayak & Greenfield 1994; McMahon 2001; Zaman & Gadenne 2002), the evidence is somewhat mixed. This is evident, for example, in the results of a series of studies of U.S. farms undertaken by Mishra and colleagues (Mishra, El-Osta & Johnson 1999; Mishra, El-Osta & Steele 1999; Mishra & Morehart 2001). Each study looked at a broad range of factors thought to affect farm financial performance and each included a dichotomous measure of keeping books or records on farm income and expenditure.

Each study expected a positive association between this variable and various measures of financial performance, including returns to operators' labour and management in dollars and net farm income. Mishra, El-Osta & Steele (1999) argue that keeping good financial records helps allocate resources more effectively, increasing efficiency and hence profitability. Support for this was found in Mishra, El-Osta & Johnson's (1999) study of cash grain farms but there was no apparent beneficial impact uncovered in Mishra, El-Osta & Steele's (1999) study of limited resource and other small farms or in Mishra and Morehart's (2001) study of dairy farms. However, record-keeping is only one of a large number of financial management practices and dichotomous measurement of record-keeping is of limited usefulness.

Rather than focusing on the financial management practices undertaken, Jackson-Smith, Trechter and Splett (2004) examined the link between financial management training and knowledge and dairy farm financial performance. Their results found no evidence of a link in the case of simple exposure to such training but a weak positive association was found between financial performance and the application of financial management knowledge in the form of production cost calculation. This provides some support for the benefits of financial management.

The most comprehensive study to date of the farm financial performance impacts of financial management was undertaken by Gloy and LaDue (2003). This study of New York dairy farms found that the adoption of investment analysis techniques was associated with higher return on assets. Investment analysis techniques were measured using two variables, both dichotomous. One considered whether respondents used either the payback period, projected cash flow or discounted cash flow techniques (such as net present value and internal rate of return) to evaluate major expansions. The other considered whether a detailed profitability analysis was undertaken for a major capital investment. Both were associated with higher return on assets. However, Gloy and LaDue (2003) found no evidence to support an association between return on assets and the use of either benchmarking or trend analysis. Thus the evidence from this study is also mixed.

The studies discussed above have focused on financial performance. However, research indicates that farmers do not solely aim to maximise profits, as might be implied from the basic assumption of many economic theories and models. Various

lifestyle, social and environmental objectives, which may be broadly defined as non-economic objectives, are also common amongst farmers (see, for example, Gasson 1973; Kerridge 1978; Schroeder et al. 1985; Coughenour & Swanson 1988; Olsson 1988; Fairweather & Keating 1994; DRDC 1995; McGregor et al. 1995; Bone et al. 2003). Therefore, this study takes a broader view than previous studies by considering farmers' satisfaction with their business's performance on a number of non-economic as well as economic objectives.

Sample and Data Collection

Data was collected from self-administered questionnaires, distributed to all members of the NSW Dairy Farmers' Association via the Association's monthly publication. A reminder was included in the following monthly edition of the publication and local branch secretaries were contacted to seek their support for follow up at branch meetings.

A total of 204 useable responses were received, representing a response rate of 14%. This rate can only be considered crude and a minimum because the distribution method did not allow adjustment for ineligibles and other factors. However, to explore the implications of this response rate, the possibility of non-response bias was assessed by comparing initial and late responders (Armstrong & Overton 1977) and by comparing the demographics of respondents with those of NSW dairy farms reported in secondary sources. The sample was found to over-represent intensive dairy farms in southern NSW where average milk production per farm and herd size is higher than state averages. These farms also made up a large proportion of initial responses. However, analysis indicated that there were no significant differences between regional groups or initial and late responders on other key variables and items reported in this paper.

Table I presents characteristics of the respondents and their farms. The average age of respondents was 46 years and on average they had been operating a dairy farm for 22 years. The mean herd size was 165 cows and the mean farm area used for agricultural production was 189 hectares. Annual milk production per cow averaged 5,455 litres.

