A DESCRIPTION AND ANALYSIS OF CHARACTERISTICS AFFECTING DECISION MAKING BEHAVIOR OF HORSE FARM MANAGERS

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CHAPTER I

INTRODUCTION

Overview of the Study

Present and future economic health of businesses in all industries depends on the quality of decision making skills and processes of its managers. In addition to these characteristics portrayed by good decision makers, availability of industry information and characteristics is essential to achieve optimal decision making. Research in this study will focus on studying decision behavior of a sample of managers in the horse industry and how their personal and situational characteristics influence their decision processes. The research will also gather and report economic and characteristic data unique to two representative regions of the Oklahoma horse industry.

Horse producers and managers in Oklahoma face a difficult task in decision making for their operations. A recent study of Oklahoma's horse industry has determined that the horse production industry has suffered through several tough years economically and financially (Walker et al. 1989). "Horse prices declined after the boom years of the early 1980's, which were partly fed by a strong Southwestern U.S. economy. Increasing

real interest rates, declining property values and insufficient cash flow to meet debt and current expense requirements created many horse farm economic and financial crises" (Walker et al. 3).

Considering this scenario, making informed decisions is important for the best economic interest of the horse farm and those involved. The 1989 Oklahoma study also noted that limited economic and characteristic information concerning the Oklahoma horse industry is available to the public. This lack of information adds difficulty to optimal decision making.

Sound economic business decisions rely on accurate aggregate industry information as well as complete information from personal record keeping at the firm level. Data describing the aggregate Oklahoma horse industry is minimal since there are no centralized reporting agencies that collect and report complete aggregate data for the industry.

The United States Department of Agriculture collected and reported national and state census data for on-farm horses in the U.S. from 1850 to 1959 but canceled the census process for the horse industry in 1959. The census report of the horse industry shows up again in the 1969 U.S.D.A. census report and continues up to 1987 which was the latest agriculture census taken. The information provided by this service is important but it only includes reportings of on-farm and on-ranch horse numbers and values. The horse population in Oklahoma, as well as across the nation, is assumed to be much higher than the Agriculture Census reports because of the horses owned by small city and urban residents and those kept on small private

acreages which are likely to be excluded in the farm census (Walker et al. 1989).

Services that gather and publish annual aggregate statistical data, such as the Oklahoma Agricultural Statistics Service, do not include the Oklahoma horse industry. "Funding for the development of a representative panel of horse producers, breeders, owners and trainers is a major obstacle to having needed industry data provided by the Agricultural Statistics Service" (Walker et al. 10). Educational institutions, policy makers, and the general public would also benefit from this type of information for purposes of developing programs and policies that affect the horse industry, other industries and other sectors of society indirectly.

Regardless of the lack of aggregate industry information, managers can practice good decision making habits by employing an adequate record keeping system, making use of available information, and using proven decision techniques and tools. Educational institutions throughout the country have developed decision making tools, strategies, and models to aid farmers in making more efficient and optimal decisions. The convenience and time efficiency of these decision aids have also been enhanced by programs and packages available for personal computers. Farmers can collect, process, and evaluate information better and easier than ever before. Developers of these decision aids are disappointed because of the low acceptance and adoption level of these cost and time effective decision making resources (Walker 1992). Survey results confirmed that farm and

ranch managers were not heavy users of formal decision support tools and only about 17 percent of the respondents use a computer in their farm and/or ranch operations (Walker 1992). If farm managers are not adopting these decision making aids, what kind of decision practices are they using and what tools and strategies are they using? The main concern is that they may be sacrificing optimal decision making processes for other less optimal decision making methods which will be identified and described in the next chapter.

Description of the Current Situation in the Oklahoma Horse Industry

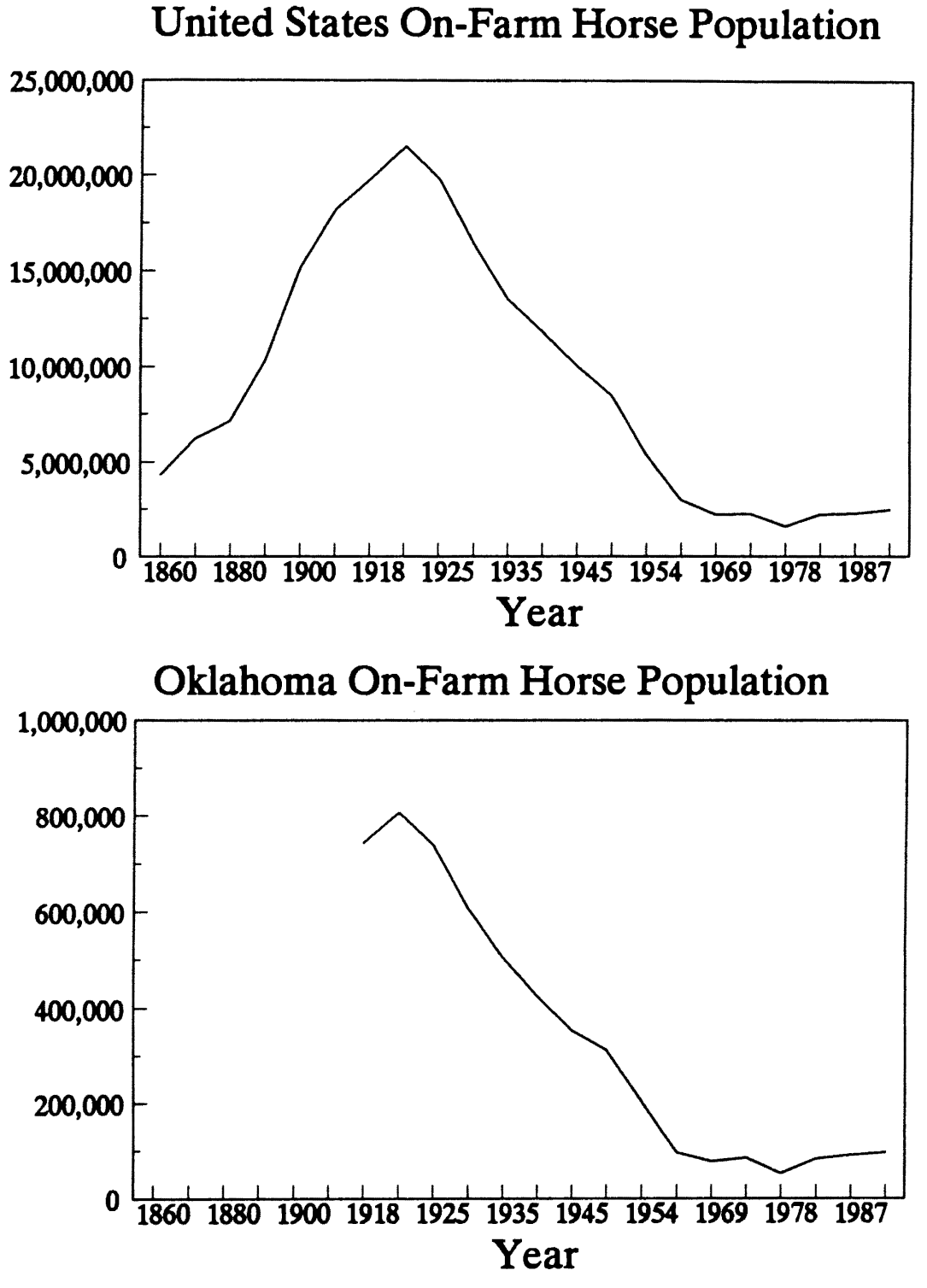
The horse industry has played several significant roles throughout the history and development of Oklahoma. During the years of pre-statehood and early statehood of Oklahoma, the horse was the major source of transportation and farm and industry power (Haines 1971). The state economy's progress and growth depended on the significant contribution of horses even with the development of machinery power throughout the twentieth century. But as technology advanced, the demand for horses' contribution declined significantly from around 1920 into the 1950's (Haines 1971; Howard 1965). Oklahoma and U.S. horse population data provided by the U.S. Agricultural Census from 1850 to 1987 is in Table 1 and a view of the population trend lines throughout this time period is in Figure 1.

TABLE 1

ON-FARM HORSE POPULATION IN THE UNITED STATES AND OKLAHOMA, 1850-1987*

Year	Total On-Farm Horses Reported in Oklahoma	Total On-Farm Horses Reported in United States	Oklahoma's Contribution to National Horse Population	Oklahoma's National Ranking in Horse Population
1850	-	4,336,719	-	-
1860	-	6,249,174	-	-
1870	-	7,145,370	-	-
1880	-	10,357,488	-	-
1890	-	15,266,244	-	-
1900	-	18,267,020	-	-
1907	---------- Oklahoma Statehood Established ----------			
1910	742,959	19,833,113	3.746%	10
1918	806,373[d]	25,555,000[a]	3.741%[c]	-
1920	738,443	19,767,161	3.736%	11
1925	608,210	16,400,623	3.708%	11
1930	505,620	13,510,839	3.742%	11
1935	425,485	11,857,850	3.588%	12
1940	353,986	10,086,971	3.509%	10
1945	313,069	8,499,204	3.684%	9
1950	203,027	5,401,646	3.759%	7
1954	96,228	2,962,220	3.249%	8
1964	78,000[b]	2,211,511[e]	3.527%[c]	-
1969	85,148	2,237,981	3.805%	4
1974	52,416	1,595,640	3.285%	6
1978	83,142	2,209,138	3.764%	3
1982	90,654	2,260,791	4.010%	3
1987	96,423	2,456,951	3.924%	3

* U.S. Department of Commerce Bureau of Census.
[a] Howard, The Horse in America 229.
[b] Howard, The Horse in America 283.
[c] estimated by calculating the mid-point value between the preceding and succeeding values for Oklahoma's contribution to the national horse population.
[d] estimated by calculating the values (25,555,000 x 3.741%).
[e] estimated by calculating the values (78,000 ÷ 3.527%).



Source: U.S. Department of Commerce Bureau of Census

Figure 1. On-Farm Horse Population in the United States and Oklahoma, 1850-1987.

Horse population numbers increased remarkably from the time the census started collecting data for horses with 4,336,719 horses in 1850 until it reached an all time high in 1918 of 21,555,000 on-farm horses, an increase of nearly 400% (Howard 1965). It was during this period that the horse was at its prime. Industry was booming during the turn of the twentieth century and the horse was needed for transportation and power. Even though the combustible engine had been invented in 1890, its developmental progress could not keep up with the country's demand for transportation and power, therefore, the horse prospered (Howard 1965).

The wartime need of horses for the military during World War I and the intensive farm programs during World War I also contributed to the increase of the horse population during this time. Horses were transported over seas to allied forces, and at the same time, farmers across the country broke out an additional forty million acres of farm land during the war time effort (Howard 1965). All of this brought about the horse population peak of 21,555,000 horses in 1918.

This time in history also marked the beginning and end of two eras. The tractor and automobile took their places in society and moved the draft horse and saddle horse aside. The horse population started its decent throughout the next three decades getting down to below 3 million horses in 1954 which was lower than it was when the census started over one hundred years earlier.

The U.S.D.A. Census data shows that the Oklahoma horse industry followed the national trend and maintained about 3 to 4 percent of the national population. It currently ranks 3rd in state horse population and has not been lower than 12th since statehood establishment in 1907.

Even though the draft horse was on its way out as an economic contributor, the saddle horse started its reemergence during the post World War II era in late 1940's and early 1950's (Haines 1971; Howard 1965). The development of motion picture theaters, television and radio, western movies and programs, and a strong interest in America's western heritage have influenced the build-up of the romantic aura surrounding the western riding horse (Haines 1971). This appeal has increased the demand for well-bred, registered horses of all the light riding breeds. Through the 1950's and 1960's, breed associations reported thousands of new registrations annually by the different popular light riding horse breeds such as Quarter horse, Appaloosa, Morgan, and Arabian to name a few (Haines 1971).

The role of the horse industry has changed considerably throughout the century but it has reemerged as one of the important agricultural industries of the Oklahoma economy. The Oklahoma horse industry impacts the state's economy through gross sales, input purchases, jobs, and recreation activities (Goode et al. 1990). An economic report in 1989 of the Oklahoma Bred Program, which is a segment of the Oklahoma race horse industry, estimated its value of production at $63 million. That figure ranked fifth in value of production compared to other industries in the farm sector. "Cattle

and Calves averaged $1,114 million; Wheat, $462 million; Hay, $259 million; Poultry and Eggs, $145 million; Dairy Products, $160 million; and Cotton, Peanuts, and Hogs each in the range of $40-50 million" (Walker et al. 14). The value of production of all other segments in the horse industry such as rodeo, show, performance, work, and hobby horses are not included because of lack of statistical data. However, if their contribution to the value of production were included with the Oklahoma Bred segment, the horse industry would be even more significant as a contributor to the state's economy.

Oklahoma is one of the leading horse states and provides a diverse selection of breeds and types of horses on a national and international level. The industry has experienced some positive economic incentives in recent years due to the establishment of parimutuel racing in 1986. Observing the industry throughout the late 1970's and the 1980's, a growing interest and revival has evolved in the Oklahoma horse tradition and is reflected by the horse numbers increase shown in Table 1 which summarizes the Oklahoma census of on-farm horses reported from 1974 to 1987 (U.S.D.A. Census 1850-1987). Besides the opening of Blueribbon Downs and Remington Park, Oklahoma hosts numerous local, state, national, and international horse shows and rodeo events. Local round-up clubs across the state also provide many activities such as community services, entertainment activities, and social functions.

The industry has also experienced some negative factors in recent years. In particular, the industry appears to face a continual problem of aggregate unprofitability. A weakened Oklahoma economy throughout the late 1980's, income tax reforms of 1986, and low horse prices all have created pessimism among horse people about its future.

Several states have done studies of the economic impacts of the horse industry on their state. Most of the studies were of the Thoroughbred sector and determined that Thoroughbred businesses, on average, were experiencing profitability problems. "Horse farms often experience several 'bad years' followed by one 'good year'. In general, the number of farms showing net losses for one year well exceeded the farms showing gain" (Haywood et al. 172). Carter, Shepard, and Whitney conducted an economic analysis of the California Thoroughbred racing industry in 1991 and reported on their review of economic analysis of Thoroughbred horse industries of other states which included:

California, 1964, Thoroughbred

Oregon, 1977, Thoroughbred

Louisiana, 1979, Thoroughbred

Washington, 1984, Thoroughbred

Oklahoma, 1989, Thoroughbred

Kentucky, 1989, Thoroughbred

California, 1991, Thoroughbred

Even though each state had its own unique set of circumstances regarding its own horse industry, the general consensus was that all experienced industry profitability problems on average.

