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Financial Management Practices of New York Dairy Farms

By

Brent A. Gloy, Eddy L. LaDue, and Kevin Youngblood



Agricultural Finance and Management at Cornell
Cornell Program on Agricultural and Small Business Finance



Department of Applied Economics and Management
College of Agriculture and Life Sciences
Cornell University
Ithaca, New York 14853-7801

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For additional copies, contact:

Carol Fisher
Department of Applied Economics and Management
Agricultural Finance and Management at Cornell
357 Warren Hall
Cornell University
Ithaca, New York 14853-7801

E-mail: cf44@cornell.edu

Fax: 607-255-1589

Phone: 607-255-1585

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By Brent A. Gloy, Eddy LaDue, and Kevin Youngblood¹

EXECUTIVE SUMMARY

This study examines New York dairy farm manager's attitudes toward and use of financial management practices. A mail survey of Cornell Dairy Farm Business Summary participants was used to gather data regarding financial goals, business analysis, financial control, investment analysis, investment decision making, and capital acquisition. Completed questionnaires were received from 137 of 352 farms. The report summarizes the data collected from these farms. Results provide information regarding the degree to which farmers use various financial management practices and their attitudes toward these practices. Further, the relationships between farm profitability and financial management practices are examined.

Although many goals are important, goals related to financial risks were among the most important managerial goals. Lifestyle goals, such as raising the family in a farm environment, and profitability goals, such as earning a high rate of return, were also important. Several relationships between goals and profitability were identified. Farmers that placed more importance on profitability goals were considerably more profitable than those who placed less importance on these goals. Likewise, farmers that viewed lifestyle goals as less important were also more profitable. Farmers who choose to focus their attention on profitability achieved greater profitability than farmers who followed other goals. It is also likely that farmers select goals that reflect their proficiencies. Regardless of the causality of this relationship, a reasonable first step toward improving profitability is to set and monitor the achievement of profitability goals. In general, the results suggest that one of the keys to understanding financial performance is to understand the goals and motivations of the farm manager.

The use of and attitudes toward several investment analysis techniques and information sources were examined. Farmers rely on a variety of information sources, purchasing strategies, and analysis techniques when making expendable and capital asset purchase decisions. Farmers who did not rely heavily on one information source tended to be more profitable than their peers who focused on one source. The use of simple purchasing strategies such as asking for price quotes from more than one supplier also tended to distinguish profitable from less profitable operations. When evaluating capital investments, farmers who actually conducted payback and cash flow analyses tended to be much more profitable than their peers. At least half of the respondents use detailed written calculations or spreadsheets to analyze the cash flow and profitability of capital investments and these farmers are much more profitable than their peers. Only a small

¹ The authors thank Gerald White and Wayne Knoblauch for helpful suggestions on earlier versions of this report.

portion of respondents were using discounted cash flow techniques to analyze the profitability of investments.

Fewer relationships were found among the methods used to acquire capital and profitability than for the goals, investment analysis, and business analysis sections. Here, those farms that compared rates across lenders, a very easy strategy to implement, were more profitable than those who never compared rates. Also farmers using more sophisticated methods to analyze the costs of leasing were more profitable than farms not using these techniques. Farmers who most frequently relied on dealer/supplier credit were less profitable than those who less frequently relied on these sources of financing. More farmers seldom or never considered the effects of fees, patronage, and stock on the effective interest rate than always or frequently considered these factors. This is somewhat surprising because these factors can have an important impact on the cost of financing. A relatively small proportion of the respondents frequently leased assets. When evaluating the costs of leasing, very few farmers considered only the size of the lease payment. It appears that most realize that tax savings, terminal values, and fees are important components of lease costs.

The results of the business analysis section indicate that many farms use trend analysis and benchmarking to evaluate business performance. Three fourths of the respondents indicated that they conduct a formal business analysis meeting to review business performance. The managers use various metrics to measure farm performance. The most popular measure was net cash income. A substantial proportion of the respondents (32%) indicated that they preferred measures such as checkbook balances, milk production per cow, or gross sales. These measures are not accurate measures of profitability. There is relatively strong evidence that producers using these measures to evaluate performance are less profitable than the 29% of respondents that used either accrual net farm income or return on assets to measure performance. Developing an accurate budget is an important aspect of business analysis because a budget is a critical component of profitability analyses and cash flow projections. Over half of the respondents prepared annual budgets and 22% prepared a written budget before making a major change in the farm operation.

INTRODUCTION

Farm financial management responsibilities range from basic, such as record keeping, to strategic, such as making capital investment decisions. Farmers use a variety of management practices and strategies to carry out these responsibilities. The purpose of this study is to examine the financial management practices used by New York dairy farm managers. The results will provide managers with information regarding the basic financial management practices used by their peers and their peers attitudes toward these practices. The study also examines the relationship between farm profitability and the use of financial management practices and attitudes toward these practices. The results identify critical management practices and will assist managers in identifying areas where they might improve the financial performance of their operation.

This report presents the findings of a study of the financial management practices of New York dairy farmers. The primary objectives of this study are to:

1. Identify key financial management practices and farmer's attitudes toward these practices;
2. Estimate the degree to which these practices have been adopted; and,
3. Examine the relationship between the use of financial management practices and performance.

Organization

First, the farm financial management data and method used to collect the data are described. The survey instrument, sampling procedure, timeline, and the response are discussed. Next, the results of the study are presented. The results are organized around the financial management practices and activities used in four areas of financial management. The data collected in each particular financial management area are described after a brief discussion of the responsibilities in each area. The results describe attitudes toward and use of various financial management practices. The level of profitability for farmers with different attitudes and practices is then examined.

DATA

Cornell's dairy farm business summary (DFBS) program collects a great deal of production and financial data from participating dairy farms. A complete set of financial statements, including detailed data regarding production practices, efficiency, and operator characteristics is collected from each farm. A mail questionnaire was used to collect supplementary information on specific financial management practices from participating farms. The 352 farms that completed a DFBS report in 2000 were included in the sample¹.

Survey Instrument

The survey instrument requested that farmers respond to a variety of questions regarding their goals, business analysis practices, input purchasing practices, capital investment purchasing practices, and capital acquisition practices². A pretest of the survey instrument was conducted with extension educators and faculty in the department of Applied Economics and Management. After incorporating suggested changes, it was expected that completion of the entire questionnaire would require approximately 30 to 40 minutes. The financial management section of the questionnaire contained 79 response variables. Each survey instrument was coded with a number from 1 to 352. Each of these numbers was assigned to a DFBS participant. This allowed one to match returned questionnaires and actual DFBS farm numbers without placing names or farm numbers on the survey instrument.