Table I Characteristics of Respondents and Their Farms

	Mean	Std. Dev.	*n*
Age (years)	46.3	11.3	204
Years operating a dairy farm	22.3	13.1	202
Herd size (cows)	164.9	91.3	191
Annual milk production per cow (litres)	5,454.8	1,518.8	177
Farm area used for production (hectares)	188.8	120.2	197
Size of farm management team (no. of people)	2.5	0.9	202
Dairy income (% of family income)	92.7	14.6	203

Around half of the farms had a farm management team consisting of two people, reflecting the small, family-oriented nature of most businesses in the industry. Most of the family's income came from dairying, rather than other agricultural activities or off-farm work. Income from dairying represented at least 90% of all family income for around 85% of respondents and 55% of respondents relied entirely on dairying income. Only 15% of respondents received any income from other agricultural enterprises on the farm and only 12% from off-farm, non-agricultural work. The heavy reliance on a single source of income by many dairying families, reflected in these figures, highlights the importance of research investigating ways to sustain or increase this income.

Financial Management Practices

Respondents were asked to indicate the extent to which they undertook each of 24 financial management activities, measured on an 11-point numerical scale where '0' was anchored with 'not done at all' and '10' with 'done very diligently'. The 24 items are presented in the Appendix. Items were chosen after an extensive examination of the literature, expert review by three academics and two dairy industry professionals, and pre-tests with eight farmers.

The item set does not cover every conceivable aspect of financial management. Rather, the focus is on activities that minimise necessary prior assumptions about the structure and resources of businesses in the population of interest. In addition, the item set de-emphasises formal financial management (for example, preparation of formal historical financial statements) because, as Nayak and Greenfield (1994) suggest, formality may not be as necessary in a small business as in larger businesses where other parties must be kept informed. The resulting item set includes activities from most of the major classifications in McMahon and Holmes' (1992) taxonomy of small business financial management practices. Table II includes descriptive statistics for the 24 financial management items.

As can be seen from Table II, written cash budgeting was more commonly undertaken than the other forms of budgeting, particularly balance sheet budgeting, which 40% of respondents reported not engaging in at all. This is to be expected, since proforma balance sheets may not be as important as a cash or income budget. Similarly, relevant cost/benefit analyses of minor and major decisions were also undertaken by a larger proportion of farmers than accounting-based budgeting. Notwithstanding this, a large proportion of farmers (between 60 and 74 per cent) still undertook some form of budgeting to at least some extent.

Nearly all respondents reported keeping summary financial records, comparing current to past financials and tax planning with an accountant. The proportion of farmers comparing current to past financials is in line with previous studies in the UK agricultural sector (Gasson 1989; Sealy & Warren 1994). Ninety per cent of respondents reported seeking financial advice from an accountant or other advisor when considering major farm, investment or borrowing changes and this is in line with other evidence from Australia and New Zealand (Delany & Johnson 1997; Popoff & Perry 1991). However, it is worrying that 10% of respondents claimed that they do not seek any such advice. Unless the specialised skills required to analyse such changes are to be found within the farm management team, it is suggested that seeking outside specialist advice is an important financial management strategy in a small firm (Meredith 1985).

Table II Descriptive Statistics for the Financial Management Items

Items (Question No. – see Appendix)	% undertaking	% not undertaking	Mean
Long-term financial goals (1)	86.8	13.2	6.37
Short-term financial targets (2)	91.6	8.4	7.61
Summary financial records (3)	97.5	2.5	9.39
Compare current to past financials (4)	93.6	6.4	8.18
Cash budget (5)	74.0	26.0	5.92
Compare cash budget to actual (6)	70.6	29.4	5.62
P&L budget (7)	65.3	34.7	4.96
Balance sheet budget (8)	60.1	39.9	4.28
Financial sensitivity analysis (9)	72.9	27.1	5.14
Inter-firm comparisons (10)	78.3	21.7	6.02
Finance analysis (borrow /invest) (11)	75.9	24.1	5.53
Ratio analysis (12)	73.6	26.4	5.51
Contribution margin analysis (13)	74.8	25.2	5.80
Computer use (14)	60.3	39.7	5.68
Taxation planning with accountant (15)	93.6	6.4	8.33
Financial advice for major decisions (16)	89.7	10.3	8.32
Relevant cost/benefit analysis (major) (17a)	92.2	7.8	7.36
Cost/benefit sensitivity analysis (17b)	84.3	15.7	6.45
Payback period calculation (17c)	92.6	7.4	8.18
Relevant cost/benefit analysis (minor) (18)	88.2	11.8	6.58
NRP^ expenditure monitoring (19)	86.6	13.4	6.35
Value of lost production from NRPs^ (20a)	69.0	31.0	4.53
Value vegetation/wildlife benefits (20b)	51.3	48.7	3.20
Land valuations related to NRPs^ (20c)	59.1	40.9	4.01