As mentioned before, complete aggregate data of the Oklahoma horse population is not available to measure how the industry has responded to the problem of unprofitability, but it is assumed that the Oklahoma horse industry has followed the general pattern of national industry growth. In particular, since the parimutuel racing was legalized in 1986 and the favorable economic conditions of Southwestern U.S. economy in the 1970's and the early 1980's and industry growth shown by recent agriculture census reports, the industry appears to have expanded in Oklahoma over the past 20 years.

Problem Statement

Optimal decision making implicit or explicit in the disciplines of economics and management is prescribed as a basic methodical process of sequential steps designed to guide the decision maker from correctly defining a problem or opportunity to achieving an optimal solution for that problem or opportunity. These five basic steps are as follow (Boehlje and Eidman 25-26):

1. Define the problem or opportunity.
2. Identify alternative courses of action.
3. Gather information and analyze each of the alternative actions.

4. Make a decision and take action.

5. Accept the consequences and evaluate the outcome.

The theory of production economics assumes that the decision maker is a profit maximizer and has access to all relevant economic information including product and input prices and technical production relationships. In addition to following the described decision methodology and stated assumptions, it is assumed that the rational decision maker follows the fundamental economic principles that influence the managers decisions in regard to production in a competitive market (Beattie and Taylor 1985). These principles of production include rules of whether or not to produce and how much to produce, which can be calculated using production models developed for profit maximizing decision making.

Economic theory says that a decision maker following this type of prescribed decision making and portraying this type of decision behavior would avoid entering into a business projected to be unprofitable and get out of a business that is exhibiting unprofitability.

If the horse business is unprofitable, what kind of decision making processes are horse business managers using and what personal and situational factors are influencing their decision making processes?

Objectives

This study has three objectives. The first objective is to gather and report data to better describe important characteristics of the Oklahoma

horse industry. It is hoped that the Oklahoma horse industry information reported in this study will improve decision making for all industries, institutions, organizations, businesses, and individuals who have an interest in the industry. Sound economic and industry information is needed for optimal decision making. Successful planning, implementation, and control of operations depends on accurate, up-to-date information.

The second objective is to develop a hobby horse enterprise budget for Oklahoma. The hobby horse budget will be an information source useful to current and prospective owners. It will provide a benchmark for cost and input information and capital and equipment requirements for a typical hobby horse operation in Oklahoma. This enterprise budget will be a decision tool to help horse owners make planning, implementation, and control decisions.

The third objective is to describe decision making processes of managers in the Oklahoma horse industry and to discover what personal and situational forces are influencing their decision processes. Formal decision support tools have been developed and are readily available to farm and ranch managers. These tools are designed for high involvement decision makers seeking full information and performing full analysis decision processes. Given their low adoption rate, it is possible these decision support tools do not match decision making processes used by farmers and ranchers including horse owners. Better identification of decision making processes used by farm and ranch managers can help guide the development of decision support tools that match actual decision making processes.

Procedures and Content of Thesis

The research procedures involved an initial survey questionnaire mailed to a sample of identified horse owners in two counties representing urban and rural Oklahoma. The two counties surveyed were Rogers and Pontotoc counties, with Rogers being the urban county representative and Pontotoc being the rural county representative. Figure 2 shows the location of the two counties in the state of Oklahoma. Rogers county has a land area of 683 square miles and a population of approximately 55,170 people compared to Pontotoc county which has a land area of 717 square miles and a population of approximately 34,119 people (Statistical Abstract of Oklahoma 1991).

The questionnaire was constructed to garner information to describe important characteristics of the Oklahoma horse industry and to develop an enterprise budget for a hobby horse operation. The questionnaire was also designed to gather information to describe decision making processes of managers in the Oklahoma horse industry and to collect information that will be used to describe personal and situational variables of the sample of horse managers. The results and conclusions for this research report rely heavily on data produced from this survey questionnaire.

Chapter 1 of this thesis presents an introduction and description of the research along with the objectives and problem statement.

Chapter 2 provides a general description of the concepts and theories of decision making processes and decision making behavior. This general

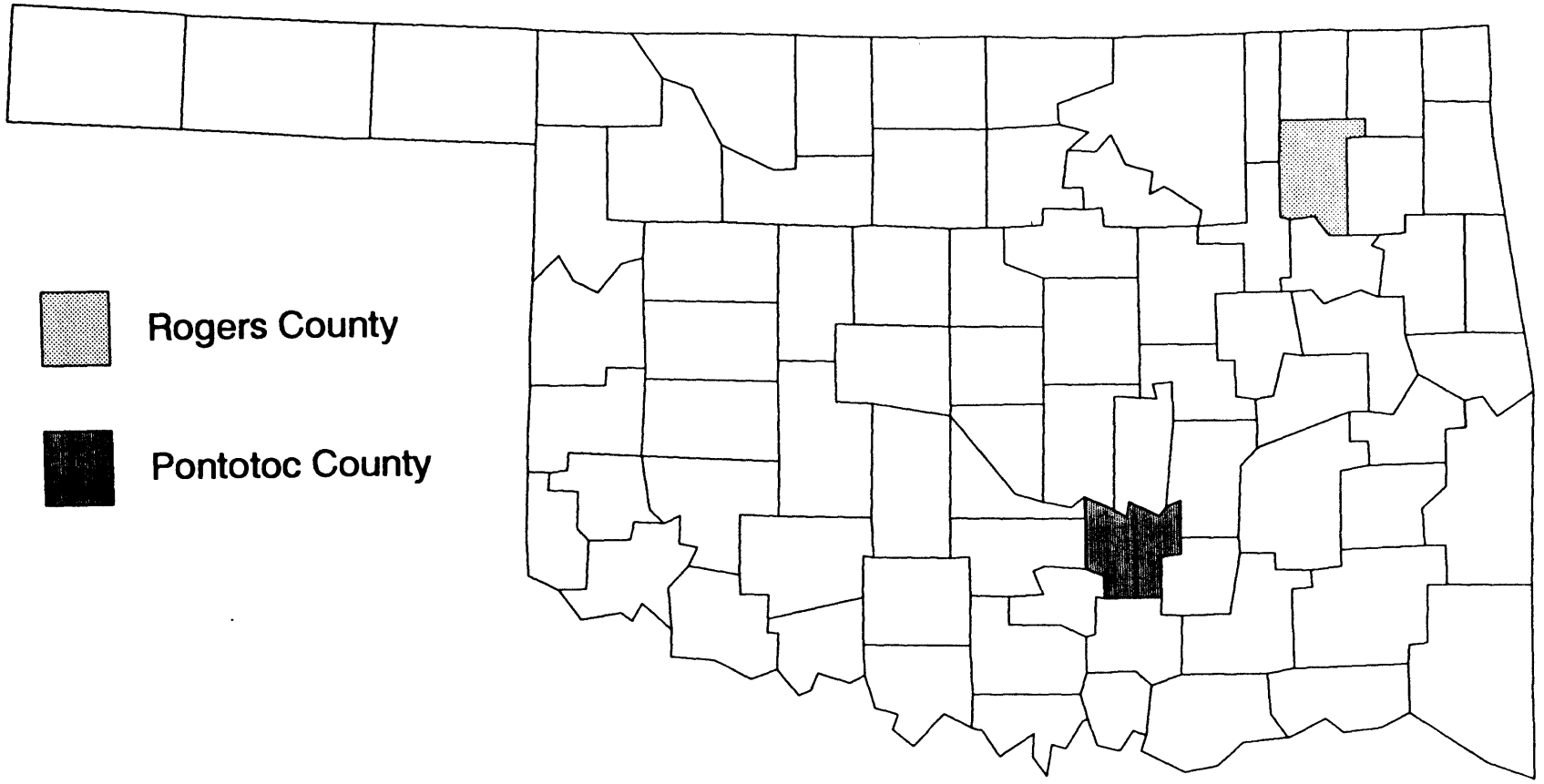


Figure 2. Rogers and Pontotoc Counties of Oklahoma, 1992 Horse Industry Survey

description includes the conceptual framework of decision making in the discipline of economics. A review of research reports on the principles of psychology and sociology's role in decision making processes and information search efforts is also included. Chapter 2 also provides a thorough presentation of the research data collection process along with a description of the data analysis procedures including the use of statistical programs for descriptive statistical analysis, enterprise budget generation, and statistical regression analysis.

Chapter 3 provides a description of the results from the survey information concerning the description of the horse industry of the two counties and the hobby horse operation budget.

Chapter 4 presents the results of the survey information describing industry assessments and decision making processes of Oklahoma horse managers.

Chapter 5 provides a summary and conclusions of the research.

CHAPTER II

CONCEPTUAL FRAMEWORK OF DECISION THEORY AND RESEARCH PROCEDURES

Decision Theory in Economics

Decision making is a responsibility realized by all business managers and they face a variety of decision problems. Decisions can range from complex to simple, from formal to informal, and from unique to routine. Regardless of the type of decision, for sound economic decision making the usual presumption is that the decision maker has to engage in the active process of doing something to achieve a solution for the decision (Downey and Trocke 1981).

Every aspect of agriculture has developed and progressed substantially over the past century creating a highly complex management environment. This environment includes vast amounts of information on factors and forces in agriculture operations and markets that influence decision making. Theoretically, optimal decision making involves dedication of time and attention to collect and analyze as much pertinent information as possible to achieve an optimal solution. "Good decision making is active and timely involvement" (Downey and Trocke 194).

Management is a well studied field in the discipline of economics. Most of the research and teaching involves the mechanics and structure of optimal decision making. However, research and teaching efforts devoted to important factors involved in decision making such as psychological and sociological factors have been minimal. These factors can and often do impede economically optimal decision making.

As described earlier, managerial decision making includes a specific procedure of steps designed to lead a manager to an optimal solution. The five-step process described by Boehlje and Eidman that was presented earlier included:

1. Define the problem or opportunity.
2. Identify alternative courses of action.
3. Gather information and analyze each of the alternative actions.
4. Make the decision and take action.
5. Accept the consequences and evaluate the outcome.

Presumably, a rational optimizing decision maker following this five-step model to achieve an optimal solution is fully involved in the decision process and has access to full or adequate information pertaining to the decision.

The term "rational" indicates that the decision maker is an economic maximizer of profit, utility, or welfare or a minimizer of cost in his/her decision objectives (Beattie and Taylor 1985). The meaning of "fully involved" is that the decision maker is devoting the necessary time and attention to the decision task to achieve an optimal solution (Downey and

Trocke 1981). Having "full" or "adequate" information pertaining to the decision implies that the decision maker is not restricted from obtaining solution optimality because of forces limiting important information needed to achieve the optimal solution (Browning and Browning 1989). This specified decision making process is called prescriptive decision making and is considered to be the way that managers should make decisions (Bazerman 1986).

The study of decision making is divided into two parts: (1) prescriptive decision making, which studies the rational decision making behavior of using a prescribed decision model such as a mathematical model, the five step decision model, and other decision tools to help make a more optimal decision and (2) descriptive decision making, which studies the "bounded" decision making process by which most decisions are believed to be made. Optimal decisions are often bounded by such constraints as lack of information due to time and cost constraints of gathering and evaluating pertinent information. Other constraints may include the decision makers' ineffectiveness in retaining information in his/her usable memory. Also, limitations on intelligence and perception toward available information may also restrict the potential to derive optimal solutions (Bazerman 1986).

Much teaching, research, and extension effort has been geared toward prescriptive decision making to aid farmers in optimal decision making. These efforts include developing and teaching proven, and more efficient

decision making techniques and tools, and also making all of these progressive developments available to farmers.

As mentioned earlier, the adoption rate of these decision making techniques and tools has not been high (Walker 1992). If farmers aren't using this type of decision making, what are they using? Research on consumer decision behavior in the discipline of marketing can help us answer some of these questions.

Consumer Decision Theory

In consumer decision theory, the decision maker is described as flowing through a pattern of developing **beliefs** about a consumer product followed by developed **attitudes** toward the product which finally results in a **behavior** related to the product meaning purchase or non-purchase.

This described process of decision making results from a rational series of steps as described in the five-step decision model. The **beliefs** about a product refers to the cognitive knowledge the consumer has or has developed of the product. This knowledge includes attributes, benefits, and other important characteristics obtained through information available and search efforts. The **attitude** toward the product refers to the degree of feeling or emotion developed toward the product resulting from beliefs concerning the product. These feelings and emotions develop through evaluation and analysis of the known information about the product. The **behavior** refers to the action of final choice about the product which would

be to ultimately choose to purchase and consume or to not purchase the product (Mowen 1990).

As mentioned above, this decision pattern refers to the rational process of decision making, but consumer decision research has discovered and defined multiple decision processes or perspectives practiced by consumers. There are three decision perspectives described in consumer decision theory that also appear useful in describing farm managers' decision behavior. They are (Mowen 1990):

1. The Decision Making perspective.
2. The Behavioral Decision Making perspective.
3. The Experiential Decision Making perspective.

These three decision perspectives break up into four decision hierarchies exhibiting four different processes as follows (Mowen 1990):

Hierarchy	Process
1. Decision making-high involvement	Beliefs-attitudes-behavior
2. Decision making-low involvement	Beliefs-behavior-attitudes
3. Experiential	Attitudes-behavior-beliefs
4. Behavioral	Behavior-beliefs-attitudes

The **Decision making-high involvement hierarchy** is the same as the prescriptive approach to decision making described earlier. In this process, the decision maker fully completes the five step model while being fully analytical and fully involved in each step of the process. The decision maker develops beliefs about attributes, benefits, and other characteristics of a

product through cognitive evaluation of information about the product that is acquired through information search processes. Attitudes and feelings are then developed from analyzing the beliefs of the product and possibly alternative products in consideration. Finally, the decision maker responds with a behavior of purchasing and consuming or not purchasing the product.

The **Decision making-low involvement hierarchy** will employ a decision making effort that involves less time spent in any or all five steps of the decision process. The decision maker is not motivated to involve himself/herself in comprehensive analytical problem solving and limits the amount of time and attention given to the decision. The low involvement process is similar to the high involvement process in that beliefs are developed first. However, in the low involvement hierarchy, the decision maker responds with behavior after the development of beliefs and then develops his/her attitude toward the product as the last phase of the process.

The **Experiential decision making hierarchy** is a process of decision making that does not involve the five-step model. It is non-analytical, takes less time than a prescriptive approach, and is considered a descriptive strategy to decision making. In this decision approach, the decision maker's choice is made based on an attitude developed from sensations, feelings, emotions, or possibly images connected with a particular product. For example, the decision maker's attitude toward a product can be influenced by commercials, songs, signs, people and other communication mediums of

a product. After the decision maker's attitude is influenced through sensational forces then he/she responds with a decision choice. Following the choice, of say purchase and consumption, the decision maker then develops beliefs about the product.