Data Collection Timeline

The data collection process began on September 14, 2001 when letters were mailed to farm management extension agents and other DFBS cooperators. These letters explained the project and contained a copy of the survey instrument. On September 21, 2001 a package containing the survey instrument and postage-paid return envelope was mailed to each of the 352 farms. The cover letter accompanying the instrument explained the purpose of the project. As an incentive for participation, farmers were promised an individual report based on their responses to the general management questions. They were also promised a copy of the results of the financial management study. The letter requested that they respond by October 15, 2001. On October 12, a reminder post card was sent to participants who had not completed the questionnaire. Data collection ended on December 1, 2001.

Response

Of the 352 questionnaires mailed, 149 were returned by December 1, 2001. Twelve of the respondents returned blank questionnaires or indicated that they did not wish to participate in the study. Considering only the respondents who wished to participate in the study, the response rate was 137 out of 352, or 39%. Several of the respondents chose not to answer a particular question or did not respond consistent with the directions, so the number of farms responding to any particular question may be less than 137.

Table 1. Characteristics of year 2000 DFBS Participants and Survey Respondents.

Characteristic	Average All DFBS Farms	Average for all Survey Respondents
Number	352	137
Operator Age (years)	47.0	46.6
Average number of cows	237.2	285.9
Average assets	\$1,493,277	\$1,764,497
Net farm income with appreciation	\$84,036	\$89,247
Rate of return on assets with appreciation	3.02%	3.82%
Net farm income with appreciation per cow	\$462	\$468
Milk per cow (lbs/year)	19,323	20,141
Percent Equity	61.53%	61.78%
Cash flow coverage ratio	1.22	1.03
Interest expense	\$48,099	\$58,267
Percent of farms with debt	97%	96%

The farms that complete the DFBS do so voluntarily and are not entirely representative of the New York dairy industry. The respondents also voluntarily chose to complete and return the questionnaire. Completion of the financial management questionnaire was not required for participation in the DFBS program. Table 1 presents several descriptive statistics for the respondents and all 352 farms in the DFBS³. As opposed to all DFBS participants, those responding to the survey tended to operate larger farms, 286 cows for respondents as opposed to 237 cows for DFBS participants. The general level of profitability of these farms was low in 2000 when the average respondent generated a rate of return on assets with appreciation (ROA) of 3.82%. This level of profitability was in part due to relatively low milk prices.

While the proportion of debt and equity used to finance the operations of respondents and DFBS participants was nearly identical, interest expenses were greater for the respondents, reflecting greater asset values. In comparison to national farm averages, the average proportion of equity used by DFBS farms was relatively low, 62%. This indicates that the average debt to asset ratio for these farms was 38%. Low milk prices, combined with this level of debt financing contributed to the weak average cash flow coverage ratio for both respondents and all DFBS participants. Nearly all of the respondents (96%) and DFBS participants (97%) have some debt. This is not typical of the agricultural sector. According to the 1997 Census of Agriculture 42% of all farms incurred interest expenses. This means that at some point in the year 42% of U.S. farms used debt financing. However, the respondents operate much larger farms than the “average” U.S. farm. In general, both the respondents and DFBS participants represent an important segment of commercial family farm operations.

RESULTS

The responsibilities of the financial manager were used to identify the necessary financial management data. These responsibilities were divided into four areas:

- 1) Identifying and setting business goals and priorities;
- 2) conducting investment analysis and making both short and long-term investment decisions;
- 3) acquiring the capital necessary to fund on-going operations and profitable investment alternatives; and,
- 4) implementing financial control systems and conducting business analyses to determine if the business is meeting goals and to insure liquidity, solvency, profitability, and efficiency.

A series of questions were developed to gather information in each of these areas. It was necessary to balance data collection needs with the time constraints of the respondents. The focus of the data collection centered on collecting data regarding the use of and attitudes toward the most fundamental practices in each area.

This report presents a summary of the financial management data. Specifically, the response to each question is described and then the responses are related to farm profitability. Profitability is measured by the rate of return on assets with appreciation (ROA) for the year 2000. More thorough analyses of these same questions are also being conducted are available at: <http://agfinance.aem.cornell.edu/index.htm>.

Responsibility 1: Identifying and Setting Goals

The farm manager is responsible for setting business goals and priorities. In most cases, the farm business generates a substantial amount of the farm family’s disposable income and wealth. This requires that the farm financial manager operate the business in a manner that achieves business, personal, and professional goals. While the importance of

these diverse goals is generally acknowledged, it is important to understand how closely different goals are held and how different goals influence the managerial choices made by farmers. Goals may influence decisions to balance risk and reward, satisfy demand for disposable income, enhance personal/family reputation or community standing, and improve or maintain lifestyle factors such as spending time with family or maintaining a farm lifestyle.

The importance placed on each of these goals influences how the financial performance of the business is evaluated and assessed. For instance, financial performance that is acceptable to a person who places a great deal of importance on spending time with family may not be acceptable to a person who wishes to maximize financial performance. In short, the importance that a manager places on these goals will likely influence the operation of the business.

Several possible goals were considered in this study. These goals represented profitability, risk tolerance, personal lifestyle, family and farm life, and professional life. Respondents were asked to rate the importance of several goals on a 5-point Likert scale of very important (1) to not at all important (5).

The goal statements and the percent of respondents in each rating category are shown in Table 2. The average rating of each goal is shown in the final column of Table 2 where lower average ratings identify more important goals. The goals with the two highest average ratings, avoiding foreclosure and owning a farm that generates a stable income, are both related to risk. Nearly every manager indicated that avoiding foreclosure was a very important goal and 59 percent of the respondents identified owning a farm with a stable income as a very important goal. This is over twice the percent of respondents that rated earning a high rate of return on investment as very important. In fact three lifestyle goals, continue with a dairy farm lifestyle, raising a family in the farm environment, and having time away from the farm also received higher average ratings than earning a high rate of return on investment. The ratings of those three lifestyle goals were very similar, with nearly identical percentages of respondents at each level of importance. The goals of being a top farmer in the community and withdrawing large amounts of money from the business were rated of lowest importance at least as frequently as they were rated of the most importance.