^ natural resource problem

Scale: 0 = Not done at all; 10 = Done very diligently

'% not undertaking' is based on those scoring 0; '% undertaking' is based on scores of 1 to 10

n ranges from 193 to 204 due to missing values on some items.

Table II also indicates, as expected, that a large percentage of respondents do not undertake the more complex environmental accounting activities. This is likely to be

due to their complexity and also because they are relatively new and developing techniques.

Principal Components Analysis

Principal components analysis was utilised to reduce the number of variables and to discover groups of interrelated financial management items. Five components with eigenvalues greater than one were extracted, accounting for 66% of variance. Examination of the scree plot similarly suggested five components. Rotation using direct oblimin showed that several components had correlations greater than 0.30, indicating that an oblique rotation was appropriate. Table III presents the component loadings from the pattern matrix. Two items, summary financial records (Q3) and comparison of current to past financials (Q4), had factor loadings less than the suggested 0.40 cut-off for significance given a sample size of 200 (Hair et al, 1998). Therefore, these two items were not used in further analysis but it is worth noting that their highest loadings were with other items reflecting similar aspects of financial management. Of the remaining items, highest loadings are shown in bold to clearly indicate each component. Table III also shows the internal consistency reliability for each component, measured using Cronbach's alpha coefficient and based on emboldened items only. Four of the components had very satisfactory alpha coefficients above 0.80. Component 4 had a lower but acceptable alpha.

From examination of the common elements of items loading onto each component, the five components were described as:

Component 1: *Appraisal* – investment and contingency appraisal activities, geared towards the long term.

Component 2: *Environmental Accounting* – activities dealing with the evaluation of the financial impacts of natural resource problems.

Component 3: *Budgeting* – activities dealing with the preparation and use of future-oriented financial statements and target setting.

Component 4: *Aid use* – activities involving the use of financial management aids (support systems).

Component 5: *Analysis* – activities of an ongoing or regular nature oriented towards monitoring the financial situation of the business.

Table III Financial Management Principal Components Analysis: Rotated Loadings[a]