The **Behavioral decision making hierarchy** is another descriptive approach to decision making that is non-analytical and does not involve the five-step decision model. The Behavioral process implies that decision behavior results from effects of key environmental forces rather than from beliefs and attitudes developed from the decision process of searching and evaluating information of the product or alternative products. Behavioral decision making does not involve the steps of information search, comparative analysis of alternatives, or a conscious choice step. The decision maker responds with a decision choice triggered by a stimulus or conditioning event in the decision maker's environment. With no problem or opportunity definition in this decision making behavior, the decision maker merely reacts with a decision as a result of an environmental stimulus. After the initial behavior of consumption, the decision maker then develops beliefs about the product followed by attitudes toward it.

Optimal decision making mostly depends on the decision making process implemented by the decision maker. The decision making-high involvement hierarchy is believed to be the best decision making process for optimal decision making. The other three hierarchies, decision making-low involvement, behavioral, and experiential, all describe situations during the

process where optimality is constrained. Limiting factors such as time, attention, information, and analysis can all constrain decision optimality.

Review of Information Search in Consumer Decision Theory

Decision makers that are more analytical and involved in their decision making processes spend more time searching out information and analyzing information to achieve decision optimality. Information search effort is a measure of analytical effort in the decision process.

Researchers have identified two kinds of information search - internal and external. Internal search involves the cognitive process of retrieving information from memory that will help solve the problem or opportunity. External search involves the procedure of acquiring information from outside sources such as people, publications, books, and so forth (Mowen 1990). For farm managers to consistently achieve optimal decisions in their decision making process, perfect information relative to the problem situation is needed. Admittedly, acquiring perfect information is not realistic, however, the more information that is acquired, the more likely it is for these managers to achieve sound economic decisions.

Consumer researchers' studies of decision making processes of consumers purchasing marketed products have identified several factors that influence consumer's efforts to search external information. The influencers

of consumer information search can be categorized as: (1) personal variables and (2) situational variables.

According to various reviewed studies, personal variables' influence on information search consists of determinants such as prior product knowledge, self-confidence, involvement in the product, attitude toward shopping, age, education, and income.

The research reviewed on prior knowledge of the product gave inconsistent results. The results include positive, negative, and inverted-U relationships with information search. Three of the studies reviewed found a positive relationship between prior knowledge (experience, familiarity) and amount of information search (Brucks 1985; Johnson and Russo 1984; Punj and Staelin 1983). These studies conclude that prior product knowledge encourages information search because consumers can more easily process new information due to their prior product knowledge. Consumers can generate more appropriate questions and better evaluate responses to questions which increases their search efficiency. The reduced cognitive cost and increased marginal benefit leads to greater search effort and increased knowledge.

There were also studies supporting the negative relationship between prior product knowledge and information search (Beatty and Smith 1987; Moore and Lehmann 1980; Newman and Staelin 1972; Swan 1969). Conclusions of these studies claim that product knowledge substitutes for the need to acquire additional information. Additionally, prior product

knowledge may also allow the consumer to discriminate which attributes are most useful for determining purchases which also leads to more efficient information search.

Other studies have determined an inverted-U shaped relationship between prior knowledge and information search (Johnson and Russo 1984; Bettman and Park 1980). This theory simply expresses a positive relationship between prior knowledge and information search from low-to-moderate levels of product knowledge and a negative relationship from moderate-to-high levels of product knowledge.

Consumer self-confidence in product knowledge and experience was also found to be a determinant of information search effort (Kiel and Layton 1981). This study found that consumers with less confidence undertook greater search activity, suggesting a negative relationship between self-confidence and information search. Consumers with higher self-confidence relied on their own experience and also highly credible sources to reduce purchase risks. Credible sources were sources of information that the consumers felt confident in. Consumers showed that they were selective of external information and that they limited their search effort to minimal sources in addition to their own internal information.

The relationship of product involvement to information search has also been studied (Beatty and Smith 1987; Newman and Staelin 1972). These studies have ascertained a linkage between involvement and search effort. The relationship between the two is positive meaning that higher

involvement in a product motivates the consumer to increased search effort. Low involvement toward a product is correlated with less information search. Consumers with higher involvement levels in a product class may be so because of personal interest, occupational interest, or some other motivational influencer. This can develop into what is called "enduring involvement" which is when the consumer is consistently engaged in high-involvement prepurchase activities of a particular product (Mowen 1990). Other extended studies have determined and analyzed two forms of search influenced by involvement. They are "prepurchase search" and "ongoing search" (Bloch, Sherrell, and Ridgway 1986). They conclude that prepurchase search, which is search related to a specific purchase, is influenced by involvement in the purchase. Ongoing search, which is search independent of specific purchase needs or decisions, is influenced by involvement with the product.

A similar influencer to involvement that has been studied is attitude toward shopping (Beatty and Smith 1987). This obviously has a positive relationship with information search. Consumers who have a positive attitude toward shopping will have a higher information search effort since shopping is a form of information search.

Studies have also found that education and age have a determination on information search effort. Studies on education and search effort support a positive relationship between the two variables (Kiel and Layton 1981; Schaninger and Sciglimpaglia 1981; Newman and Staelin 1972). Indications

from this research may be that consumers with more education understand the economics of information search better and also have a broader knowledge of information search sources, processes, and techniques.

Studied relationships between age and information search have been found to have a negative correlation (Kiel and Layton 1981; Thorelli 1971). Decreased search effort with age can be caused by the accumulation of knowledge and experience as a substitute for external search, increased efficiency of the search effort, and/or lifestyle patterns that stabilize purchasing patterns.

Studies of the relationship between income and information search include both negative and positive effects. One study reviewed indicates a positive correlation for income (Thorelli 1971). It suggests that higher income groups consult more information sources, are more aware of their existence, and understand how to use them better than lower income groups. Another study reviewed estimated a negative relationship (Kiel and Layton 1981). No explanation was given in the study for the relationship but common knowledge would suggest that as income levels increased, consumers may tend to ignore searching out information to find the best bargain and may go out and purchase what they want with less concern for price and substitute products.

Research that was reviewed of situational variables' influence on information search involved studies of determinants such as time, availability, cost of information, price of the product, task description (simple

or complex), risk, frequency of the purchasing task, and choice objective (optimal or satisfactory choice).

The studies of time's influence on information search (Beatty and Smith 1987; Moore and Lehmann 1980) is quite predictable as having a positive relationship with information search. These studies strongly support the theory that consumers increase search effort with increases in time availability and will decrease search with decreases in time available for search.

The cost and benefit of information has also been studied as an influence of information search (Beatty and Smith 1987; Kiel and Layton 1981; Newman and Staelin 1972). These studies support the theory that consumers respond positively to increased marginal profit of information search. This means that if the next unit of search effort results in increased purchasing profit (e.g. cost saving), then the consumer will extend search effort. In economic terms, the consumer will extend information search effort until marginal cost of the information search effort equals the marginal benefit of the information search effort.

Price of the product, task description of the product (simple or complex), and risk of purchasing a product have also been studied. Studies of the correlation of price of the product and information search were concluded to be positive (Kiel and Layton 1981; Newman and Staelin 1972; Udell 1966). The greater the net price paid for a product, the greater the information search effort on the product class. This indicates that

consumers were willing to extend the search effort to reduce uncertainty and risk when making a more expensive purchase.

Studies done on the purchase task description and information search also support a positive relationship (Schaninger and Sciglimpaglia 1981). As the purchase task became more complex, the consumer responded with increased search effort. As the task became more simple, information search decreased. Complexity of the task was associated with more attributes of a product that had to be evaluated. The relationship here is that complex tasks require a more complex collection of information which usually requires more search. Simple tasks require a simpler collection of information which usually requires less search.

A positive relationship was also supported in studies of degree of risk in purchasing a product (Locander and Hermann 1979; Roselius 1971). Consumers tend to reduce the uncertainty component by seeking information about the purchase decision. There are several types of product purchasing risks which can influence the consumer's effort to search out risk reducing information. The risks can be financial, product performance, physical, psychological, social, time, and opportunity loss (Mowen 1990).

Frequency of the purchase situation has also been studied for its influence on information search (Swan 1969). This study supported a negative relationship between information search and more frequent purchases of consumer products such as foods and household items.

Conclusions were that buyer's experience with the items was the main source of information.

Satisfactory choices and optimal choices was analyzed for their influence on information search (Swan 1969). This study indicated that consumers search effort was lower to achieve a satisfactory purchase choice opposed to an optimal purchase choice. A satisfactory choice is a choice which is suitable to the consumer even though there are possibly or probably more optimal choices available. Once a satisfactory choice has been achieved, the consumer will no longer give search effort to attain additional information. A similar theory has been studied in the field of management decision making that will be discussed in the next section.

Judgmental Errors and Biases in Decision Making

The most extensive work in decision making has been in the area of consumer decision behavior, but there has been valuable research and work in the area of managerial decision behavior. The managerial aspect is not as extensive as the consumer decision work, but it does have a history dating back to the 1950's and has contributed valuable insight to the science of management. Max Bazerman gives an excellent account of the work in managerial decision behavior along with his own work in his book Judgment in Managerial Decision Making.

Bazerman explains that the decision making process using prescriptive models and decision tools has been proven and accepted as the optimal way to make decisions but most managers do not use this kind of decision making process (Bazerman 1990).

Managers tend to sacrifice optimal decision solutions to alternative acceptable decision solutions. Even though optimal solutions are preferred, acceptable solutions can be achieved at a lower cost of time, attention, and other cost factors. The term given to this type of decision making is "satisficing." Once an acceptable solution is attained, the decision maker abandons the process of achieving the optimal solution and is satisfied with the acceptable solution. In economics, the theory behind satisficing is that the cost/benefit of searching and analyzing further for a better or the optimal problem solution has reached an equilibrium (Bazerman 1990).

Because of the numerous decisions that managers have to make every day and because of the costs involved in carrying out a prescriptive process for each decision, it may not be practical to exclusively use prescriptive decision making for all decisions. Most managers recognize this and substitute for the prescriptive decision process with decisions made by judgments based on internal knowledge and insight (Bazerman 1990).

Bazerman explains that these judgments depend on decision making heuristics which are simplifying strategies that managers use for guiding their descriptive decision making processes. He describes these heuristics

as "rules of thumb." "They are standard rules that implicitly direct our judgment" (Bazerman 5).

Even though decision making using decision heuristics may seem very practical and effective, dangers are involved. When judgments rely heavily on cognitive processes, as opposed to hard analytical data and information, judgment errors and biases can occur due to inefficiencies of cognitive processes (Bazerman 1990).

Bazerman describes three types of decision heuristics that decision makers use (Bazerman 1990):

1. The Availability Heuristic
2. The Representative Heuristic
3. The Anchoring and Adjustment Heuristic (Bazerman 1990)

The **availability heuristic** is a decision strategy managers use by making judgments on information readily accessible from memory. As managers gain experience and knowledge in their business processes, they accumulate more information in their memories. As information increases in the memory, the availability heuristic becomes more useful and effective. However, the possibility of judgment errors exist because during decision making processes, some information is recalled easier than other and also some information is recalled and some isn't. Information that is stored in our memories can be unique in itself or it can be unique because of where we were, what we were doing, or how we were feeling when we received the information. What ever the circumstances were when we received the

information, if it is extraordinary information or remembered under extraordinary circumstances, then it is likely to be recalled easier than ordinary information or recalled when ordinary information is not recalled. A judgment bias is possible if all relevant information is not recalled.

The **representativeness heuristic** is also a decision strategy managers use to make judgments. Managers will discriminate succeeding decisions based on similarities to previous decision events or knowledge. This can obviously be an effective decision rule if the previous events or knowledge are representative of normality. However, if previous events or knowledge are unlikely to reoccur or if they misrepresent normality, then judgment biases can occur.

The **anchoring and adjustment heuristic** is another strategy that managers use for making judgments. In this heuristic, the manager begins with an initial bit of information that becomes a standard or "anchor" which greatly influences the final solution. The manager may adjust from the anchor for the decision choice, but the anchor influences the decision. The judgment bias occurs if the anchor is not a logical or justifiable starting point and the decision maker does not adjust appropriately from the anchor.

Bazerman lists and describes thirteen judgment biases that are common in management when using various heuristics. Describing all of them would be too lengthy for this research report, but we feel that they apply to managers in farming industries. Farm managers have to deal with numerous

complex and time consuming decisions as do managers in other fields, so judgment heuristics are likely used by managers in the farm industry as well.

Decision Making in the Horse Industry

Economic theory tells us that if a business is unprofitable, a rational profit maximizer/cost minimizer manager completing the 5 step decision-process and using adequate information will respond by getting out of the business or by avoiding the business if thinking about entering it.

The horse industry, however, appears to be retaining many proprietors and even attracting new proprietors. Speculation is that a few firms in the horse industry are operating at a profit while others are exhausting their financial resources and exiting the business. Meanwhile new prospects with available capital are entering the business. Why are these horse people choosing to continue to operate in this economic business environment? This research will focus on identifying the decision strategies of producers in the Oklahoma horse industry.

Considering the assumption that these horse managers are rational profit maximizers or cost minimizers, economic theory suggests that to achieve the optimal decision, perfect information is required. Even though perfect information is not possible, the information search process and the information evaluation process are necessary to achieve a more optimal decision. The decision making perspective of completing the 5 step model is the only approach identified by economists as rational optimizing decision

making. The experiential and behavioral approaches are not considered rational approaches and are less likely to achieve the optimal choice from an economic view point. Even the low involvement decision process of the 5 step decision model is less likely to produce the optimal decision because less search and information evaluation is taking place. The low involvement decision making perspective may be rational and optimal if it is a simple or routine business decision requiring only minimal information.

The decision literature reviewed in this study implies that optimal decision making is a specifically structured process. It exposes the fact that less optimal decision making results when decision makers move from prescriptive structured decision processes. The studies' results show that several reasons and factors may "bound" optimal decision making or constrain its optimality. Information is the key ingredient for achieving optimality and most descriptive decision processes limit information search, availability, and information processing. The consumer behavior literature reviewed here provides several promising hypothesis concerning personal and situational variables which may affect decision making processes. These ideas are tested in Chapter 4 using data from horse business managers' responses to the survey. The decision hierarchies and heuristics described in the literature explain how decision errors and biases can occur because of the breakdown of information gathering and/or processing.

Research Procedures

Data Development

The data required for this study was obtained through the form of a mail questionnaire survey. A state-wide survey of Oklahoma horse owners was preferred but because of limited research funds, the survey focused on two counties in Oklahoma. Special efforts were made to choose counties, that when combined, would serve to represent a sample of the Oklahoma horse industry. The two counties were chosen to individually represent a rural setting and an urban setting of the Oklahoma horse industry. The counties chosen were Rogers county, an urban county in Northeastern Oklahoma, and Pontotoc county, a rural county in Southeastern Oklahoma.