Table 2. Importance of Various Farm Goals
New York Dairy Farms, 2001

Goal	No. ^b	Very Important	Important	Somewhat Important	Not Very Important	Not at All Important	Average Rating
Avoid being unable to meet loan payments and/or avoid foreclosure	137	87	9	0	2	1	1.22
Own a farm with a stable income	134	59	39	2	0	0	1.43
Continue the dairy farm lifestyle, i.e., being own boss, working with cows, etc.	137	34	39	24	3	1	1.99
Raise family in a farm environment	136	34	37	25	4	1	2.01
Have time away from the immediate responsibilities of the farm to spend in leisure and other non-farm activities	137	30	34	26	9	1	2.18
Earn a high rate of return on investment	137	23	37	28	11	0	2.27
Accumulate a large net worth over my lifetime	137	15	34	36	12	3	2.55
Transfer farm to the next generation	135	24	25	22	22	6	2.60
Be recognized as a top farmer in my community	136	7	27	32	27	7	3.00
Be able to withdraw large amounts for personal or family use	137	3	18	42	30	7	3.21

^a. The goals were rated on a five-point Likert scale 1 = Very Important, 5 = Not at all Important. Lower average ratings indicate more important goals.

^b. Number of farms responding.

Table 3. Relationship Between the Importance of Goals and Rate of Return on Assets
New York Dairy Farms, 2001

Goal	Very Important or Important	Somewhat, not very, or not at all important
	Rate of Return on Assets (%)	
Avoid being unable to meet loan payments and/or avoid foreclosure	3.80	Not enough data
Own a farm with a stable income	3.98	Not enough data
Raise family in a farm environment	3.85	3.76
Earn a high rate of return on investment	5.05*	1.94
Continue the dairy farm lifestyle, i.e., being own boss, working with cows, etc.	3.40	4.92
Transfer farm to the next generation	4.59	3.10
Be recognized as a top farmer in my community	5.22*	3.08
Accumulate a large net worth over my lifetime	5.04*	2.65
Be able to withdraw large amounts for personal or family use	2.98	4.04
Have time away from the immediate responsibilities of the farm to spend in leisure and other non-farm activities	4.44*	2.73

* The ROA on farms that consider this goal to be very important is statistically different from the ROA of farms that do not consider it important at the 10% level.

The relationship between the importance assigned to the goals and financial performance was also examined. For each goal, respondents were placed in two groups. Managers that rated the goal as very important or important were placed in one group and managers that rated the goal somewhat important, not very important, or not at all important were placed in the second group. The average rate of return on assets with appreciation (ROA) was then calculated for each group. Table 3 displays the average ROA for each goal by group membership. For instance, the average ROA for managers that rated raising the family in a farm environment as very important or important was 3.85%, while the average ROA for managers that rated this goal as somewhat important, not very important, or not at all important was 3.76%. Statistical significance is a measure of the

likelihood that the means of the two groups are actually different. The means could be widely different, but if there is a wide degree of variability in the sample of each group, one is less likely to be confident that the means are actually different. This degree of confidence is influenced by the number of farms in each group and the variation in each group. Averages that were statistically different are marked with the * symbol. The minimum level of statistical significance reported is 10%. This indicates that a difference between the two means would not be expected to occur by chance more than 10% of the time. Where there were fewer than 10 respondents in a group, no mean is reported.

The results in Table 3 show that the average ROA's were statistically different in four cases. The greatest difference in average profitability was associated with the importance of earning a high rate of return. Farmers that viewed this as a very important or important goal earned an average ROA that was roughly 3% greater than managers who placed less importance on this goal. Similarly, managers who placed more importance on accumulating a large net worth and being recognized as a top farmer in the community were also more profitable than their peers who indicated that these goals were less important. The basic finding of this comparison is that farmers who place more emphasis on profitability were more likely to be profitable than those who viewed profitability as a less important goal.

It was somewhat surprising that farmers who identified having time away from the farm for leisure or family related activities were more profitable than those who placed less importance on this goal. It is useful to know that, on average, income goals are not the most important goals of many farmers. Farmers who indicated that non-financial goals, such as raising the family in a farm environment were important were not significantly less profitable than their peers. This means that it is possible to achieve both lifestyle and financial goals. However, it is important to note that while one can infer the achievement of income goals from the relative level of a farm's ROA, it is not necessarily easy to determine how well a farm is achieving its non-financial goals. Although farms that feel lifestyle goals are important are not significantly less profitable, they may not be achieving their lifestyle goals.

The analysis of the Likert scale ratings of the goals allows one to make general conclusions regarding the relative importance of various goals. However, it does not allow one to observe the absolute importance of a particular goal. For instance, it is possible that a respondent rated all of the goals as very important. An alternative method of evaluating the goals is to ask the respondents to order or rank the importance of each goal. Questions of this nature require considerably more time for the respondent to evaluate, and some respondents will make mistakes when answering the questions in a mail survey because the difference between rating and ordering is subtle. These considerations make it impossible to include as many goals in the set to be ranked as were rated with the 5-point Likert scales. However, questions of this nature are important because they allow one to establish a more rigorous ranking of the importance of the goals.

Table 4. Relative Rankings of Four Farm Management Goals^a
118 New York Dairy Farms, 2001

Goal	First	Second	Third	Fourth	Average Ranking
	Percent of farms				
Earn a high rate of return	39	33	22	6	1.95
Increase free time	25	36	30	8	2.21
Raise family in farm environment	32	19	36	12	2.28
Increase the size of my operation	4	11	12	73	3.53

^aThe goals were ranked from 1 to 4 with 1 being the most important goal.

Respondents were given directions to rank the importance of four goals from 1 to 4, with 1 being the most important goal. Goals were chosen to represent profitability, free/personal time, farm family/lifestyle, and reputation factors. The goals and the percent of farmers ranking each goal from first to fourth most important are shown in Table 4. The conclusions drawn from this question are slightly different than those drawn from the Likert scale ratings shown in Table 3, where the average importance of earning a high rate of return fell in the middle of the set of goals. Here, earning a high rate of return was the most important goal followed by the free time and family farm goals which have nearly identical ratings. Nearly three fourths of the respondents (72%) indicated that earning a high rate of return was their first or second most important goal. Raising the family in a farm environment was the most important goal for 32% of the respondents. Again, the goal intended to measure the importance of reputation or stature, increasing the size of the operation, was ranked as the most important goal by only 4 percent of the respondents. In fact, increasing the size of the operations was chosen as the least important goal by an overwhelming 73 percent of the respondents.