	Components				
Items (Question No. – see Appendix)	**1**	**2**	**3**	**4**	**5**
Payback period calculation (17c)	**0.830**	0.010	0.058	0.112	0.050
Cost/benefit sensitivity analysis (17b)	**0.741**	0.105	-0.040	-0.006	0.160
Relevant cost/benefit analysis (major) (17a)	**0.707**	-0.047	-0.140	0.131	0.092
Relevant cost/benefit analysis (minor) (18)	**0.706**	0.066	0.036	-0.005	0.172
Long-term financial goals (1)	**0.502**	0.038	-0.368	0.018	0.023
Financial sensitivity analysis (9)	**0.475**	0.150	-0.343	-0.122	0.139
Land valuations related to NRPs (20c)	-0.016	**0.893**	-0.092	0.002	-0.081
Value vegetation/wildlife benefits (20b)	-0.128	**0.877**	-0.016	0.004	0.031
Value of lost production from NRPs (20a)	0.082	**0.763**	-0.018	0.028	0.033
NRP expenditure monitoring (19)	0.233	**0.433**	0.131	0.115	0.233
Cash budget (5)	0.016	-0.003	**-0.906**	0.056	-0.034
P&L budget (7)	-0.023	0.022	**-0.905**	0.009	0.028
Compare cash budget to actual (6)	0.098	-0.029	**-0.837**	-0.005	0.087
Balance sheet budget (8)	0.005	0.162	**-0.774**	-0.099	0.079
Short-term financial targets (2)	0.389	0.060	**-0.418**	0.176	-0.094
Financial advice for major decisions (16)	0.155	0.068	0.067	**0.862**	-0.106
Taxation planning with accountant (15)	0.103	0.039	0.072	**0.847**	-0.029
Computer use (14)	-0.288	0.011	-0.202	**0.533**	0.216
Summary financial records (3)	-0.086	-0.157	-0.267	0.334	0.219
Ratio analysis (12)	-0.006	0.006	0.002	-0.048	**0.878**
Inter-firm comparisons (10)	0.125	-0.022	-0.004	-0.018	**0.772**
Contribution margin analysis (13)	0.103	0.055	0.014	-0.059	**0.752**
Finance analysis (borrow /invest) (11)	-0.035	0.088	-0.076	0.078	**0.699**
Compare current to past financials (4)	0.240	-0.081	-0.106	0.271	0.390
Cronbach's alpha coefficient	***0.89***	***0.80***	***0.90***	***0.67***	***0.84***

[a] Kaiser-Meyer-Olkin measure of sampling adequacy = 0.900

The grouping of items into these components fits with conceptual expectations as they are generally in line with major classifications in McMahon and Holmes' (1992) taxonomy of small business financial management practices and expectations relating to the grouping of environmental accounting practices. An exception relates to component 4. This component includes two financial advice items and the computer use item. The former two items were expected to be more closely related to appraisal activities given their longer term planning nature. However, their inclusion with computer use is interpretable as the use of financial management aids or support systems.

In order to represent these dimensions of financial management and to reduce measurement error, averaged scales based on the emboldened items were used in the analysis that follows (Hair et al. 1998). Respondent scores for each component were calculated as the mean of item scores.

Regression Analysis

An index of satisfaction with business performance was developed based on Kotey and Merideth's (1997) instrument. Respondents were first asked to rate the degree of importance they attached to each of eight objectives on a scale of 0 to 10, with anchors being, respectively, 'not at all important' and 'extremely important'. The eight objectives were high volume, high product quality, high profit, low cost of production, conservation of natural resources, business growth, contribution to the community and high quality of lifestyle. Respondents' level of satisfaction with their performance on each of these same eight items was then measured on a 0 to 10 scale with anchors being 'very dissatisfied' and 'very satisfied', respectively. In order to reflect the differing importance attached to the various objectives, the satisfaction score on each item for each respondent was weighted by the importance score. The scales were recoded from 0 – 10 to 1 – 11 prior to undertaking this weighting procedure. Consistent with previous use of this instrument, an index was constructed from these importance-weighted satisfaction scores, computed as the mean of the summed weighted item scores. This index was used as the dependent variable in the regression analysis. Cronbach's alpha for this scale was 0.80.

Previous research has indicated that factors such as farm scale and herd productivity are determinants of farm performance (El-Osta & Johnson 1998; Mishra & Morehart 2001; Jackson-Smith, Trechter & Splett 2004) and so may in turn influence satisfaction with performance. Therefore, two control variables representing these factors were included in the regression: herd size (with logarithmic transformation) and annual milk production per cow (in litres). A third variable, age (in years), was also included in line with Gloy and LaDue (2003) to capture stage of life.

Table IV summarises the results of the ordinary least squares regression analysis. The F-statistic for the regression was significant ($F = 6.608$; $df = 8, 165$; $p < 0.001$). In the table, emboldened variables have significant coefficients at or below the 0.10 level.