During July of 1992, the mail questionnaires were sent to a sample of 930 horse owners with 642 (69%) sent to Rogers county and 288 (31%) sent to Pontotoc county. Two weeks after the initial mailing of the surveys, a survey reminder was sent to all of the surveyed horse owners who had not yet responded. Nineteen of the surveys were returned because of no forwarding address and 36 respondents indicated they were no longer horse owners. This left 875 surveys that were believed to have reached horse owners. The cumulative response rate was 17.1% with a 15.4% response rate from Rogers county and a 20.8% response rate from Pontotoc county. A summary of the survey mailing and response rate is shown in Table 2.

TABLE 2

MAILING AND RESPONSE SUMMARY OF ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Survey Identification	Total Surveys Mailed	Total Mailing Percentage	Total Surveys Returned to Sender*	Total Responses No Longer Owned Horses	Total Surveys Reaching Horse Owners	Total Responses From Horse Owners	Percent of Total Responses	Total Response Rate
County:								
Rogers	642	69	16	30	596	92	61	15.4
Pontotoc	288	31	3	6	279	58	39	20.8
Operation Type:								
Horse Business	-	-	-	-	-	63	42	-
Hobby Horse	-	-	-	-	-	87	58	-
Totals	930	100	19	36	875	150	100	17.1

* Surveys returned to sender were surveys that were returned because of no available forwarding address.

The namelist for the mail questionnaire was gathered from numerous sources. Table 3 summarizes the namelist sources used for each county, number of names per source, and response rate from each source. The total number of responses indicated from all sources is greater than the total number of survey responses because some respondents were on more than one namelist.

TABLE 3

SOURCES USED FOR ROGERS AND PONTOTOC COUNTIES SURVEY NAMELIST, 1992 SURVEY, OKLAHOMA

Namelist Source	Total Number of Names			Total Number of Responses From Both Counties	Response Rate From Namelist Sources
	From Rogers County	From Pontotoc County	From Both Counties		
OTA[1]	40	30	70	17	24.3
OQHA[2]	17	2	19	5	26.3
OQHRA[3]	3	0	3	1	33.3
County Assessor	0	207	207	47	22.7
County Treasurer	456	0	456	62	13.6
Rogers State College Horseman's Association	63	0	63	18	28.6
Will Rogers Round-up Club	34	0	34	8	23.8
Chelsea Round-up Club	37	0	37	7	18.9
Ada 4-H	0	47	47	4	8.5
Ada Area Round-up Club	0	27	27	3	11.1
Pinto	36	0	36	13	36.1
Paint	13	0	13	3	23.1
Producers	0	8	8	0	0.0
Rogers County	39	0	39	4	10.2
Welsh Pony Club	2	0	2	0	0.0

[1] Oklahoma Thoroughbred Association
[2] Oklahoma Quarter Horse Association
[3] Oklahoma Quarter Horse Racing Association

Each questionnaire included a cover letter followed by three sections of questions that were designed to gather data for the three objectives of this research. The three sections were color coded to help the survey recipient distinguish between each section of the survey. A copy of the complete questionnaire and cover letters are provided in Appendix A.

Section I and II were combined and were color coded orange. These sections of the survey were intended for all survey recipients to answer. They were designed to gather general information describing characteristics and other aspects of the individual's horse operation.

Section III was color coded green. This section of the survey was constructed for hobby horse operations only. It was designed to gather information describing the inputs, expenses, revenues, personal data, and motivation factors for each individual's hobby horse operation.

Section IV was color coded blue. This section of the survey was constructed for horse business operations only. It was designed to gather information describing personal characteristics, decision behavior, and some assessments of the horse industry by the individual horse business managers.

The survey reminders, which were sent two weeks after the surveys were mailed, were orange colored post cards. The reminders referred to the initial mailing of the survey, the purpose of the survey, and encouraged a prompt response from each survey recipient. A copy of the survey reminder is provided in Appendix A.

Data Analysis

The orange section data (sections I and II), describing the characteristics of the individual horse operations of the two counties, was analyzed using descriptive statistics. All descriptive data was analyzed using the statistical computer program Statistical Analysis System better known as SAS. The descriptive statistical data will be summarized in tables presented in Chapter III.

The green section data (section III), providing the input, cost, revenue, personal data, and motivation factors of the individual hobby horse operations was also analyzed using SAS for the descriptive statistics results. The hobby horse enterprize budget was developed using the data from this section of the survey. The hobby horse budget was generated using the Oklahoma State University Enterprize Budget Generator. All data from this section will be summarized in the form of a hobby horse enterprize budget and data tables also present in Chapter III.

The blue section data (section IV), describing the characteristics and industry assessments of the horse business managers, was analyzed using descriptive statistics, Student's *t*-tests of difference between two means, and an econometric model. The descriptive statistics were used to summarize characteristics of horse business managers and some of their assessments of the horse industry and was analyzed using SAS.

The Student's *t*-test of difference between two means was used to measure if a significant difference exists between the importance rating for

three decision scenarios, the choice of decision process used for each of the decision scenarios, and the ranking of the managers own knowledge as an information source for the three decision scenarios. The Student's *t*-tests of difference between two means procedures were performed using the computer program Statplan V. Statplan V has the capability of performing several of the basic types of statistical analysis procedures which includes difference between two means analysis.

The econometric model was used to describe how selected manager characteristics influence the decision making process of the horse manager. The econometric model used for the analysis was a qualitative choice model called a logit model and was estimated using the computer program LIMDEP. The econometric analysis procedures will be more thoroughly discussed later. The data results from section IV of the survey will be presented using data tables and presented in Chapter IV.

Student's *t*-test of Difference Between Means Analysis. Part B of the blue section of the survey was designed to gather information describing the decision making behavior of horse farm managers. The respondents were provided with different choices for each of the questions identified by a number. By assigning the possible answers to the questions with numerical values, the data, which would otherwise be qualitative, is quantified and can be evaluated statistically.

The Student's *t*-test was used to test the significant difference between the mean responses to the questions of the three different purchase

decisions. The Student's *t*-test measures the distance of a random variable from a hypothesized mean in units of standard deviations when the underlying distributions are assumed normal (Steel and Torrie 1980). In order to test if a significant difference exists between the importance ratings, decision making processes, and importance ranking of an information source for the three decision scenarios, the Student's *t*-test for the difference between two means was used. The equation for the Student's *t*-test is:

$$t = \frac{(\bar{y}_1 - \bar{y}_2)}{S_{\bar{y}_1 - \bar{y}_2}} \qquad (2.1)$$

where

$$S_{\bar{y}_1 - \bar{y}_2} = \sqrt{S^2 \left(\frac{n_1 + n_2}{n_1 n_2} \right)} \qquad (2.2)$$

For example, if we consider the responses to rating the importance level of purchase decision 1 and that of purchase decision 2, the $\bar{y}_1$ is the mean of the importance rating of decision scenario 1 and $\bar{y}_2$ is the mean of the importance rating of decision scenario 2. $S\bar{y}_1\text{-}\bar{y}_2$ is the standard deviation for the difference between two means. Equation (2.2) is the $S\bar{y}_1\text{-}\bar{y}_2$ for the difference of two means with equal variances (S^2) and unequal sample size (n_i). The assumption of unequal variances and sample sizes requires the use of an approximation of the Student's *t* distribution or a Student's *t'* (Steel

and Torrie 1980). Therefore, a Student's t' can be determined using equation (2.3).

$$t' = \frac{(\bar{y}_1 - \bar{y}_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \qquad (2.3)$$

To determine a critical value for the Student's t, a tabulated t with effective degrees of freedom should be used (Steel and Torrie 1980). The effective degrees of freedom can be calculated using equation (2.4).

$$df = \frac{(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2})^2}{\frac{(\frac{s_1^2}{n_1})^2}{n_1 - 1} + \frac{(\frac{s_2^2}{n_2})^2}{n_2 - 2}} \qquad (2.4)$$

The data for this research was assumed to be normally distributed and have unequal variances and sample sizes. Thus equation (2.3) is used when testing the difference of two means. The null hypothesis to be tested using the Student's t-test is: no significant difference exists between the mean response of purchase decision 1 and purchase decision 2. The alternative hypothesis would be that a significant difference exists between the two means.

The null and alternative hypothesis for the Student's *t'* tests would be presented as follows:

$$H_O: \bar{y}_1 - \bar{y}_2 = 0$$

$$H_A: \bar{y}_1 - \bar{y}_2 \neq 0$$

Figure 3. Null and Alternative Hypothesis for Student's *t'* Test

A significant Student's *t'* indicates that a difference exists between the means of the responses to the two different purchase decisions at the selected percent significance level.

Econometric Analysis. Econometrics has long been accepted as a way of testing economic hypothesis and estimating economic parameters. This type of analysis is usually done using simple or multiple regression equations. The process involves fitting the regression equation to a set of data points for the purpose of estimating economic relationships or testing the economic hypothesis.

The most used method of regression analysis is ordinary least-squares. Desirable properties of statistical estimators are efficiency, unbiasedness,

and consistency. Given the basis of the Gauss-Markov theorem, ordinary least-squares estimators exhibit these desirable properties.

Conventional regression models are designed to accommodate dependent variables that are continuous quantitative variables. These models are suitable for both continuous and discrete independent variables since discrete independent variables can be handled using dummy variables. However, when the independent variables are continuous and take on a wide range of values and the dependent variable is discrete, heteroscedasticity results. In the presence of heteroscedasticity, the estimators lose efficiency but are still unbiased and consistent (Pindyck and Rubinfeld 1991).

For this research, the objective is to estimate the relationship between personal and situational characteristics of horse business managers (e.g. age, education, etc.) and the probability that the manager will use a given decision making process alternative. In this case, the dependent variables are restricted to a limited set of qualitative choices meaning that the dependent variable is discrete.

The qualitative choice model employed for this analysis is the logit model. The logit model is a linear probability model developed to predict the odds of an event's occurrence throughout the range of the real line of 0 to 1. This particular model is useful for analyzing survey data when the dependent variable involves two or more qualitative choices (Pindyck and Rubinfeld 1991). In this particular survey analysis, the dependent variable is

represented by managerial behavioral responses of choosing alternative decision making processes (e.g. high or low involvement decision processes) which are hypothesized to be dependent on personal and situational characteristics of the manager.

"The logit model is based on the cumulative logistic probability function" (Pindyck and Rubinfeld 1991, 258). The model uses the function of natural logarithms to predict an overall summation likelihood that a variable will be chosen given the presence and magnitude of one or more explanatory variables. Pindyck and Rubinfeld specify the model as:

$$P_i = F(Z_i) = F(\alpha+\beta X_i) = \frac{1}{1+e^{-z_i}} = \frac{1}{1+e^{-(\alpha+\beta X_i)}} \qquad (2.5)$$

Where,

- P_i = the probability that an individual makes the ith choice, given explanatory variable X_i.
- e = the base of natural logarithms which is approximately equal to 2.718.
- α = the value of the intercept estimate.
- β = the value of the coefficient estimates.
- X_i = the i^{th} explanatory variable.

The model specified in equation (2.5) can be estimated by algebraically transforming the model to:

$$\log\frac{P_i}{1-P_i} = Z_i = \alpha+\beta X_i \qquad (2.6)$$

In this particular model, the dependent variable is determined by taking the logarithm of the odds that a particular choice will be made. The term "odds" is the ratio of the probability that a choice will be made to that of an alternative choice.

The cumulative logistic probability function will produce an "S" shaped probability distribution ranging along the real line including and between 0 to 1. The "S" shaped cumulative distribution of the logit model exhibits its greatest slope at $P = ½$. It is at this point that a change in an independent variable will have its greatest effect on the probability of choosing one of the optional choices.

At the two endpoints, at the top and bottom of the "S" distribution, the slopes flatten out and it takes relatively large changes in the independent variables to have some effect on the probability of a choice. The logit cumulative distributions presents problems for the application of ordinary least-squares as the estimation method. In the event that P_i equals 0 or 1, the odds ratio of $P_i/1\text{-}P_i$ would equal 0 or infinity. The logarithm calculation of the odds ratio would then be undefined and ordinary least squares is not appropriate (Pindyck and Rubinfeld 1991).

The appropriate technique for estimation of the logit model using individual panel data is the maximum-likelihood estimation procedure. This technique involves the maximization of the likelihood function of the observed sample observations. The maximization procedure, regarding the

parameter values of the equation, chooses the parameter values which are 'most likely' to have generated the sample observations.

The maximum-likelihood estimators also exhibits desirable statistical properties. Estimators are consistent, efficient as the sample gets larger, and all parameters are asymptotically normal (Pindyck and Rubinfeld 1991).

"Goodness of fit" is the general term commonly used to describe how well an econometrically measured model fits the data. The goodness of fit for classical regression models is usually summarized by the coefficient of determination, commonly known as R^2. R^2 is a statistic that summarizes the explanatory power of a model. More specifically, R^2 measures the proportion of the variation in the dependent variable that is attributed to the composite variation of the independent variables in the model. Since R^2 is described as a proportion, it is limited to the values ranging form 0 to 1 with a value close to 1 indicating a model of good fit or a value of 1 representing a perfect fit. However, in the case when the dependent variable is binary, it is not likely that the R^2 statistic will be close to one (Pindyck and Rubinfeld).

A preferred alternative to the R^2 measure is the likelihood ratio index (Pindyck and Rubinfeld). The likelihood ratio index is an appropriate measure for goodness of fit when using the maximum-likelihood estimation procedure and is defined as:

$$\rho = 1 - \frac{L(\beta*)}{L(0)} \qquad (2.7)$$

Where,

ρ = the value of the likelihood ratio index.
$L(\beta^*)$ = the value when the log-likelihood function is maximized.
$L(0)$ = the value of the log-likelihood function when all the parameters, excluding the intercept, are equal to 0.

The likelihood ratio index or ρ is similar to R^2 in that it takes on the values ranging between 0 and 1. Also similar to the R^2 value, the ρ value is not likely to be close to 1 in the case of binary choices and therefore an interpretation of the value of ρ is difficult. However, the value of ρ does provide an indication of what is gained with the addition of new variables to the model (Pindyck and Rubinfeld 1991).

As mentioned earlier, LIMDEP was the computer program used for the logit analysis. The title LIMDEP stands for "limited dependent" which refers to limited dependent variable. The LIMDEP program is specifically designed to accommodate econometric analysis which includes the use of qualitative choice models with limited dependent variables such as the logit model used in this analysis.