For each of the goals, ROA was computed for managers that ranked the goal first or second most important as opposed to third or fourth most important. For instance, Table 5 shows that the average ROA for managers that identified earning a high rate of return as the first or second most important goal was 5.03%, while farms that ranked earning a high rate of return as the third or fourth most important goal was 1.18%. Farmers who ranked raising the family in a farm environment as the third or fourth most important goal were more profitable than those who placed a great deal of importance on the goal. Again, the results suggest that the more important the profitability goal, the more profitable the farm. Unlike the previous results, farmers who ranked the family farm goal as their first or second most important goal were less profitable than those who placed less importance on this goal. This indicates that at its extreme, following this goal may lead to lower profitability.

Table 5. Relationship Between Goal Rankings and Rate of Return on Assets
118 New York Farms, 2001

Goal	First or Second Most Important	Third or Fourth Most Important
Average Ranking ^a		
Earn a high rate of return	5.03*	1.18
Increase free time	3.33	4.96
Raise family in farm environment	3.10*	4.86
Increase the size of my operation	4.35	3.88

^aThe goals were ranked from 1 to 4 with 1 being the most important goal.

*indicates significance at the 0.10 level.

Responsibility 2: Investment Analysis and Decision Making

Farmers are presented with numerous investment opportunities. The financial manager must evaluate the profitability and risk of investment opportunities in order to determine which investments to accept and reject. Gathering and processing accurate, timely, and useful information is a critical component of this decision making process. Because the information needs and decision making processes are typically different for expendable and capital asset purchases, each are examined. This section describes where farmers obtain information used in purchase decisions and how they process this information. Specifically, the importance of several information sources, the use of different investment analysis techniques, and the data collection and processing techniques used to evaluate financial feasibility and profitability are examined⁵.

Capital assets, such as facilities or equipment, require large initial expenditures and generate cash flows for a considerable period of time. Expendable assets, such as feed or seed, are inputs to short-term production processes. Thus, time and scale tend to distinguish capital asset purchases from expendable asset purchases.

Regardless of the type of asset purchased, the manager must project the amount of income that will be generated by the asset and compare this to the amount of income required to purchase the asset. The net present value rule is based on the idea that, after accounting for the timing of cash flows, profitable investments generate more cash than they require. This decision rule essentially requires that managers purchase assets at prices below their value to the farm.

In the case of purchasing expendable assets, a variety of strategies can be used to insure that goods and services are purchased at a fair price. Perhaps the most easily implemented purchasing strategy is to obtain price quotes from more than one supplier. Table 6 shows how frequently farmers obtain price quotes from more than one supplier of

inputs such as feed, seed, fertilizer, and fuel. Only 8% of the respondents seldom or never obtain more than one price quote. Many, 24%, responded that they always obtain more than one price quote.

Another strategy that might be used to improve the value of goods and services received from a supplier is to negotiate prices. Once price quotes have been obtained from multiple suppliers it is relatively easy to ask suppliers to meet or improve upon another supplier's offer. Respondents were asked how frequently they negotiated prices with suppliers of financing expendable asset suppliers, such as feed, seed, fertilizer, and fuel suppliers. The average frequency with which this strategy was used was nearly as great as that for obtaining price quotes. One might infer that a major use of multiple price quotes is to drive negotiations with a preferred supplier.

It is sometimes difficult to observe the quality of purchased inputs such as feed and seed and the quality of these inputs can vary considerably. The quality level of many inputs such as feed can be determined by scientific testing. Respondents were asked how frequently they sample and test feed for quality. As opposed to the other input purchasing strategies, a greater proportion of respondents indicated that they always used this technique (28% – Table 6). On the other hand, a greater proportion of respondents (15%) had never used this technique. It is possible that those who have adopted this practice find it very useful and they always use it, while others have yet to adopt the practice at all.

Table 6. Frequency of use of Various Input Purchasing Strategies
New York Dairy Farms, 2001

Strategy	No. of farms	Always	Frequently	Sometimes	Seldom	Never	Average Frequency ^a
Obtain price quotes from more than one source when buying inputs such as feed, seed, fertilizer, and fuel	136	24	38	29	7	1	2.22
Negotiate prices of inputs such as feed, seed, fertilizer, and fuel	137	22	29	34	12	4	2.46
Negotiate terms of a loan from a lender, dealer, or other source of financing	136	14	19	40	19	8	2.88
Sample and test feed for content quality	131	28	28	16	13	15	2.57

^a. Use was rated on a five-point Likert scale 1 = Always, 5 = Never. Lower averages indicate more frequent use.

Producers who always or frequently obtain price quotes had a greater ROA than producers that obtained price quotes less frequently (Table 7). This strategy can be implemented relatively easily. This result does not mean that those producers are buying the lowest priced goods and services. It is important to remember that the quality and service characteristics offered by suppliers can vary considerably. However, it seems logical that asking for price quotes forces suppliers to provide competitive prices. Statistically significant differences in profitability did not emerge for farmers who used or did not use the other input purchasing strategies.

Table 7. Use of Input Purchasing Strategies and Average Rate of Return on Assets
New York Dairy Farms, 2001

Strategy	Always or Frequently Use	Sometimes, Seldom, or Never Use
Obtain price quotes from more than one source when buying inputs such as feed, seed, fertilizer, and fuel	4.52*	2.55
Negotiate prices of inputs such as feed, seed, fertilizer, and fuel	4.07	3.56
Negotiate terms of a loan from a lender, dealer, or other source of financing	3.72	4.00
Sample and test feed for content quality	3.31	4.72

*indicates significance at the 0.10 level.

Gathering and processing reliable and accurate information is an important component of both capital and expendable asset purchase decisions. There are several potential sources of information that dairy farmers might use to purchase inputs like feed, seed, fertilizer, and fuel. Although one would expect that each individual's personal experience with a particular product or supplier would heavily influence their purchase decisions, farmers also receive useful information from a variety of other sources. Some of these information sources include other farmers, local dealers and salespeople, consultants, and lenders.

Table 8. Use of Various Information Sources for Input Purchases
New York Dairy Farms, 2001

Information Source	No. of farms	Always	Frequently	Sometimes	Seldom	Never	Average Frequency ^a
Salesman	136	21	46	28	5	0	2.17
Local dealer	137	11	59	25	5	0	2.24
Manufacturer or technical specialist	136	6	24	50	17	4	2.88
Consultant	135	10	30	30	16	13	2.91
Extension	137	3	19	45	20	12	3.20

^a. Use was rated on a five-point Likert scale 1 = Always, 5 = Never. Lower averages indicate more frequent use.

*indicates significance at the 0.10 level.