Table IV Regression of Satisfaction with Business Performance on the Control and Financial Management Variables

Independent Variable	Unstandardised Coefficient	Standardised Coefficient	*t*-Statistic	Prob. Value
Herd size (log)	-6.627	-0.078	-1.071	0.286
Annual milk per cow	**0.001**	**0.125**	**1.777**	**0.077**
Age	**0.406**	**0.257**	**3.634**	**< 0.001**
Aid use	0.831	0.125	1.569	0.119
Analysis	-0.616	-0.100	-1.050	0.295
Appraisal	**2.419**	**0.345**	**3.560**	**< 0.001**
Budgeting	-0.230	-0.039	-0.429	0.668
Environmental accounting	**1.242**	**0.171**	**2.144**	**0.033**

$R^2 = 0.243$ Adjusted $R^2 = 0.206$
$F(8, 165) = 6.608$, $p < .0001$

The coefficient for herd size was not significant indicating that it had no marginal effect on farmer satisfaction with business performance. This is surprising given the pressures on farmers to increase herd size in order to maintain viability (Davidson 2001). The results here suggest that increasing herd size does not increase farmer satisfaction. The coefficient for annual milk per cow was significant at the 0.10 level

and its sign was positive as expected, indicating that improved herd productivity increases farmer satisfaction with business performance.

The coefficient for age was significant at the 0.05 level and it indicates that, on average, older farmers are more satisfied with their business performance than younger farmers. This could be related to more experience amongst older farmers and also a stage of life with more discretionary income.

Of the five financial management variables, two had significant (at the 0.05 level) coefficients – appraisal and environmental accounting. Both had a positive association with satisfaction, suggesting that the more diligence with which the relevant financial management activities were undertaken, the higher was satisfaction with the dairy farm business's performance. Although the three remaining financial management dimensions – aid use, analysis and budgeting – had significant bivariate correlations with satisfaction (analysis not reported), their coefficients in the regression were not significant, suggesting that there is no marginal influence on satisfaction to be gained from engaging in these activities more diligently. This finding is discussed further in the next section.

It may be noted that all components of financial management were positively correlated with each other, suggesting that those who undertake one set of activities are likely to undertake other sets. Statistics, however, showed no evidence of high collinearity, with the highest variance inflation factor (VIF) being two.

Conclusions and Implications

The results of this study of dairy farms in NSW indicate that greater diligence in some aspects of financial management is associated with greater farmer satisfaction with their business performance. This provides some evidence to support the argument that more comprehensive financial management is beneficial for farmers. The interrelatedness of the dimensions of financial management suggests that those who undertake one set of activities tend to also engage in the others to a similar extent, completing the whole financial management practice package. However, the results

suggest that appraisal and environmental accounting activities may require special emphasis amongst dairy farmers.

The positive association between appraisal and satisfaction is in line with and extends previous findings by Gloy and LaDue (2003, p.173), who found that "the greatest returns to financial management practices appear to be generated in the investment analysis/decision-making area". The reason for the more unique relationship between appraisal and satisfaction may be because actions implemented as a result of appraisal would usually result in major adjustments to current operations (e.g. purchase of new machinery, expanding the dairy) and require substantial financial resources. Inadequate evaluation of the financial implications of these changes may lead to sub-optimal decisions that have substantial negative impacts on business performance and, in turn, satisfaction. Getting these major adjustments right, on the other hand, will result in substantial positive impacts. However, the results should be interpreted with some caution because of the cross-sectional nature of the data. Alternative explanations are possible. For example, it could be argued that better performing businesses (and hence more satisfied farmers) may be in a better position to actually consider major, long-term investments and other changes or additions to operations. Farmers not satisfied with their achievements may not be willing to take a long-term view of their business, perhaps because they are focussed on the short-term, experiencing financial or other stress, or considering leaving the industry altogether. Further research, based on longitudinal data, is needed to investigate these alternative explanations.

Unlike appraisal activities, analysis activities relate to on-going financial performance monitoring through ratio and finance analysis, inter-firm comparisons and the comparison of current results to those in the past. Any actions that are implemented as a result of such monitoring may require only minor adjustments to current operations and so have little marginal impact on performance. A similar argument could be made for budgeting activities.