CHAPTER III

RESULTS AND ANALYSIS - CHARACTERISTICS OF THE HORSE INDUSTRY AND HOBBY HORSE INFORMATION

The analysis is organized into three individual parts corresponding with sections II, III, and IV of the survey respectively. And, of course, the three parts address the three objectives of the study. This chapter contains parts I and II.

Part I summarizes the information from section II of the survey which describes some characteristics of the horse industries in Rogers and Pontotoc counties which includes identification of horse operations in the two counties, inventories and investments for those horse operations, and other descriptive data such as horse uses, participation events, and horse users characteristics.

Part II summarizes the information from section III of the survey which will be used to present a hobby horse enterprise budget developed from the cost, input, and capital information provided by survey responses from hobby horse operations. Information describing some characteristics of hobby horse operations and owners will also be presented.

Part III summarizes the information from section IV of the survey which includes the response summaries of some characteristics of horse

businesses and their managers of the two counties surveyed and also to present the findings of the econometric analysis of the managers personal characteristics' effect on their decision making process. Part III is presented in chapter IV.

Characteristics of the Horse Industry in Rogers and Pontotoc Counties

Objective one of the study is to describe investment and operational characteristics of the horse industries in Rogers and Pontotoc counties. The information used for this objective came from section II of the survey questionnaire and will be summarized here. Summary statistics to the responses of section II of the survey are provided in Appendix B and additional tables providing supportive statistical data from section II of the survey are provided in Appendix C.

Types of Operations

Questions 1 and 2 of the survey (Appendix A) were included to identify various types of horse operations reported by the sampled population in the two counties. Question 2 asks the respondents to identify his/her primary type of operation. Table 4 summarizes the combined responses to question 2 for the two counties and Table 5 summarizes the responses for each county. Additional detail to question 2 is provided in Appendix B and C.

Combined County: Table 4 shows that 31.3% of respondents identified the farm or ranch operations as the primary type. Suburban residence and small acreage operations were the next most frequently reported types, 20.0% and 18.7%, respectively. Breeding farm operations represented 12.7%, training stables 5.3%, and owners boarding out 4.0%. No commercial stable operations were reported. Other types of operations accounted for 7% of respondents and were identified as operations providing entertainment and/or service activities through their horse operations, e.g. as those providing hay rides and entertainment; guest ranch and riding; a polo club; and a horse trader, transportation, and farrier operation. Table 4 shows that major horse operations in these two counties may be associated with one or more other subordinate types of operations.

Individual County: Rogers and Pontotoc counties were expected to exhibit some differences in the type of operations reported. Table 5 shows that Rogers county reported a higher percentage of suburban residence operations at 25.0% compared to Pontotoc county at 12.1%. Pontotoc county reported a higher percentage of farm or ranch operations at 36.2% compared to Rogers county at 28.3%. These major differences were expected, as urban areas usually have more suburban residences and rural areas have more farm or ranch residences. Percentage of owner boarding out operations were higher in Rogers county at 5.4% compared to Pontotoc county at 1.7%. This result was also expected assuming horse owners in an urban area would have to rely on boarding services to harbor owned

TABLE 4

TYPES OF HORSE OPERATIONS REPORTED IN ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Type of Operation	Major Type (Number)	Percent of Total	Other Types Associated with Major Types Reported							
			A	B	C	D	E	F	G	H
A. Breeding Farm	19	12.7	-	10	1	3	2	8	8	0
B. Suburban Residence	30	20.0	2	-	0	2	0	2	16	0
C. Owner Boarding Out	6	4.0	0	1	-	0	0	0	0	0
D. Training Stable	8	5.3	2	2	0	-	0	1	6	0
E. Commercial Stable	0	0.0	0	0	0	0	-	0	0	0
F. Farm or Ranch	47	31.3	4	8	2	4	0	-	10	2
G. Small Acreage	28	18.7	2	3	1	4	1	3	-	0
H. Other*	7	4.7	3	0	0	2	2	3	1	-
No Classification Indicated	5	3.3	4	2	2	2	2	4	2	0
Totals	150	100.0	17	26	6	17	7	21	43	2

* Other types of operations reported and identified were hay rides and entertainment; guest ranch and riding; polo club; horse dealer; and horse trader, transportation, and farrier.

TABLE 5

MAJOR TYPES OF HORSE OPERATIONS REPORTED BY COUNTY IN ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Type of Operation	Rogers County		Pontotoc County	
	Major Type (Number)	Percent of Total	Major Type (Number)	Percent of Total
A. Breeding Farm	11	12.0	8	13.8
B. Suburban Residence	23	25.0	7	12.1
C. Owner Boarding Out	5	5.4	1	1.7
D. Training Stable	4	4.3	4	6.9
E. Commercial Stable	0	0.0	0	0.0
F. Farm or Ranch	26	28.3	21	36.2
G. Small Acreage	16	17.4	12	20.7
H. Other	4	4.3	3	5.2
No Classification Indicated	3	3.3	2	3.4
Totals	92	100.0	58	100.0

horses. Horse owners in urban areas are more likely to live within city limits or residential areas with zoning laws restricting farm animals. In the case of rural areas, most small towns and communities are more tolerant to harboring farm animals close to or within city limits so boarding out services are not as prominent. The other types of operations of interest are presented and can be compared in the table.

Horse Uses and Activities

Question 3 was included to collect information on the various uses and participation events of horses in the two counties. Tables 6 and 8 provide combined summaries of the reported horse numbers for uses and participation events in the two counties. Table 7 presents support data for Table 6. Tables 9, 10, 11, and 12 provide separate summaries of the responses for each county.

Combined County: Table 6 is designed to present two aspects. First, the information is summarized for number of responses who reported horse uses and secondly for the number of horses reported for the different uses.

Considering the number of responses, the most common use reported was pleasure riding at 54.0%. Following was the use for breeding purposes which was reported by 38.7% of the respondents. Other significant reported uses were showing and working livestock at 28.7% and 26.0% respectively.

If we consider the total number of horses reported, pleasure riding was again the most frequent reported use. Respondents reported 28.4% of owned horses were used for pleasure riding. Next, 27.4% of the reported horses were used for breeding followed by 15.4% for working livestock and 14.5% for showing. Summaries of responses and number of horses reported for the uses of rodeo events, racing, other competition, training, other work, and other uses are also presented in Table 6.

TABLE 6

PRIMARY USES OF HORSES REPORTED IN ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Type of Use	Number of Responses[a]	Percent of sample[b]	Number of Horses[c]	Percent of Horses Reported[d]
A. Pleasure Riding	81	54.0	170	28.4
B. Racing	26	17.3	45	7.5
C. Showing	43	28.7	87	14.5
D. Rodeo Events	29	19.3	48	8.0
E. Other Competition	20	13.3	55	9.2
F. Training	20	13.3	58	9.7
G. Working Livestock	39	26.0	92	15.4
H. Other Work	3	2.0	1	0.2
I. Breeding	58	38.7	164	27.4
J. Other	11	7.3	35	5.8

[a] Responses to primary uses of owned horses often indicated two or more uses per operation.
[b] Sample size from both Rogers and Pontotoc counties totaled 150 responses.
[c] Horses reported for primary uses occasionally indicated two or more uses per horse.
[d] Horses reported for primary uses totaled 599.

A 1985 study of the economic impact of the U.S. horse industry was prepared for The American Horse Council (A.H.C.) and submitted by the policy group of Peat, Marwick, Mitchell and Co. This comprehensive national study provides some comparative data for the figures of this report. The 1985 A.H.C. report included data for the number of horses reported for different uses in the United States and Oklahoma. The results of the studies can be compared in Table 7. The categories for the different uses were

TABLE 7

SUMMARY COMPARISON OF HORSE USES REPORTED BY 1992 OKLAHOMA STATE UNIVERSITY HORSE INDUSTRY STUDY AND 1985 AMERICAN HORSE COUNCIL HORSE INDUSTRY STUDY

Reported Uses	Rogers and Pontotoc Co. (O.S.U. Horse Survey 1992)[a]	Oklahoma (A.H.C. Horse Survey 1985)[b]	United States (A.H.C. Horse Survey 1985)*
Pleasure	28.4%	19.0%	32.2%
Racing	7.5%	15.3%	8.7%
Breeding	27.4%	37.4%	31.4%
Working	15.6%	12.2%	8.6%

[a] Oklahoma State University Report.
[b] American Horse Council Report.

quite different for the two different studies but four of the categories were comparable are presented in Table 7. The use categories of Pleasure riding, Racing, Breeding, and Working are listed in the table along with their reported values. The data from both studies do indicate that pleasure riding and breeding are the primary uses of horses in the two counties, Oklahoma, and the U.S. Summaries for the two counties and Oklahoma report close percentages for horses used for working purposes and are higher than the national average of horses used for working. The data for the use of racing is quite different between the summaries for the two counties and for Oklahoma. Both figures may be valid estimates and the difference may be

attributed to demographics since the two different studies likely involved two different areas in Oklahoma or different area descriptions. Both of the studies indicated that respondents reported owned horses were used for multiple uses in many cases.

Table 8 presents the horse participation events that were reported along with the associated uses that they were identified with. The information is presented in terms of total responses for each of the uses and events and total horse numbers reported for each of the items. Trail riding was the most reported event with 24 of the respondents reporting 53 horses used for the activity. Several different participation events were reported under the uses of pleasure riding, showing, rodeo events, and other competition. The number of responses reporting having stallions and mares and the number of stallions and mares that were reported are summarized under breeding. Horse operations indicating they used owned horses for other types of uses or events are summarized at the bottom of the table under the category "other." The horses reported here were identified as foals, yearlings, and other young horses; pets; retired horses; and one response for driving. The variety of horse uses and participation events reported gives a good indication of the diversity of the Oklahoma horse industry. The response effort was very low to the question of participation events so a summary of percentages is not presented in the table. The respondent numbers for the two counties is given in the footnote of the table for the reader who wishes to review the response rate of any of the categories of

TABLE 8

PRIMARY USES AND PARTICIPATION EVENTS OF HORSES REPORTED IN ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Uses and Participation Events	Number of Responses[a]	Number of Horses[b]
Pleasure Riding:	81	170
Trail	24	53
Performance	2	3
Rodeo	2	2
Parades	2	10
Racing	26	45
Showing:	43	87
Western Pleasure	10	21
English	4	12
Halter	9	21
Performance	2	4
Trail	6	11
Dressage	4	7
Jumping	3	8
Color	1	5
Rodeo Events:	29	48
Roping	15	26
Bull-Dogging	1	2
Barrel Racing	13	21
Flags and Poles	4	7
Other Competition:	20	55
Horse Club Playdays	6	19
Cutting	2	NA
Drill Team	2	5
Team Penning	2	5

TABLE 8 (CONTINUED)

Uses and Participation Events	Number of Responses[a]	Number of Horses[b]
Endurance	2	4
Polo	1	20
Reining	1	NA
Training	20	58
Working Livestock	39	92
Other Work	3	1
Breeding:	58	164
Stallions	5	6
Mares	8	53
Other:	11	35
Foals, Yearlings, and Other Young Horses	3	20
Pets	4	7
Retired	3	8
Driving	1	NA

[a] Sample size for both Rogers and Pontotoc counties totaled 150 responses.
[b] Horses reported for primary uses and participation events totaled 599.

participation events, but for the most part, the percentage values will be very small and difficult to interpret.

Individual County: Table 9 presents the summary for each county's responses to the different horse uses. Rogers county reported a much higher response rate for pleasure riding at 62.0% compared to 41.4% in

Pontotoc county. Rogers also had more responses for showing at 33.7% compared to Pontotoc at 20.7%. Pontotoc county reported a much higher percentage of responses for racing at 27.6% compared to 10.9% in Rogers county and also in other competition with a 20.7% to 8.7% advantage. Pontotoc also held an edge over Rogers in responses of horses used for breeding with a response rate of 43.1% compared to 35.9%. The response rate to the other identified horse uses in the survey were very comparable between the two counties and can be reviewed in the table.

TABLE 9

PRIMARY USES OF HORSES REPORTED BY RESPONSES FOR ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

	Rogers		Pontotoc	
Type of Use	Number of Responses[a]	Percent of Sample[b]	Number of Responses[a]	Percent of Sample[c]
Pleasure Riding	57	62.0	24	41.4
Racing	10	10.9	16	27.6
Showing	31	33.7	12	20.7
Rodeo Events	19	20.7	10	17.2
Other Competition	8	8.7	12	20.7
Training	12	13.0	8	13.8
Working Livestock	24	26.1	15	25.9
Other Work	1	1.1	2	3.4
Breeding	33	35.9	25	43.1
Other	7	7.6	4	6.9

[a] Responses to primary uses of owned horses often indicated two or more uses per operation.
[b] Sample size for Rogers county totaled 92 responses.
[c] Sample size for Pontotoc county totaled 58 responses.

Table 10 provides the summary of responses by the two counties concerning the different horse participation events and uses. Table 10 is like Table 8 and does not provide the response percentage for the participation events because of the small number of responses for each of the participation categories. The numbers do provide some information by the number of responses for each use and events. The reporting sample size for each of the counties is provided in the footnote for comparison purposes.

The summary for the number of horses reported for the different uses by each county is presented in Table 11. Rogers county reported a higher percentage of its horses used for pleasure riding at 31.3% compared to 23.1% by Pontotoc county. Rogers county also reported 12.1% of its horses for training compared to 5.2% by Pontotoc county. Pontotoc county reported a higher percentage of its horses used for racing at 10.4% compared to 5.9% by Rogers county. Pontotoc also held an edge over Rogers in responses to the use of breeding with a response rate of 43.1% compared to 35.9%. The remaining categories of horse uses were within 4.0% difference between the two counties and can be compared in the table.

Table 12 presents the information for number of horses reported by each county for the different horse participation events categorized with the different types of uses that they are associated with. The table reaffirms that trail riding is the most popular horse event in both counties. Rogers county reported 31 horses and Pontotoc county 22 horses used for trail

TABLE 10

PRIMARY USES AND PARTICIPATION EVENTS OF HORSES BY RESPONSES FOR ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Uses and Participation Events	Number of Responses	
	Rogers County[a]	Pontotoc County[b]
Pleasure Riding:	57	24
Trail	17	7
Performance	2	NA
Rodeo	2	NA
Parades	1	1
Racing	10	16
Showing:	31	12
Western Pleasure	8	2
English	2	2
Halter	8	1
Performance	2	NA
Trail	5	1
Dressage	3	1
Jumping	1	2
Color	1	NA
Rodeo Events:	19	10
Roping	11	4
Bull-Dogging	1	NA
Barrel Racing	9	4
Flags and Poles	3	1
Other Competition:	8	12
Horse Club Playdays	2	4
Cutting	NA	2
Drill Team	NA	2

TABLE 10 (CONTINUED)

Uses and Participation Events	Number of Responses	
	Rogers County[a]	Pontotoc County[b]
Team Penning	NA	2
Endurance	1	1
Polo	1	NA
Reining	NA	1
Training	12	8
Working Livestock	24	15
Other Work	1	2
Breeding:	33	25
Stallions	5	NA
Mares	6	2
Other:	7	4
Foals, Yearlings, and Other Young Horses	3	NA
Pets	1	3
Retired	2	1
Driving	1	NA

[a] Sample size for Rogers county totaled 92 responses.
[b] Sample size for Pontotoc county totaled 58 responses.