Respondents were asked to indicate the frequency that they obtained information from various sources when making a decision regarding the purchase of inputs such as feed, seed, fertilizer, and fuel. Table 8 displays the percent of respondents using each source by 5 levels of frequency and an average rating for each source. Lower average ratings indicated that the source was more frequently used. Salespeople were important sources of information for expendable asset purchases. Salesmen had the highest average rating, followed closely by local dealers. In fact, none of the respondents indicated that they never relied on these information sources. Nearly twice as many producers rated the salesman as an always useful source than indicated that any other source was always useful. Sources typically thought to provide neutral information, such as consultants and extension, received the lowest average ratings.

Table 9. Information Source Use and Average Rate of Return on Assets
New York Dairy Farms, 2001

Information Source	Always or Frequently Use	Sometime, Seldom, or Never Use
	-----ROA (%)-----	
Salesman	3.49	4.55
Local dealer	2.76	6.31*
Manufacturer or technical specialist	5.04	3.33*
Consultant	4.06	3.77
Extension	0.92	4.63*

*indicates significance at the 0.10 level.

The average ROA was calculated for producers who indicated that they always or frequently used an information source and for those who sometimes, seldom, or never used the source (Table 9). Farmers who frequently relied on manufacturer representatives for information had a greater ROA than those who relied on these individuals less frequently. Manufacturer or technical specialists usually deliver more specialized information than a salesman who must support a wide variety of products and services.

While no respondents indicated that they never used the local dealer, 30% only sometimes or seldom used this source. Producers who always or frequently relied on the local dealer were much less profitable than those who less frequently relied on this source. The results suggest that the 22% of producers who always or frequently relied on extension were less profitable than their peers who used extension less frequently. It appears that producers who discriminate among information sources and do not rely heavily upon one particular source tend to be the most profitable.

Capital investment decisions are different from expendable asset purchase decisions because they usually involve substantial investments that generate cash flows for more than one year. There are many methods that the farm manager might use to evaluate such an investment. Perhaps the most commonly used technique is to determine if the investment will generate enough cash flow to repay a loan to purchase the asset. The manager might also consider whether the entire farm can generate enough earnings to repay the loan for a new investment. Unfortunately, the use of either of these methods does not insure that an investment will actually generate a profit, only that the investment and/or the business can generate enough cash to repay the loan.

Another common method used to evaluate capital investments is to calculate the time that it takes for the earnings of the investment to equal the cost of the investment. This method is commonly referred to as the payback period. Although this method accounts for the fact that cash flows are generated over a period of time, the method treats cash flows generated in later years equivalent to immediate cash flow. Because of factors such as inflation, risk, and opportunity costs, this is typically a poor assumption. In order to account for these factors, one can use discounted cash flow techniques such as net present value or the internal rate of return. Although these measures are typically more accurate assessments of profitability, they have the disadvantage of being more difficult to calculate and understand.

Producers were asked a series of questions concerning their use of investment analysis techniques. They were presented with three possible investments, a major facility expansion of more than 25%, an equipment replacement, and an increase in herd size of 10%. It is expected that more thorough and sophisticated analyses will generally be used for the larger investment, the facility expansion. Because conducting a net present value analysis of an equipment replacement is typically more difficult than for a new facility, it is not expected that many producers will use this method of analysis on that investment. Table 10 shows the percent of farmers using each technique for each type of investment. For all types of investments, the ability to make loan payments was the most common method used to evaluate an investment. It was most commonly used for facility expansions (74%), which would typically require a loan agreement. Only a small proportion of farmers were using discounted cash flow techniques like NPV analysis. These techniques were used the least frequently when making equipment replacement decisions. The payback period was used by at least 40% of the respondents to evaluate all of the investments.

Table 10. Frequency of Use of Alternative Capital Investment Analysis Techniques^a
New York State Dairy Farms, 2001

Investment Decision	Pay-back Period	Projected Cash Flow, ability to make loan payments	Net Present Value or Internal Rate of Return
Major facility expansion of more than 25%	43	74	12
Equipment replacement	45	67	7
Expanding herd size by 10%	40	69	10

^a Some farmers use more than one technique for an investment decision.

Table 11 shows that farmers who used payback period and cash flow analyses had a greater ROA than those who did not use these techniques. Producers who actually

evaluate their investments tend to be more profitable than those who do not use these methods. There were no statistical differences detected for the discounted cash flow methods, but this is not surprising given the relatively small proportion of respondents who used these techniques.

Table 11. Capital Investment Analysis Techniques and Average Rate of Return on Assets
New York Dairy Farms, 2001

Investment Decision	Pay-back		Cash Flow		NPV or IRR	
	Use	Do Not Use	Use	Do Not Use	Use	Do Not Use
Major facility expansion of more than 25%	5.64	2.46*	4.44	2.04*	4.07	3.71
Equipment replacement	4.72	3.07*	3.79	3.86	3.59	3.77
Expanding herd size by 10%	4.95	3.04*	4.34	2.61*	3.6	3.70

*indicates significance at the 0.10 level.

A series of questions were asked to determine the techniques that respondents used to create cash flow budgets and conduct profitability analyses. Respondents were asked to choose the answer that described the method that they most frequently used to make a cash flow budget. The percent of farmers that used various techniques to create a budget for a major capital investment are shown in Table 12. The combined proportion of producers not making a cash flow budget (4%) or calculating the budget in their head (16%) was nearly as great as the number of producers who created a spreadsheet budget on their computer (21%). Many of the respondents (41%) used detailed written calculations to create their budgets. Only 6% of the respondents allowed the lender to make their cash flow budget with little of their input.

Table 12. Most Common Method Used to Make Cash Flow Budgets
Major Capital Investments, 133 New York Dairy Farms, 2001

Method	Percent Using
Don't make a cash-flow budget	4
Calculate in my head	16
Detailed written calculations	41
Input data on computer and make a spreadsheet	24
Lender makes cash flow projection with little of my input	6
Hire a consultant or accountant	9

A similar question considered the techniques used to conduct a profitability analysis for a capital investment (Table 13). The results are very similar to the cash flow results. However, more respondents (9%) did not conduct a profitability analysis than did not conduct cash flow analysis (4%). Likewise, more (14%) outsourced the profitability analysis to a consultant.

Table 13. Most Common Method Used to Conduct a Profitability Analysis
Major Capital Investments, 132 New York State Dairy Farms, 2001

Method	Percent Using
Don't make a profitability analysis	9
Calculate in my head	16
Detailed written calculations	34
Input data on computer and make a spreadsheet	21
Lender makes cash flow projection with little of my input	5
Hire a consultant or accountant	14

Farmers who use written calculations or a computer spreadsheet to make a cash flow budget had a much greater ROA than those who did not use these techniques (Table 14). The same relationship holds for profitability analyses. This provides evidence that there are positive returns to detailed financial analyses.