It is, however, somewhat surprising that aid use was not more clearly related to satisfaction, since it would be expected that professional advisors would also assist in the analysis of major investment decisions. The aid use measure had lower reliability than measures of the other components and therefore measurement error could have

resulted in attenuation in the coefficient. Since the aid use coefficient in the multiple regression was close to significance (being 0.12) further investigation seems warranted. Future research could consider further development and validation of the aid use measure, perhaps extending it by the addition of other potentially relevant items such as employment of internal accounting support staff.

The analysis also suggested that environmental accounting is uniquely related to farmer's satisfaction with performance. Environmental accounting activities involve the evaluation of the financial impacts of natural resource problems (weed infestation, water contamination, erosion, salinity etc) and any actions aimed at alleviating these problems taken as a result of evaluation may provide net economic and environmental benefits over very long time frames. However, there may also be satisfaction in terms of conserving and improving natural resources and contributing to a community that values environmental amenity. Some financial benefits may be also be realised in the shorter term. Evaluation techniques in this area have only begun to gain more widespread consideration in the agricultural sector (Gannon 1996) and their impact on business performance may not yet be fully realised, suggesting research should investigate this class of financial management activities further in the future. The findings of this study for this important emerging area are, however, very encouraging and provide policy makers and farm advisors with some preliminary evidence to help promote farmer uptake of these environmental accounting techniques.

It should be stressed that this study indicates that farmers satisfied with their business performance are engaging more actively in financial management activities but does not directly assert that better financial performance results. This is not a weakness of the study; indeed one of its strengths is that it takes a more holistic view. Other studies outlined earlier have found a direct link between financial performance and certain aspects of financial management. The present study sought to extend those studies by considering a broader range of farmer goals in assessing the potential outcomes of a wider range of financial management practices. Although recognising the essential role of profitability, Fairweather and Keating (1994, p. 197) found in their study of New Zealand farmers' goals that "profitability was a means to an end which was primarily non-economic: being the best, finding a balance, living close to nature". Thus, it is how financial management might help achieve these "softer" ends in the sense of a triple bottom line that this study sought to explore. It did so by using

satisfaction with business performance as an indicator of the quality of that performance. This is similar to the way social scientists measure job satisfaction as an indicator of job quality (Coughenour & Swanson 1988).

With this in mind, it is worth considering what policy makers, farm advisors, financial educators and farmers themselves can do with the results of this study. Firstly, the results suggest that more financial management education for farmers may be beneficial, especially education related to appraising long-term investments and analysing the financial effects of environmental activities. Secondly, some farmers may perceive financial education and practice as more relevant to the vigorous pursuit of financial goals but the results of this study suggest that benefits may also be linked to broader goals such as connection to the land and community. The implications of this are that a wider farmer audience may be encouraged to benefit from financial management education and practice and that financial education programs can be tailored in a way that emphasises broader goals of the farmer. For example, farmers who emphasise environmental goals (Fairweather and Keating's (1994) 'environmentalists') can be encouraged to learn and practice environmental accounting for the satisfaction it will provide in terms of achieving both environmental and financial goals.

References

ABARE (2002) Australian Farm Surveys Report 2002, Canberra.

Australian Bureau of Statistics (2001) Small Business in Australia, cat. no. 1321.0, AGPS, Canberra.

Armstrong, J.S. & Overton, T.S. (1977) Estimating Nonresponse Bias in Mail Surveys, Journal of Marketing Research, Vol. 14, pp. 396-402.

Bone, Z., Henry, E., Hunt, E. & Sefton, C. (2003) Attitudes and Family Farm Business Performance, Proceedings of the 14th International Farm Management Congress, 10-15 August, Perth, Western Australia.

Coughenour, C.M. & Swanson, L.E. (1988) Rewards, Values, and Satisfaction with Farm Work', Rural Sociology, Vol. 53, No. 4, pp. 442-459.

Dairy Research and Development Corporation (DRDC) (1995) A Sociological Research Study into the Characteristics of Growing Dairy Businesses, DRDC, Sydney.