TABLE 11

PRIMARY USES OF HORSES REPORTED BY HORSE NUMBERS FOR ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Type of Use	Rogers		Pontotoc	
	Number of Horses[a]	Percent of Horses Reported[b]	Number of Horses[a]	Percent of Horses Reported[c]
Pleasure Riding	121	31.3	49	23.1
Racing	23	5.9	22	10.4
Showing	59	15.2	28	13.2
Rodeo Events	34	8.8	14	6.6
Other Competition	31	8.0	24	11.3
Training	47	12.1	11	5.2
Working Livestock	57	14.7	35	16.5
Other Work	1	0.3	NA	NA
Breeding	102	26.4	62	29.2
Other	24	6.2	11	5.2

[a] Horses reported for primary uses occasionally indicated two or more uses per horse.
[b] Horses reported for primary uses by Rogers county totaled 387.
[c] Horses reported for primary uses by Pontotoc county totaled 212.

TABLE 12

PRIMARY USES AND PARTICIPATION EVENTS BY HORSE NUMBERS FOR ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Uses and Participation Events	Number of Horses Reported	
	Rogers County[a]	Pontotoc County[b]
Pleasure Riding:	121	49
Trail	31	22
Performance	3	NA
Rodeo	2	NA
Parades	2	8
Racing	23	22
Showing:	59	28
Western Pleasure	12	9
English	3	9
Halter	17	4
Performance	4	NA
Trail	7	4
Dressage	7	NA
Jumping	3	5
Color	5	NA
Rodeo Events:	34	14
Roping	19	7
Bull-Dogging	2	NA
Barrel Racing	14	7
Flags and Poles	7	NA
Other Competition:	31	24
Horse Club Playdays	4	15
Cutting	NA	NA
Drill Team	NA	5

TABLE 12 (CONTINUED)

Uses and Participation Events	Number of Responses	
	Rogers County[a]	Pontotoc County[b]
Team Penning	NA	5
Endurance	2	2
Polo	20	NA
Reining	NA	NA
Training	47	11
Working Livestock	57	35
Other Work	1	NA
Breeding:	102	62
Stallions	6	NA
Mares	49	4
Other:	24	11
Foals, Yearlings, and Other Young Horses	20	NA
Pets	1	6
Retired	3	5
Driving	NA	NA

[a] Horses reported for primary uses and participation events by Rogers county totaled 387.

[b] Horses reported for primary uses and participation events by Pontotoc county totaled 212.

riding. Table 12, like Tables 8 and 10, does not present the percentages for the number of in each of the participation events because of the low response rate, but the total number of horses that were reported for horse uses is provided in the footnote for the reader to compare.

Horse Operation Investment and Expenses

Questions 4 through 11 were designed to gather information on investment in land; buildings, fencing, and facilities; capital equipment; and tools, tack, special clothing, supplies, etc.; and horses for horse operations in the two counties. The information from the responses to these questions is summarized and presented in Tables 13 through 21.

Investment in Land: Table 13 presents information describing investment in land by horse operations. The table summarizes the information for responses reporting acreage only and also for responses reporting both acreage and value of acreage. As expected, responses from Pontotoc county reported more acres per horse operation than Rogers county. This can be attributed to comparing the rural county to the urban county. Given that the two are relatively the same size with respect to total acreage as shown in Figure 2, rural counties usually show a lower population level than urban counties as is the case between Pontotoc and Rogers counties. Therefore land is distributed across fewer landowners resulting in a higher average acres per landowner or landuser. Horse businesses also reported more acres per operation than hobby horse operations. This also

TABLE 13

LAND INVESTMENT CHARACTERISTICS OF THE ROGERS AND PONTOTOC COUNTIES HORSE INDUSTRIES BY COUNTY, TYPE OF OPERATION, AND COMBINED COUNTY AND OPERATION, 1992 SURVEY, OKLAHOMA

	Summary of Responses Reporting Acreage Only			Summary of Responses Reporting Both Acreage and Value of Acreage					
Description	Total Acres of Land	Total Responses	Total Acres per Response	Total Value of Land	Total Responses	Value of Land per Response	Total Acres	Total Acres Per Response	Value of Land per Acre
County:									
Rogers	4496.2	90	50.0	$4,014,500	65	$61,762	3176.3	48.9	$1,263
Pontotoc	5007.0	53	94.5	$4,171,250	41	$101,738	4035.0	98.4	$1,034
Type of Operation:									
Horse Business	6040.2	61	99.0	$6,009,000	49	$122,633	4847.3	98.9	$1,240
Hobby Horse	3463.0	82	42.2	$2,176,750	57	$38,189	2364.0	43.1	$886
Combined:									
Rogers Horse Business	2916.2	37	78.8	$2,580,000	30	$86,000	2035.3	67.8	$1,268
Pontotoc Horse Business	3124.0	24	130.2	$3,429,000	19	$180,474	2812.0	148.0	$1,219
Rogers Hobby Horse	1580.0	53	29.8	$1,434,500	35	$40,986	1141.0	32.6	$1,257
Pontotoc Hobby Horse	1883.0	29	64.9	$742,250	22	$33,739	1223.0	55.6	$607
Aggregate Total	9503.2	143	66.5	$8,185,750	106	$77,224	7211.3	68.0	$1,136

was expected since horse businesses usually have a larger inventory of horses and overall operation and therefore need larger spreads to harbor their horses.

Rogers county horse operations reported a higher value per acre for land than did Pontotoc county. The final values of land per acre were closer in comparison than expected for the two counties. Rogers county is more likely to exhibit a higher per acre value than Pontotoc county. Demand for land in an urban county is usually higher than for a rural county which in theory would result in higher land values. Higher demands for land in urban counties can be attributed to residential requirements for the bigger job markets in urban areas and to the land development opportunities in urban settings. Rogers county also exhibits fewer acres of land per horse operation and smaller tracts of land are usually valued at a higher price per acre than larger tracts assuming other land factors are held constant. Table 14 is a summary of land sale values for Rogers and Pontotoc counties during the years 1988 through 1991 provided by Dr. Darrel D Kletke who is a professor at Oklahoma State University and specializes is farm management and farm appraisal. The land values reported in the horse survey are noticeably higher than those reported in Dr Kletke's data. The information from both sources is provided for the benefit of the reader to make his/her own judgments concerning reported land prices. However, the data in Table 14 supports the theory of higher land values in Rogers county (an urban county) compared to Pontotoc county (a rural county) which was reported in

Table 13. The data also supports the theory that smaller tracts of land are usually valued at a higher price compared to larger tracts of land.

TABLE 14

LAND SALE VALUES FOR ROGERS AND PONTOTOC COUNTIES, 1988 - 1991

	Rogers		Pontotoc	
Tract Size	Unimproved	Improved	Unimproved	Improved
Acres	Dollars/Acre			
20<A<80	811	1002	478	595
80<A<200	525	581	343	390
200<A<1000	514	545	318	342
> or = 1000	425	462	254	261

Horse businesses also reported higher value of land per response and higher value of land per acre than hobby horse operations. Horse businesses are more likely to show higher valued land than hobby horse operations due to the need for quality grazing and land topography requirements for production and animal husbandry purposes. High quality land also enhances land development, land improvements, and horse marketing which are important to horse businesses. The table also summarizes the information

for the different combinations of county and type of operation plus aggregate totals for the population sample.

Investment in Buildings, Fencing, and Facilities: Table 15 summarizes the responses for investment in buildings, fencing, and facilities; capital equipment; and tools, tack, special clothing, supplies, etc. Rogers county reported a higher average value of investment in buildings, fencing, and facilities than Pontotoc county. However, the difference was not much with Rogers reporting $29,742 and Pontotoc reporting $26,653 per respondent. Horse businesses reported a substantially higher investment at $49,990 on average compared to an average of $9,952 by hobby horse operations. This is what is expected due to the requirements for the scale of breeding, training, horse numbers, and other activities involved in horse businesses compared to a hobby horse operation.

Investment in Capital Equipment: The summary of investment in capital equipment per operation also shows a relatively close comparison between Rogers and Pontotoc county horse operations reported at $17,647 and $19,312 respectively. Capital equipment includes trailers, pickups, trucks, and other depreciable equipment. Horse businesses reported $26,512 in capital equipment per operation and hobby horse operations reported $11,210 per operation. The difference in investment between the two types of operations is likely due to horse businesses' need for more of this kind of equipment for operational purposes such as more capacity for

TABLE 15

NON-LAND INVESTMENT CHARACTERISTICS OF THE ROGERS AND PONTOTOC COUNTIES HORSE INDUSTRIES BY COUNTY, TYPE OF OPERATION, AND COMBINED COUNTY AND OPERATION, 1992 SURVEY, OKLAHOMA

	Buildings, Fencing, and Facilities			Capital Equipment*			Tools, Tack, Special Clothing, Supplies, Etc.		
Description	Total Value	Total Responses Reporting	Average Value	Total Value	Total Responses Reporting	Average Value	Total Value	Total Responses Reporting	Average Value
County:									
Rogers	$1,844,000	62	$29,742	$1,164,700	66	$17,647	$334,865	67	$4,998
Pontotoc	$1,172,750	44	$26,653	$811,100	42	$19,312	$168,050	45	$3,734
Type of Operation:									
Horse Business	$2,449,500	49	$49,990	$1,325,600	50	$26,512	$342,000	51	$6,706
Hobby Horse	$567,250	57	$9,952	$650,200	58	$11,210	$160,915	61	$2,638
Combined:									
Rogers Horse Business	$1,469,000	29	$50,655	$816,100	31	$26,326	$241,500	32	$7,547
Pontotoc Horse Business	$980,500	20	$49,025	$509,500	19	$26,816	$100,500	19	$5,289
Rogers Hobby Horse	$375,000	33	$11,364	$348,600	35	$9,960	$93,365	35	$2,668
Pontotoc Hobby Horse	$192,250	24	$8,010	$301,600	23	$13,113	$67,550	26	$2,598
Aggregate Total	$3,016,750	106	$28,460	$1,975,800	108	$18,294	$502,915	112	$4,490

* Includes trailers, pickups, trucks, and other depreciable equipment.

transportation in trailers, multipurpose uses of pickups and trucks, and the need for other depreciable equipment possibly used in breeding, training, and other day to day activities unique to horse businesses.

Investment in Tools, Tack, Special Clothing, Supplies, Etc.: The summary of investment in tools, tack, special clothing, supplies, etc. estimates a value of $4,998 per operation in Rogers county and $3,734 in Pontotoc county. Investment by horse businesses is higher than for hobby horse operations with $6,706 per horse business response compared to $2,638 per hobby horse operation response. This can again be explained by the different nature of the two operations. A horse business usually requires more inputs per operation than a hobby horse operation due to more horse numbers and operation activities. The table also provides summaries for the aggregate totals and the different combinations of counties and operation types for the investment categories for horse operations.

Horse Operation Cash Expenses: Table 16 summarizes the reported information on 1991 farm horse cash expenses and horse related cash travel expenses in Oklahoma and out of state. Both Rogers and Pontotoc counties report very similar values per horse operation for farm cash horse expenses and Oklahoma travel expenses. Horse businesses reported significantly more for farm cash expenses than hobby horse operations probably due to operation size and activities as mentioned earlier.

TABLE 16

HORSE OPERATION EXPENDITURE CHARACTERISTICS OF THE ROGERS AND PONTOTOC COUNTIES HORSE INDUSTRIES BY COUNTY, TYPE OF OPERATION, AND COMBINED COUNTY AND OPERATION, 1992 SURVEY, OKLAHOMA

	Farm Horse Cash Expenses in 1991			Travel Horse Related Cash Expenses in 1991, in Oklahoma			Travel Horse Related Cash Expenses in 1991, Out of State		
Description	Total Expenses	Total Responses	Average Expenses	Total Expenses	Total Responses	Average Expenses	Total Expenses	Total Responses	Average Expenses
County:									
Rogers	$500,425	66	$7,582	$73,755	52	$1,418	$32,300	20	$1,615
Pontotoc	$323,194	42	$7,695	$44,200	30	$1,473	$9,900	10	$990
Type of Operation:									
Horse Business	$707,514	52	$13,606	$83,680	47	$1,780	$34,850	25	$1,394
Hobby Horse	$116,105	56	$2,073	$34,275	35	$979	$7,350	5	$1,470
Combined:									
Rogers Horse Business	$432,420	34	$12,718	$57,380	30	$1,913	$25,550	16	$1,597
Pontotoc Horse Business	$275,094	18	$15,283	$26,300	17	$1,547	$9,300	9	$1,033
Rogers Hobby Horse	$68,005	32	$2,125	$16,375	22	$744	$6,750	4	$1,688
Pontotoc Hobby Horse	$48,100	24	$2,004	$17,900	13	$1,377	$600	1	$600
Aggregate Total	$823,619	108	$7,626	$117,955	82	$1,438	$42,200	30	$1,407

Horse Operation Travel Expenses: Travel expenses in Oklahoma are also almost double for horse businesses compared to the hobby horse operations. Horse businesses are likely attend more road trip horse related events and off-farm horse business activities than do hobby horse operations.

As for the reportings for out of state travel expenses, Rogers county reports more per operation at $1,615 than Pontotoc county at $990 per operation. The values for the types of operation show that both operation types spend relatively the same amounts for out of state travel per operation at $1,394 for horse businesses and $1,470 for hobby horse operations. The response rate to this question was low which makes it difficult to describe and compare the values but it does provide some economic information regarding this horse operation activity for some horse operations. The table provides summaries of the aggregate totals for different combinations of counties and types of operations.

Investment in Registered and Unregistered Horses: Question 11a was included to collect information regarding registered and unregistered horses owned by horse operations and Table 17 summarizes the responses.