Table 14. Average Rate of Return on Assets by Analysis Technique
Profitability and Cash Flow Analyses, New York Dairy Farms, 2001

Group	Average ROA for Farmers Using	Average ROA for Farmers Not Using
Use detailed written calculation or input data on computer and make spreadsheet to make a <u>cash flow budget</u>	4.58*	2.32
Use detailed written calculation or input data on computer and make spreadsheet to conduct a <u>profitability analysis</u>	5.38*	1.79

*indicates significance at the 0.10 level.

Responsibility 3: Acquisition of Funds

The financial manager must acquire the funds necessary to finance the ongoing operations of the business as well as new investment opportunities. In this process the financial manager must identify alternative sources of capital, assess the cost of capital obtained from these sources, and obtain the necessary capital or capital asset (if leasing). Funds can be raised in the form of either equity or debt. Rather than acquiring additional funds, financial leases can be used to acquire control of an asset without actually purchasing the asset. In this case, the capital asset instead of the capital necessary to purchase the asset is rented.

In agriculture, most short and long-term debt funds are obtained through private loan agreements⁶. These loan agreements are often made with banks, Farm Credit associations, government agencies, insurance companies, machinery and other input manufacturers, and individuals. Rates and services can vary considerably from institution to institution, and the degree to which the manager evaluates various credit and financial service offerings should influence the cost and return to credit. Because most lenders offer a variety of services, terms, rates, fees, and stock purchase requirements, comparing these various offerings can be a challenging endeavor.

The questionnaire addressed several issues related to how farmers assess the cost of funds. One potentially important step in obtaining credit is to compare the rates and services offered by various lenders. The second column of Table 15 shows the percentage of producers making rate and service comparisons at various points in time. Rates and services were never compared by 17% of the respondents. Rates and services were most likely to be compared when the farmer borrows a significant amount of money. At this point in time, 43% of the producers indicate that they make a rate and service comparison. Changing loan officers or changes in lender management triggered

25% of the respondents to compare rates and services, and 24% of respondents indicated that they compare rates and services every time that they borrow additional funds. Changing loan officers or changing the management of the financial institution with which the borrower has a relationship introduces uncertainty to the borrowing relationship. These factors would be expected to trigger a reevaluation of the lender/borrower relationship. Surprisingly, 75% of the managers did not consider a loan officer or lender management change sufficient to trigger a rate and service comparison.

Table 15. Frequency at Which Lender Rates and Services are Compared, New York Dairy Farms, 2001.

Frequency with which Rates and Services are Compared ^a	Percent of Farmers Comparing	Average ROA for Farmers Comparing	Average ROA for Farmers Not Comparing
Every time I borrow additional funds	24	3.16	4.08
When borrowing a significant amount of money	43	4.27	3.53
When there has been a change in the lender relationship such as a new loan officer or new lender management	25	5.03	3.45
Annually check and compare interest rates and services	17	3.83	3.85
Never	21	1.94*	4.34

^a Multiple responses allowed

*indicates significance at the 0.10 level.

Table 15 indicates that, although the ROA was greater for farms that compared rates when borrowing a significant amount of money or after a change in the lender/borrower relationship, the only statistically significant difference is for farmers who never compare rates and farmers who compare rates and services at some point in time. Farmers who never compared rates and services had a much lower ROA than those who compared rates and services at some point in time. This result would suggest that farmers who at least monitor rates are more profitable than those who never monitor rates. It is possible that some farmers might be able to achieve lower costs or better services if they made a comparison. It is also possible that this is not an option for these borrowers. Perhaps they are borrowing from the only institution willing to finance them.

Equipment manufacturers, input suppliers, and vendors also supply credit. In order to estimate how frequently respondents used vendor and dealer financing, farmers were asked how frequently (on a 5 point Likert scale) they used dealer/supplier financing for

purchases of feed, machinery, etc. Few farms always used these sources to finance purchases (Table 16). However, only 15% of the respondents indicated that they never used these sources of financing.

Respondents were also asked a series of questions regarding the factors that they considered when calculating the cost of financing. First, farmers were asked if they calculated the effect of fees, patronage refunds, or stock purchase requirements when comparing effective interest rates. Surprisingly only 15% of the respondents always evaluated these factors. In fact, the number of producers who seldom or never considered these factors was greater than the number who always or frequently considered them. This would suggest that many producers make rate comparisons based on stated rates of interest and are not calculating the impact of fees on rates.

More producers claimed to always or frequently calculate the effects of cash discounts forgone on feed/seed financing than always or frequently calculated the effects of fees, patronage, or stock purchase requirements on the effective interest rate. More producers always or frequently consider rebates, terms, and interest rates when calculating the cost of machinery financing than consider fees, stock purchase requirements, and patronage when calculating effective interest rates. It is possible that, if the question regarding fees also included the term interest rates, the ratings would have changed. However, this term was not included in the question regarding cash discounts. Because these fees can have a substantial impact on the effective rate of interest, it was important to consider how their evaluation impacted profitability.

Table 16. Percent Using Dealer/Supplier Financing and Various Methods to Calculate Cost of Financing
New York Dairy Farms, 2001

Source of Financing	No. of farms	Always	Frequently	Sometimes	Seldom	Never	Average Frequency ^a
Use dealer/supplier financing of feed, machinery, etc.	137	1	19	39	26	15	3.35
Calculate the effect of fees, patronage refunds, or stock on effective interest rates	135	15	14	24	22	25	3.29
Calculate the effect of cash discounts foregone on effective interest rate for dealer financing	135	32	31	16	8	13	2.40
Calculate the effect of rebates, terms, and interest rates on effective rate of machinery financing	137	29	27	22	12	10	2.47

^a. The goals were rated on a five-point Likert scale 1 = Always, 5 = Never. Lower averages indicate more frequent use.

The average ROA for producers who always or frequently use dealer/supplier financing of feed, machinery, etc., was less than those who did not frequently use these sources (Table 17). Several factors might explain this relationship. It could reflect a higher cost of dealer/supplier credit. It is possible that these producers were not able to obtain financing from traditional sources. As expected, producers that always or frequently calculated the impact of fees, patronage refunds, or stock purchase requirements on the effective interest rate were more profitable than those who considered these items less frequently (Table 17).