Davey, L. & Nettle, R. (1997) Economic and Social Implications of Dairy Farm Expansion in Tasmania, DRDC, October.

Davidson, A.P. (2001) Dairy Deregulation and the Demise of Dairying in New South Wales, Rural Society, Vol. 11, No. 1, pp. 23-37.

Delany, T. & Johnson, R. (1997) Rural Accounting Services: The Client's Perspective, Australian Accountant, Vol. 67, No. 3, pp. 42-44.

El-Osta, H.S. & Johnson, J.D. (1998), Determinants of Financial Performance of Commercial Dairy Farms, Department of Agriculture ERS Technical Bulletin No. 1859, Washington DC.

Fairweather, J.R. & Keating, N.C. (1994) Goals and Management Styles of New Zealand Farmers, Agricultural Systems, Vol. 44, pp. 181-200.

Gannon, J. (1996) Environmental Accounting in an Agricultural Context, Social and Environmental Accounting, Vol. 16, No. 2, pp. 2-5.

Gasson, R. (1973) Goals and Values of Farmers, Journal of Agricultural Economics, Vol. 24, No. 3, pp. 521-542

Gasson, R. (1989) Controlling the Farm Business: A Survey of Management Practice, Farm Management, Vol. 7, No. 3, pp. 127-138.

Gloy, B.A. & LaDue, E.L. (2003) Financial Management Practices and Farm Profitability, Agricultural Finance Review, Vol. 63, No. 2, pp. 157-174.

Hair, J.F., Anderson, R. E., Tatham, R.L. & Black, W.C. (1998) Multivariate Data Analysis, 5th edn, Prentice Hall, Upper Saddle River, NJ.

Jackson-Smith, D., Trechter, D. & Splett, N. (2004) The Contribution of Financial Management Training and Knowledge to Dairy Farm Financial Performance, Review of Agricultural Economics, Vol. 26, No. 1, pp. 132-147.

Kerridge, K.W. (1978) Value Orientations and Farmer Behaviour – An Exploratory Study, Quarterly Review of Agricultural Economics, Vol. 31, No. 1, pp. 61-72.

Kotey, B. & Meredith, G.G. (1997) Relationships Among Owner/Manager Personal Values, Business Strategies and Enterprise Performance, Journal of Small Business Management, Vol. 35, No. 2, pp. 37-64.

McGregor, M., Willcok, J., Dent, B., Deary, I., Sutherland, A., Gibson, G., Morgan, O. & Grieve, B. (1995) Edinburgh Study of Decision Making on Farms: Links Between Psychological Factors and Farmer Decision Making, Proceedings of the 10th International Farm Management Congress, University of Reading, UK, International Farm Management Association, July.

McMahon, R.G.P. (2001) Business Growth and Performance and the Financial Reporting Practices of Australian Manufacturing SMEs, Journal of Small Business Management, Vol. 39, No. 2, pp. 152-164 .

McMahon, R.G.P. & Davies, S. (1994) Financial Reporting and Analysis Practices in Small Enterprises: Their Association with Growth Rate and Financial Performance, Journal of Small Business Management, Vol. 32, No. 1, pp. 9-17.

McMahon, R. & Holmes, S. (1992) Small Business Financial Management: An International Review of Practice, Accounting Forum, Vol. 16, No. 3, pp. 73-95.

Meredith, G. (1985) Farm Management Revisited: The Accounting Practice as a Client Resource Centre, Australian Accountant, Vol. 55, No. 6, pp. 43-46.

Mishra, A.K., El-Osta, H.S. & Johnson, J.D. (1999) Factors Contributing to Earnings Success of Cash Grain Farms, Journal of Agricultural and Applied Economics, Vol. 13, No. 3, pp. 623-637.

Mishra, A.K., El-Osta, H.S. & Steele, C.J. (1999) Factors Affecting the Profitability of Limited Resource and Other Small Farms, Agricultural Finance Review, Vol. 59, No. 6, pp. 77-91.