Total numbers of registered and unregistered horses are presented in the table for the counties, type of operations, and combination county and operation type, and aggregate. However, the real story is provided by the percent of horses registered compared to unregistered horses. All of the description categories indicate a high percentage of registered horses

TABLE 17

REGISTERED AND UNREGISTERED HORSES REPORTED, 1992 SURVEY, OKLAHOMA

Description	Registered Horses	Unregistered Horses	Total Horses	Percent Registered
County:				
Rogers	513	84	597	85.9
Pontotoc	431	43	474	90.9
Type of Operation:				
Horse Business	789	63	852	92.6
Hobby Horse	155	64	219	70.8
Combined:				
Rogers Horse Business	433	52	485	89.3
Pontotoc Horse Business	356	11	367	97.0
Rogers Hobby Horse	80	32	112	71.4
Pontotoc Hobby Horse	75	32	107	70.1
Aggregate Total	944	127	1071	88.1

ranging from 97.0% for Pontotoc county horse businesses to 70.1 percent for Pontotoc hobby horse operations. Horse businesses represent the highest percentage of owned horses that were registered reported at 92.6%. This can be attributed to the importance of registration for reasons such as breeding requirements, event participation, and marketing appeal.Hobby horse operations reported 70.8% of horses as registered. Registration of hobby horses can be attributed to the same important reasons as mentioned for horse businesses but it is not as essential for hobby horses to be

registered as for horse businesses. The high registration response for hobby horses also gives support for the belief that there is a high demand for quality light riding saddle horses.

Investment in Horses: Question 11b was designed to collect information describing the investment in horses for operations in the sampled horse operations. The questions targeted identification of horse breeds, horse numbers, and values. Tables 18, 19, 20, and 21 summarize the responses to question 11b.

Some of the key results presented in Table 18 are number of horses per respondent, average value per horse, and horse investment per respondent. The table is organized to present the summary of responses reporting horse numbers only and the summary of responses reporting both horse numbers and horse values. Horse operations reporting horse numbers only had an average of 8.9 horses per operation. For those reporting horse numbers and horse values, total investment was $3,658 per horse and $28,991 in horses per operation.

Horse businesses, as expected, reported more horses per operation, a higher value per horse, and a higher total value invested in horses per operation than did hobby horse operations. Owners of horse businesses are usually engaged in their horse operation as a means for a livelihood and to generate returns to investment so they will be involved at a larger scale in terms of horse numbers, total horse investment as well as other capital investments. Owners of hobby horses are usually engaged in their horse

TABLE 18

HORSE INVESTMENT CHARACTERISTICS OF THE ROGERS AND PONTOTOC COUNTIES HORSE INDUSTRIES BY COUNTY, TYPE OF OPERATION AND COMBINED COUNTY AND OPERATION, 1992 SURVEY, OKLAHOMA

	Summary of Responses Reporting Horses Only			Summary of Responses Reporting Both Horses and Value of Horses				
Description	Total Horses	Total Responses	Total Horses per Response	Total Value of Horses	Total Horses Valued	Total Value per Horse	Total Responses	Total Horse Investment per Response
County:								
Rogers	601	73	8.2	$1,755,400	468	$3,751	65	$27,006
Pontotoc	480	49	9.8	$1,375,600	388	$3,545	43	$31,991
Type of Operation:								
Horse Business	854	56	15.3	$2,775,650	646	$4,297	45	$61,681
Hobby Horse	227	66	3.4	$355,350	210	$1,692	63	$5,640
Combined:								
Rogers Horse Business	486	34	14.3	$1,537,050	359	$4,281	28	$54,985
Pontotoc Horse Business	368	22	16.7	$1,238,600	287	$4,316	17	$72,859
Rogers Hobby Horse	115	39	2.9	$218,350	109	$2,003	37	$5,901
Pontotoc Hobby Horse	112	27	4.1	$137,000	101	$1,356	26	$5,269
Aggregate Total	1081	122	8.9	$3,131,000	856	$3,658	108	$28,991

operations for different reasons. Hobby horse operations for purposes of entertainment, leisure, or pets usually include one or few horses per person and the value of the horse investment is typically less. Hobby horse operators who are likely to invest more in value and number of horses might be people involved in showing, rodeo, or other competitive events which tend to create some return to investment.

Table 19 presents the different horse breeds that were reported in two counties. Quarter horses were the most reported breed accounting for 578 of the 1088 horses that were reported or 53.0% of the horses. Thoroughbreds accounted for 153 (14.1%) of the horses reported, Paint/Pinto 110 (10.1%), Appaloosa 46 (4.2%), and Arabian 28 (2.6%). Horses reported of other registered breeds totaled 102 (9.4%), non-registered horses 11 (1.0%), various breeds of ponies 58 (5.3%), and non-identified horses 2 (0.2%). The A.H.C. study also indicates that Quarter Horses are the most reported breed in the United States at approximately 35% followed by Arabians at about 12% and Thoroughbreds at about 11%.

Table 20 summarizes the reported values per horse of the different horse breeds. The summary presents the information for the different counties, types of operations, combinations of counties and types of operations, and aggregate totals. Pontotoc county reported a much higher value for Quarter horses at $3,784 per horse than Rogers county at $2,487 per horse. Horse businesses naturally reported a higher value for Quarter horses than hobby horse operations at $3,694 compared to $1,855

TABLE 19

NUMBER OF HORSES REPORTED BY BREED FOR ROGERS AND PONTOTOC COUNTIES HORSE INDUSTRIES BY COUNTY, TYPE OF OPERATION, AND COMBINED COUNTY AND OPERATION, 1992 SURVEY, OKLAHOMA

	Breed				
Description	Quarter Horse*	Thoroughbred	Paint/Pinto	Appaloosa	Arabian
County:					
Rogers	282	109	71	25	26
Pontotoc	296	44	39	21	2
Type of Operation:					
Horse Business	429	151	86	37	15
Hobby Horse	149	2	24	9	13
Combined:					
Rogers Horse Business	212	107	62	24	13
Pontotoc Horse Business	217	44	24	13	2
Rogers Hobby Horse	70	2	9	1	13
Pontotoc Hobby Horse	79	0	15	8	0
Aggregate Total	578	153	110	46	28

* Includes Palominos and Buckskins as double registered.

TABLE 19 (CONTINUED)

Description	Breed			
	Other Registered[b]	Non-Registered	Ponies[c]	Non-Identified
County:				
Rogers	37	7	49	2
Pontotoc	65	4	9	0
Type of Operation:				
Horse Business	99	1	41	2
Hobby Horse	3	10	17	0
Combined:				
Rogers Horse Business	34	1	38	2
Pontotoc Horse Business	65	0	3	0
Rogers Hobby Horse	3	6	11	0
Pontotoc Hobby Horse	0	4	6	0
Aggregate Total	102	11	58	2

[b] Includes Tennessee Walker, Morgan, Walking Horse, Fox Trotter, Miniature, Belgian, Hannoverian, Oldenberg, and Anglo/Trakehner.
[c] Includes Shetland Pony, Welsh Pony, Pony of America, and Pony.

TABLE 20

VALUE PER HORSE REPORTED BY BREED FOR ROGERS AND PONTOTOC COUNTIES HORSE INDUSTRIES BY COUNTY, TYPE OF OPERATION, AND COMBINED COUNTY AND OPERATION, 1992 SURVEY, OKLAHOMA

	Breed				
Description	Quarter Horse*	Thoroughbred	Paint/Pinto	Appaloosa	Arabian
County:					
Rogers	$2,487	$6,115	$2,520	$1,100	$3,638
Pontotoc	$3,784	$6,932	$2,106	$921	$500
Type of Operation:					
Horse Business	$3,694	$6,416	$2,669	$882	$3,900
Hobby Horse	$1,855	$3,000	$1,407	$1,094	$3,054
Combined:					
Rogers Horse Business	$2,573	$6,180	$2,690	$1,250	$6,167
Pontotoc Horse Business	$4,795	$6,932	$2,611	$769	$500
Rogers Hobby Horse	$2,271	$3,000	$1,539	$500	$3,054
Pontotoc Hobby Horse	$1,485	NA	$1,308	$1,169	NA
Aggregate Total	$3,151	$6,368	$2,381	$956	$3,289

* Includes Palominos and Buckskins as double registered.

TABLE 20 (CONTINUED)

Description	Breed			
	Other Registered[b]	Non-Registered	Ponies[c]	Non-Identified
County:				
Rogers	$9,697	$743	$329	$1,500
Pontotoc	$1,909	$500	$329	NA
Type of Operation:				
Horse Business	$5,829	$500	$450	$1,500
Hobby Horse	$1,267	$670	$268	NA
Combined:				
Rogers Horse Business	$10,441	$500	$600	$1,500
Pontotoc Horse Business	$1,909	NA	$250	NA
Rogers Hobby Horse	$1,267	$783	$220	NA
Pontotoc Hobby Horse	NA	$500	$388	NA
Aggregate Total	$5,651	$655	$329	$1,500

[b] Includes Tennessee Walker, Morgan, Walking Horse, Fox Trotter, Miniature, Belgian, Hannoverian, Oldenberg, and Anglo/Trakehner.
[c] Includes Shetland Pony, Welsh Pony, Pony of America, and Pony.

per horse. Thoroughbreds reflected the same scenario as Quarter horses between the counties and types of operations with not quite as much dispersion between counties but much more dispersion between types of operations. The results for the other reported breeds are presented in the table. It should be noted that the unusually high values reported by Rogers county horse businesses in the other registered horses category were the result of the breeds Oldenberg, Hannoverian, and Anglo/Trakehner. There were only one response for the three breeds of horses but 11 Oldenbergs were reported at $21,364 per horse, 5 Hannoverians at $15,000 each, and 1 Anglo/Trakehner listed at $15,000. These values made other registered horses in Rogers county and horse businesses unusually high compared to their counter categories.

Table 21 provides the ranges of values that were reported for the different breeds identified in the survey.

Horse Users: Respondents who identified themselves as a hobby horse operation, were asked to indicate the users of their hobby horse operation. The responses to question 12b are summarized and reported in Table 22.

Adults were the most frequent reported users of owned hobby horses totalling 74.1% of the responses. Families were next most frequent users at 48.3% followed by youth reported at 39.7%. Other reported users of hobby horses are presented in the table. The respondents could report multiple uses so the percentages exceed 100%.

TABLE 21

RANGE OF VALUES PER HORSE REPORTED BY BREED FOR ROGERS AND PONTOTOC COUNTIES HORSE INDUSTRIES BY COUNTY, TYPE OF OPERATION, AND COMBINED COUNTY AND OPERATION, 1992 SURVEY, OKLAHOMA

	Breed				
Description	Quarter Horse*	Thoroughbred	Paint/Pinto	Appaloosa	Arabian
County:					
Rogers	$500 - $16,667	$800 - $20,000	$300 - $13,000	$500 - $1,200	$800 - $8,750
Pontotoc	$300 - $7,143	$1,333 - $25,000	$500 - $4,000	$350 - $1,500	$5,000 - $5,000
Type of Operation:					
Horse Business	$600 - $9,286	$800 - $25,000	$300 - $13,000	$600 - $1,333	$1,000 - $8,750
Hobby Horse	$300 - $16,667	$3,000 - $3,000	$500 - $2,500	$350 - $1,500	$800 - $8,750
Combined:					
Rogers Horse Business	$800 - $9,286	$800 - $20,000	$300 - $13,000	$1,200 - $1,200	$1,000 - $8,750
Pontotoc Horse Business	$600 - $7,143	$1,333 - $25,000	$600 - $4,000	$600 - $1,333	$5,000 - $5,000
Rogers Hobby Horse	$500 - $16,667	$3,000 - $3,000	$700 - $1,967	$500 - $500	$800 - $8,750
Pontotoc Hobby Horse	$300 - $3,000	NA	$500 - $2,500	$350 - $1,500	NA
Sample Range	$300 - $16,667	$800 - $25,000	$300 - $13,000	$350 - $1,500	$800 - $8,750

* Includes Palominos and Buckskins as double registered.

TABLE 21 (CONTINUED)

Description	Breed			
	Other Registered[b]	Non-Registered	Ponies[c]	Non-Identified
County:				
Rogers	$800 - $21,364	$500 - $1,000	$50 - $800	$1,500 - $1,500
Pontotoc	$100 - $1,974	$500 - $500	$200 - $500	NA
Type of Operation:				
Horse Business	$100 - $21,364	$500 - $500	$250 - $800	$1,500 - $1,500
Hobby Horse	$800 - $2,000	$500 - $1,000	$50 - $500	NA
Combined:				
Rogers Horse Business	$875 - $21,364	$500 - $500	$300 - $800	$1,500 - $1,500
Pontotoc Horse Business	$100 - $1,974	NA	$250 - $250	NA
Rogers Hobby Horse	$800 - $2,000	$600 - $1,000	$50 - $500	NA
Pontotoc Hobby Horse	NA	$500 - $500	$200 - $500	NA
Sample Range	$100 - $21,364	$500 - $1,000	$50 - $800	$1,500 - $1,500

[b] Includes Tennessee Walker, Morgan, Walking Horse, Fox Trotter, Miniature, Belgian, Hannoverian, Oldenberg, and Anglo/Trakehner.
[c] Includes Shetland Pony, Welsh Pony, Pony of America, and Pony.

TABLE 22

REPORTED USERS OF HOBBY HORSE OPERATION, 1992 SURVEY, OKLAHOMA

User	Responses From Rogers County	Responses From Pontotoc County	Total Responses	Percent of 58 Responses to Question 12b
Adults	33	13	43	74.1
Youth 4-H Member	7	4	11	19.0
Youth Horse Club Member	3	3	6	10.3
Other Youth	14	9	23	39.7
A Family	15	13	28	48.3
A Riding Club Member	4	2	6	10.3
A Round-up Club Member	7	7	14	24.1
Other*	3	3	6	10.3

* Other users responding in the survey were breed association members, rodeo participants, and friends.

Hobby Horse Operation Enterprise Budget

Introduction

Objective two of the study is to develop an enterprise budget for a hobby horse operation. The survey questions in section III were designed to collect specific cost information for expense and capital and equipment items commonly used in hobby horse operations. Some of the questions targeted some descriptive data for input items such as major types of grain mix, types of vehicles and trailers, and estimated milage spent on the horse

operation. Questions were also included for hobby horse operations to report revenues received from horse projects. The response information will be summarized and presented per operation and per horse. Summary statistics for the responses to the quantitative questions of section III are provided in Appendix B. The respondents were also asked to write a short summary of why they are a horse owner and that information will also be summarized and presented along with some personal characteristic information of the hobby horse owners that responded to the surveyed.

The information from the survey will aid in the development of the hobby horse enterprise budget. The hobby horse enterprise budget will serve as a decision making tool for current and prospective hobby horse owners. Management decisions concerning an enterprise typically involve a process of planning, implementation, and control. An enterprise budget will provide a summary of economic data which will serve as a benchmark for resource requirements and expenditures for a hobby horse operation. The budget information is summarized in terms of a one horse operation for one year which can be used to aid the processes of planning, implementation, and control of the operation.