Table 17. Average Rate of Return on Assets by Use of Dealer Financing and Methods Used to Calculate Effective Interest Rates
New York Dairy Farms, 2001.

Source of Financing	Always or Frequently Use	Sometime, Seldom, or Never Use
Use dealer/supplier financing of feed, machinery, etc.	1.42*	4.41
Calculate effect of fees, patronage refunds, or stock on effective interest rates	5.14*	3.27
Calculate effect of cash discounts foregone on effective interest rate for dealer financing	4.29	3.00
Calculate effect of rebates, terms, and interest rates on effective rate of machinery financing	3.83	3.81

*indicates significance at the 0.10 level.

Lenders offer a variety of leasing programs. Respondents were asked a series of questions regarding their use and evaluation of leasing alternatives. The results in Table 18 show that leasing is not frequently used by these farmers. Only 8% of the respondents indicated that they frequently leased capital assets, while 43% indicated that they never leased capital assets.

There are several factors that a farmer might evaluate when making a capital asset leasing decision and farmers were asked which factors they evaluated and how they evaluated these factors. Tax savings are often given as a reason for leasing capital assets. While 41% of the respondents indicated that they never based leasing decisions on tax savings alone, 16% always or frequently based their decision on this factor. When calculating the expected cost of a capital lease, the terminal value becomes important. Farmers were asked how often they considered both tax savings and terminal values when evaluating a capital lease. Because 45% of the respondents indicated that they always or frequently considered these factors when making leasing decisions, the results suggest that farmers recognize that terminal values are important considerations in leasing decisions. The size of the lease payment is an important component of lease costs. Although 7% of the

respondents indicated that they frequently or always based leasing decisions on the payment alone, 70% seldom or never used this metric alone.

Because leasing decisions involve a commitment to cash flows over time, it is most accurate to compare their costs with a discounted cash flow method which incorporates tax savings and the terminal value of the asset. Unfortunately, these computations are relatively difficult. Respondents were asked how frequently they used discounted cash flows to compare the decision to lease an asset versus buy the asset. Surprisingly 19% of respondents indicated that they always or frequently made this comparison. On the other hand 61% either seldom or never used this method in making a leasing decision.

Table 18. Use of Leasing and Factors Evaluated When Making the Leasing Decision
New York Dairy Farms, 2001

Factor Considered	No of farms	Always	Frequently	Sometimes	Seldom	Never	Average Frequency ^a
Lease capital assets	135	0	8	27	21	43	3.99
Decision based on tax savings only	121	5	11	24	19	41	3.8
Taxes and terminal values considered in lease evaluation	125	26	19	23	7	24	2.83
Decision to lease based on payment only	124	3	4	23	23	47	4.06
Discounted cash flows used to compare lease versus buy	123	8	11	19	20	41	3.78

^a. Use was rated on a five-point Likert scale, 1 = Always, 5 = Never. Lower average ratings indicate more frequent use.

Although the data indicate that most farmers do not frequently lease capital assets, the relationship between leasing practices and profitability was investigated. Farmers who

used discounted cash flows to evaluate lease versus buy decisions had a greater average ROA than those who did not use this practice. The results should be taken as preliminary evidence because respondents were asked how frequently they actually leased assets, not how frequently they considered leasing assets.

Table 19. Average Rate of Return on Assets by Use of Leasing and Use of Lease Evaluation Techniques, New York Dairy Farms, 2001

Factor Considered	Always or Frequently Use	Sometimes, Seldom, or Never Use
Lease capital assets	6.32	3.61
Decision based on tax savings only	4.24	4.25
Taxes and terminal values considered in lease evaluation	4.50	3.41
Decision to lease based on payment only	Not enough data	4.16
Discounted cash flows used to compare lease versus buy	5.60*	3.50

*indicates significance at the 0.10 level.

Responsibility 4: Business Analysis and Control

The astute financial manager monitors the efficiency, profitability, liquidity, and solvency of the business and its enterprises. In order to fulfill this responsibility, it is necessary to identify performance measures that monitor important areas and systematically evaluate the measures. This study examined how managers measured and assessed profitability. Specifically, it considered the measures used to evaluate financial performance and the use of benchmarking, trend analyses, performance reviews, and budget preparation and use.

Benchmarking is a potentially useful method for evaluating farm business performance. This method uses peer comparison to identify strengths and weaknesses. The DFBS is a particularly useful tool for benchmarking because participating farms receive reports that allow them to compare their operations to peer farms. Successful benchmarking is also reliant upon the ability to identify peers for comparison. In other words, it is most useful when operations of similar size and structure can be identified as a peer group. Because there are a large number of farms in the DFBS, it is possible that many farms can identify such a peer group.

Table 20 shows that 62% of the respondents used annual peer comparisons of profitability and financial efficiency measures, such as ROA and asset turnover, in order to assess farm performance. This high level of adoption is expected since all farms

participate in the DFBS which provides benchmarking reports as an incentive for participation. The results in Table 20 also show that farms conducting benchmarking analyses tended to have a greater ROA than farms that did not use this analysis technique.

Another useful business analysis technique is to track and compare the financial performance over time. A large proportion of the farms (84%) indicated that they used a comparison of their farm's annual profitability and financial efficiency over time (trend analysis) when assessing performance. Surprisingly, 75% of the farms indicated that they held a formal business analysis meeting to review financial performance in order to help them understand and make changes to their operation. Given the large proportion of farmers using both trend analyses and business reviews, it is not surprising that there were no statistically significant differences between the ROA of the farms using and not using these techniques.

Table 20. Relationship of Business Analysis Practice Use and Rate of Return on Assets
New York Dairy Farms, 2001

Business Analysis Practice	Number of farms Responding	Percent of Farms Using	ROA	
			Farms Using	Farms Not Using
Compare annual farm profitability and financial efficiency measures to other farms (Benchmarking)	137	62	4.50*	2.70
Track profitability and efficiency measures of own farm (Trend analysis)	137	84	4.10	2.36
Conduct a formal business analysis review or meeting	136	75	3.85	3.48

*indicates significance at the 0.10 level.

Preparing and monitoring a budget is an important financial control tool and management practice. The budget allows one to project cash flow shortages, plan borrowings, and determine the ability to repay borrowings. It can also be used to assess how well the business is meeting projections, identify, and to correct potential problems. Slightly over half of the farms (52% – Table 21) prepared an annual written financial budget. This is expected because nearly all of the businesses are borrowing money.