Mishra, A.K. & Morehart, M.J. (2001) Factors Affecting Returns to Labor and Management on U.S. Dairy Farms, Agricultural Finance Review, Vol. 61, No. 2, pp. 123-140.

Nayak, A. & Greenfield, S. (1994) The Use of Management Accounting Information for Managing Micro Businesses, in Hughes, A. & Storey, D.J. (eds), Finance and the Small Firm, Routledge, London, pp. 182-231.

Olsson, R. (1988) Management for Success in Modern Agriculture, European Review of Agricultural Economics, Vol. 15, pp. 239-259.

Popoff, B. & Perry, R. (1991) Farm Accounting Services – Perceptions of Usefulness, Accountant's Journal, Vol. 70, No. 1, pp. 43-50.

Schroeder, E.H., Fliegel, F.C. & van Es, J.C. (1985) Measurement of the Lifestyle Dimensions of Farming for Small-Scale Farmers', Rural Sociology, Vol. 50, No. 3, pp. 305-322.

Sealy, M. & Warren, M.F. (1994) Financial Management Practices on Farms, Farm Management, Vol. 8, No. 9, pp. 413-422.

Zaman, M. & Gadenne, D. (2002) A Model for Best Financial and Cost Accounting Practices in SMEs: An Exploratory Study, Small Enterprise Research, Vol. 10, No. 1, pp. 15-31.

Appendix: Financial Management Items

1. Set specific long-term financial goals that you work towards *(e.g. amount of income in 5 years, level of debt in 10 years, etc)*
2. Work towards specific short-term financial targets
3. Keep up-to-date summary financial records *(e.g. cash book, etc)*
4. Compare current financial results to those in the past and assess the differences?
5. Prepare or update a written cash budget (forecast of cash in and out) for at least 6 months ahead
6. Compare cash budget to *actual* figures and assess differences?
7. Prepare or use a written income statement budget for 6 or more months ahead
8. Prepare or use a written balance sheet budget (forecast of assets, debts, equity) for 6 or more months ahead
9. Forecast your future financial position under a number of "best case" and "worst case" situations of milk prices, climate, interest rates and purchased feed, seed and fertiliser prices.
10. Compare your performance on several key indicators *(e.g. milk per hectare/cow, net cash income, % profit, etc)* with other producers, district averages, etc
11. Review and analyse borrowing and off-farm investment options *(e.g. costs, returns, finance & investment types)*
12. Analyse your results using ratios *(e.g. costs per litre or hectare, profit percentages, etc)*
13. Calculate gross margins (*that is, income from each enterprise less its associated variable costs*)
14. Use a computer for keeping & analysing your records *(e.g. milk production, paddock & financial records, budgets, spreadsheets, etc)*?
15. Get an accountant's advice in advance about the tax implications of your operations or have a plan worked out with an accountant that helps minimise tax
16. Seek financial advice from an accountant or other advisor when considering major farm, investment or borrowing changes

17. When considering long-term major changes *(e.g. buying machinery, expanding dairy, etc)*:
    (a) Estimate all the changes in costs and revenues that may occur on a year-by-year basis
    (b) Estimate these changes in costs and revenues under a number of "worst case/best case" situations
    (c) Work out how long it will take for the investment to pay for itself (*that is, to recoup the money invested*).
18. Estimate & compare all possible changes in costs & income before making decisions about short-term minor changes

(Examples of 'natural resource problems' in the following questions may be weed infested areas, acidity, contaminated water from effluent, erosion from cattle laneways & access to water, salinity, etc.)

19. Monitor total expenditure on controlling or improving each of your natural resource problems *(e.g. total spent on weed control, total on effluent treatment, total on correcting acidity or salinity, etc)*?
20. Calculated or estimated:
    (a) The $ value of reduced production related to your natural resource problems (or the $ value of the increased production that may occur if the problems are corrected)
    (b) The $ benefits of retaining or increasing your native vegetation and wildlife
    (c) The losses in your land value that have occurred or may occur due to natural resource problems (or the future gains in land value from works designed to improve the problems)