A common point at which a farm decides to make a budget is when undertaking a major change. When making a major change in the operation it is important to understand the amount of funds required, whether the new operation/investment will be profitable, and whether any funds invested can be repaid. Although not preparing a written financial budget annually, 22% of the respondents prepared a budget when making a major change in their business. Only 26% of the respondents did not prepare written financial budgets,

meaning that most farmers prepared a written financial budget at some point in time. It is important to remember the respondents are DFBS participants. In order to participate in the DFBS they must prepare and submit annual financial statements.

Table 21. Relationship Between Budgeting Practices and Rate of Return on Assets
136 New York Dairy Farms, 2001

Budgeting Practice	Percent of Farms Using	ROA	
		Farms Using	Farms Not Using
Prepare a written budget every year	52	3.99	3.57
Prepare a budget only when making a major change	22	4.61	3.56
Do not prepare budgets	26	2.68	4.17

When conducting benchmarking or trend analysis, it is necessary to identify which performance measures to analyze. Profitability is among the most important areas to measure. There are many measures that might be used to assess whole farm profitability. Annual profitability is most accurately determined from accrual financial statements which adjust income to reflect changes in inventories. Many farmers might also choose to monitor performance with production efficiency and/or capacity measures such as gross sales, milk production per cow, or cash on hand. These measures obviously do not reflect profitability because they do not consider the expenses that were incurred to achieve these levels of production. Other farms may choose to monitor ROA. This measure is especially useful for comparing the return generated by a farm to its peers or other assets because the measure adjusts accrual net farm income for differences in financing, farm size, and unpaid labor and management.

Respondents were presented a list of six performance measures and asked to choose the measure that they most frequently used to measure farm performance. Table 22 lists these measures and the proportion of farmers that selected each measure as their most frequently used measure. The table also shows the average ROA for farmers that used a particular measure and the average ROA of farms that did not use the measure. Three of the measures, net cash income, accrual net farm income, and rate of return on assets are measures of profitability. Net cash income was by far the most popular measure (39%) of financial performance. Although somewhat useful for tracking performance over time, net cash income is biased by changes in inventory and unpaid resources. Accrual net farm income was the second most popular measure. Given that many farmers used trend analyses to track the performance of their business over time, this is a very appropriate measure.

Nearly as many farmers used their check book balance as a measure of performance as accrual net farm income. Not surprisingly, farms that focused on this performance measure were much less profitable than farms that relied on other measures. On the other hand, the 9% of farms that used ROA as a performance measure were more profitable than their peers. Checkbook balances, milk production per cow, and gross cash income were used by 32% of the respondents. These are inaccurate measures of profitability. Farms using accrual net farm income and ROA were much more profitable than those using other measures of profitability. For instance, those focusing on milk production per cow generated a ROA of 3.33%, while those using accrual net farm income and ROA generated ROAs of 5.04% and 6.46% respectively.

Table 22. Use of and Average ROA by Various Measure of Profitability
132 New York Dairy Farms, 2001

Performance Measure	Percent of Farmers Indicating Measure was Most Frequently Used	Average ROA for Farmers Using Measure	Average ROA for Farmers Not Using Measure
Net Cash Income	39	3.33	4.06
Gross (total) Cash Income	4	Not enough data	Not enough data
Accrual Net Farm Income	20	5.04	3.45
Check Book Balance	18	1.69*	4.24
Return on assets	9	6.46*	3.51
Milk Production per Cow	10	3.39	3.82

*indicates significance at the 0.10 level.

Summary

The study examined the financial management practices of 137 New York dairy farms. The results provide estimates of the extent to which various financial management practices have been adopted. For instance, trend analysis was the most commonly used business analysis method. While many farms chose to measure performance with accrual net farm income or the rate of return on assets, many also chose measures such as milk production per cow or gross sales as their preferred measure of performance. The evidence indicates that farmers focusing on profitability measures are much more profitable than farmers choosing other measures of performance. Nearly three quarters of the respondents prepared either an annual written financial budget or prepared a written financial budget before making major changes in their operation. Roughly half of the

producers either input data on a spreadsheet or used detailed written calculations to conduct cash flow or profitability analyses. Again, these farmers were substantially more profitable than the farmers who either did them “in their head” or did not make the calculations. These basic results strongly suggest that there are positive returns to conducting detailed financial analyses. Producers who wish to improve performance may benefit from applying appropriate techniques for analyzing financial strengths and weaknesses.

The study also considered several strategies that producers might use to purchase inputs and acquire capital. Many farmers made systematic rate and service comparisons. Those farmers who did not compare rates under any circumstance were on average, much less profitable than those who made comparisons. Likewise, farmers who tended to rely on one information source were typically less profitable than those who frequently obtained information from a variety of information sources.

The study also considered the managerial goals of respondents. Profitability is an important goal, but family lifestyle goals were very important as well. The importance of these goals had a strong relationship with farm profitability. Farmers who viewed profitability as very important were typically more profitable than farmers who viewed profitability as a less important goal. The results suggest that one of the keys to understanding financial performance is to understand the goals and motivations of the farm manager.

Notes:

1. The farms included in the sample had completed a year 2000 DFBS report by September 1, 2001. Some farms reported their 2000 results to the DFBS later than this date and were not included in the sample.
2. The questionnaire also asked farmers a series of questions from the Management Development Questionnaire. These questions are designed to measure a respondent's capabilities in various general management areas. The responses to these questions are not reported in this bulletin.
3. The DFBS actually contains 14 farms from states other than New York. These farms were included in the sample and are potential respondents.
4. The average ROA was also calculated for those farms that prepared budgets at any time and for those that did not prepare budgets. The average ROA's were not statistically different.
5. Although an important topic, the study did not examine the method used to identify initial investment opportunities. Rather, the analysis proceeds by assuming that the manager has identified a project for evaluation. The topic of opportunity identification is an important, but complicated subject. In many ways it is similar to trying to understand how the initial idea for a new invention was obtained. One would expect that the answer would vary widely from individual to individual, making this topic ill-suited to the data collection procedure employed in this study. Once a project has been determined to be profitable, the manager must acquire the funds necessary to make the investment. An examination of how the manager obtains funds is contained in a later section of this report.
6. Equity funds are typically raised from personal resources, family members, or a small group of partners. Because it is unlikely that any equity claims on the firm would be traded in a liquid market, raising additional funds from other than a small number of individual equity investors is not a common practice. For this reason the questionnaire did not address the techniques that might be used to raise additional equity capital.

OTHER A.E.M. RESEARCH BULLETINS

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