Since the survey questionnaire was sent to a random sample of horse owners in Rogers and Pontotoc counties, it should be noted that the information presented here includes a variety of different hobby horse operations. Because of the variety of operations, there will be a wide range

of reportings for most of the expense, capital and equipment items, and revenues received.

Hobby Horse Operation Expenses, Revenues, and Capital Items

The next two tables will be used to present the information gathered from responding hobby horse operations in Rogers and Pontotoc counties. Tables 23 and 24 provide a summary of average values reported for each of the questions in terms of what was reported per operation and what was reported per horse. Both Tables 23 and 24 present the response data for all observations which include zero value reportings for each item and also for the observations reporting positive values only. This information gives us an idea of the average expenses for each item for all horse operations and an idea of the average expenses for each item when that item is included as an input in the operation. A copy of the survey is provided in Appendix A for any referencing to the question numbers (variables) which are identified in the tables.

TABLE 23

A PER OPERATION DATA SUMMARY FOR RESPONSES TO SECTION III OF THE SURVEY, 1992 SURVEY, OKLAHOMA

Variable	Observations Including Zero Responses	Average Value Including Zero Responses	Observations Excluding Zero Responses	Average Value Excluding Zero Responses
1	36	147.61	9	590.44
2	42	89.88	24	157.29
3A	30	146.33	7	627.14
3B	9	0.00	0	0.00
4A	61	295.95	60	300.88
4B	61	644.39	60	655.15
4C	22	274.14	19	317.42
4D	38	720.11	37	739.57
5A	64	199.42	57	223.91
5B	70	105.71	69	107.25
6	69	248.86	64	268.30
7	62	336.29	59	353.39
8	39	201.41	24	327.29
10	55	644.73	48	738.75
11	66	400.38	62	426.21
12	52	151.87	43	183.65
13A	25	113.00	8	353.13
13B	33	252.42	19	438.42
13C	43	425.66	32	571.99
14A	45	513.91	38	608.58
14B	36	202.56	26	280.46
14C	28	258.93	14	517.86
15A	27	375.00	12	843.75
15B	23	70.87	5	326.00
15C	24	229.17	10	550.00
16A2	20	25.00	2	250.00
16B2	19	5.26	1	100.00

TABLE 23 (CONTINUED)

Variable	Observations Including Zero Responses	Average Value Including Zero Responses	Observations Excluding Zero Responses	Average Value Excluding Zero Responses
17A	32	150.63	25	192.80
17B	52	74.13	43	89.64
17C	15	18.67	3	93.33

TABLE 24

A PER HORSE DATA SUMMARY FOR RESPONSES TO SECTION III OF THE SURVEY, 1992 SURVEY, OKLAHOMA

Variable	Observations Including Zero Responses	Average Value Including Zero Responses	Observations Excluding Zero Responses	Average Value Excluding Zero Responses
1	31	52.36	7	231.86
2	35	35.10	18	68.26
3A	28	63.45	7	253.81
3B	7	0.00	0	0.00
4A	47	111.53	46	113.95
4B	49	261.01	48	266.45
4C	18	55.34	15	66.41
4D	24	289.80	23	302.39
5A	49	76.03	44	84.67
5B	56	38.87	55	39.57
6	52	96.51	48	104.55
7	50	119.31	47	126.93
8	33	57.76	21	90.77
10	44	221.35	37	263.23
11	52	130.05	48	140.89
12	42	62.29	35	74.75
13A	20	23.54	7	67.26
13B	29	94.98	18	153.02
13C	37	152.06	29	194.01
14A	38	164.33	33	189.23
14B	30	66.67	23	86.95
14C	23	71.31	12	136.68
15A	22	79.38	11	158.77
15B	19	31.67	5	120.33
15C	18	77.17	7	198.45
16A2	16	8.63	2	69.05
16B2	15	2.22	1	33.33

TABLE 24 (CONTINUED)

Variable	Observations Including Zero Responses	Average Value Including Zero Responses	Observations Excluding Zero Responses	Average Value Excluding Zero Responses
17A	26	47.85	21	59.41
17B	41	24.13	35	28.27
17C	12	11.25	2	67.50

Expenses: Questions 1 through 17 and question 19 target operating expense items unique to hobby horse operations. The summarized data from responses to these question can be categorized (i.e. feed exp., health exp., etc.).

Responses to questions 1, 3, and 19 provide information of expense costs paid to others for boarding services and pasture and facility leasing. Horse owners reporting pasture rent averaged approximately 26-27 acres per operation for horses. There were no responses for facility leasing. Question 19 also presents some of the items that might be included in boarding such as feed, medicine, vet care, exercising, stalls, and pasture. Question 2, bedding costs, can be included in this category as an expense related to boarding horses.

Data from question 4 represents horse feed expenses for hay, grain, protein supplement, and total feed. Hobby horse owners reported feeding 6%-7% alfalfa hay compared to 93%-94% other types of hay such as prairie hay or other grass hays for the annual hay ration. Those reporting grain mix indicated feeding grain ranging between 12% and 14% crude protein.

Information from questions 5 and 6 provide expense data for health care which include veterinarian services, non-veterinarian services such as medicine, parasite control, etc., and hoof care.

Responses to questions 7, 8, and 17 represent typical expenditures for tools, tack, special clothing, various supplies, and other miscellaneous expenses for hobby horse operations.

The responses to questions 9, 10, and part of 13 provide information on operating expenses pertaining to vehicles and trailers used for the hobby horse operations and some descriptive information on the types and uses of vehicles and trailers.

The responses to questions 11, 12, and part of 13 provide information on operating expenses for maintenance, repairs, utilities, and insurance for buildings, facilities, fences, equipment, etc.

Information from the responses to question 14 provides approximate costs that hobby horse owners spend for event entry fees for the horse and rider and also costs for day trips and overnight trips for horse related events which would include travel, meals, and motel and boarding.

Response information for question 15 represents estimated costs paid for horse related services including horse training; lessons for riding, showing, and performing; and breeding fees.

Question 16 was a question targeting information describing the cost of skilled and unskilled labor used by hobby horse operations and how many hours those types of labor were used per week. The response rate was minimal for this question with no responses for hours reported and only a few reporting any expense for skilled and unskilled labor.

Revenues: As expected, revenues did not apply to most of the hobby horse operations. The most reported revenue was for show or other competition winnings. Most hobby horse operations are for pleasure and leisure and do not involve revenue generation. For those operations that do generate revenues, the response summaries to question 18 provide some information on what is earned by those type of horse operations.

Capital: Question 20 was included to collect information describing investment costs for capital items such as buildings and special horse fences, feeding and watering equipment, horse tack, special clothing, grooming equipment, horse trailers, towing vehicles for trailers, and other capital items. These values can vary widely in terms of investment cost, when considering an intensive type of hobby horse operation investing in modern facilities, equipment, and tack compared to the horse owner who is boarding out and owns none or only some of the listed capital items.

Hobby Horse Budget

As mentioned, there are several different types of hobby horse operations found in Oklahoma. The type of operation chosen by individual horse owners depends on the background, preferences, objectives, and resources of the individual. The analysis preceding this section presented and discussed the several types of horse operations, horse uses, and horse activities that were reported in the two counties of the study. The summary of responses to section III of the survey, presented in Appendix II also

provided some information on the ranges of cost and investment of the different types of hobby horse operations. Since hobby horse operations in Oklahoma can exhibit a variety of different types, it would take a very comprehensive study to develop a hobby horse enterprise budget to represent all the different types of hobby horse operations. Because of the limiting factors of such a comprehensive study, the objective of this research is to develop one representative hobby horse enterprise budget that can be easily modified by the user to fit any particular type of operation.

The enterprise budget provides a projection of costs and input items for the specified operation and it is presented in a format which allows the user to modify all or any of the items to fit his/her operation.

Table 25 presents the hobby horse enterprise budget. The title and footnotes of the budget provide a specific description of the type of operation. For example, a description of the horse, level of activity, feed arrangements, and the horse environment arrangements. A set of notes will accompany the enterprise budget to help the user understand each of the budget items and to help guide the user in the case of modifications needed for the budget.

Notes For Hobby Horse Budget, Oklahoma, May, 1993: The following supplemental notes for an Oklahoma hobby horse operation will assist users to interpret the budget and make modifications for individual situations and preferences. This particular budget assumes a 1 horse hobby horse operation consisting of an 1,100 pound horse. The horse is classed as a

TABLE 25

HOBBY HORSE BUDGET

HOBBY HORSE — 1 HORSE UNIT, CONFINED SYSTEM
11-12% C.P. GRAIN RATION AND GRASS HAY, OWN LABOR AT ZERO VALUE
COSTS/HORSE

57000011
05/03/93
STATE

OPERATING INPUTS	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
11-12% PROT.FEED	CWT.	10.200	19.800	201.96	
PRAIRIE HAY	TON	70.000	2.970	207.90	
SALT & MINERALS	LBS	0.150	10.000	1.50	
FARRIER	HEAD	40.000	6.000	240.00	
VET MEDICINE	HEAD	1.000	39.600	39.60	
VET SERVICE	HEAD	1.000	111.000	111.00	
UTILITIES	DOL	1.000	74.760	74.76	
TACK, MISC SUPPLIES	HEAD	1.000	372.000	372.00	
BEDDING	HEAD	1.000	68.000	68.00	
ENTRY FEES	0	0.000	0.000	0.00	
TRAVEL EXPENSES	0	0.000	0.000	0.00	
HORSE TRAINING	0	0.000	0.000	0.00	
RIDER TRAINING	0	0.000	0.000	0.00	
ANNUAL OPERATING CAPITAL	DOL.	0.086	660.135	56.94	
MACHINERY LABOR	HR.	0	5.808	0.00	
EQUIPMENT LABOR	HR.	0	8.591	0.00	
HORSE LABOR	HR.	0	360.000	0.000	
MACHINERY FUEL, LUBE, REPAIRS	DOL.			34.36	
EQUIPMENT FUEL, LUBE, REPAIRS	DOL.			51.19	
TOTAL OPERATING COSTS				1459.20	

FIXED COSTS	AMOUNT	VALUE		YOUR VALUE
MACHINERY				
INTEREST AT 9.250%	67.32	6.23		
DEPR, TAXES, INSURANCE		12.24		
EQUIPMENT				
INTEREST AT 9.250%	2500.53	231.30		
DEPR, TAXES, INSURANCE		100.14		
LIVESTOCK				
HORSE	1445.00			
INTEREST AT 9.250%	1445.00	133.66		
DEPR, TAXES, INSURANCE		51.00		
TOTAL FIXED COSTS			534.56	

RETURNS ABOVE TOTAL OPERATING COST	-1459.20
RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD, RISK, AND MANAGEMENT	-1993.77

ASSUMES 1100# HORSE, WORKING CLASS; LIGHT INTENSITY WORK

WALKER, FREEMAN, ELLIOTT
24-May-93
1111111110

DEVELOPED AND PROCESSED BY DEPARTMENT OF AGRICULTURAL ECONOMICS
OKLAHOMA STATE UNIVERSITY

TABLE 25 (CONTINUED)

HOBBY HORSE — 1 HORSE UNIT, CONFINED SYSTEM
11-12% C.P. GRAIN RATION AND GRASS HAY, OWN LABOR AT ZERO VALUE
COSTS/HORSE

[illegible]
[illegible]
STATE

OPERATING INPUTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
							RATE/UNIT											
9 11-12% PROT.FEED	165.000	165.000	165.000	165.000	165.000	165.000	165.000	165.000	165.000	165.000	165.000	165.000	[illegible]	[illegible]	CWT.	1[illegible]	3	0
10 PRAIRIE HAY	405.000	405.000	405.000	405.000	405.000	405.000	405.000	405.000	405.000	405.000	405.000	405.000	70.000	[illegible]	TON	[illegible]	3	0
11 SALT & MINERALS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100	1.00	LBS	[illegible]	3	0
12 FARRIER	1.000	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000	0.000	1.000	0.000	[illegible]	1.00	HEAD	[illegible]	3	0
13 VET MEDICINE	[illegible]	0.000	0.000	0.000	0.000	0.000	[illegible]	0.000	0.000	0.000	0.000	0.000	1.000	1.00	HEAD	410	3	0
14 VET SERVICE	0.000	0.000	0.000	[illegible]	0.000	0.000	0.000	0.000	0.000	[illegible]	0.000	0.000	1.000	1.00	HEAD	411	3	0
15 UTILITIES	0.000	0.000	0.000	0.000	0.000	0.000	0.000	[illegible]	0.000	0.000	0.000	0.000	1.000	1.00	DOL	[illegible]	3	0
16 TACK, MISC SUPPLIES	31.000	31.000	31.000	31.000	31.000	31.000	31.000	31.000	31.000	31.000	31.000	31.000	1.000	1.00	HEAD	[illegible]	3	0
17 BEDDING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.000	1.00	HEAD	475	0	0
18 ENTRY FEES	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	STATE	0.00	0.00	0	0	0
19 TRAVEL EXPENSES	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	STATE	0.00	0.00	0	0	0
20 HORSE TRAINING	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	STATE	0.00	0.00	0	0	0
21 RIDER TRAINING	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	STATE	0.00	0.00	0	0	0

MACHINERY REQUIREMENTS	JAN	FEB	MAR	APR	MAY	JUN (HOURS)	JUL	AUG	SEP	OCT	NOV	DEC	XXXXX	NUMBER WORKER	POWER UNIT	MACH CODE	TYPE	CONT
31 PICKUP, 1/2 TON	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00	1.00	11	9	4	0
32 STOCK TRAILER, 16 FT	0.150	0.150	0.150	0.150	0.150	0.120	0.150	0.150	0.120	0.150	0.150	0.150	0.00	1.00	11	[illegible]	4	0

EQUIPMENT REQUIREMENTS													NUMBER UNITS	PROP OF COST	CHECK FIGURE	EQUIP CODE	TYPE	CONT
49 BLDGS (1000SQFT)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.00	1.0000	1.0000	130	5	0
50 5-WIRE 12.5 AC FENCE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.00	[illegible]	[illegible]	1	5	0
51 FEEDING & WATERING	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.00	1.0000	1.0000	[illegible]	5	0
52 TACK, CLOTHING, GRO	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.00	1.0000	1.0000	134	5	0

LIVESTOCK INVESTMENT													NUMBER UNITS	PROPORT OF COST	XXXXX	LVST CODE	TYPE	CONT
65 HORSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.00	1.00	57	3	0

OTHER LABOR													PRICE	NUMBER UNITS	UNIT CODE	ITEM CODE	TYPE	CONT
72 HORSE LABOR	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	0.00	1.00	HR.	12	7	0

MONTHLY SUMMARY OF RECEIPTS AND EXPENDITURES

CATEGORY	UNIT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
TOTAL RECEIPTS	ACRE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENDITURES	ACRE	149.71	84.00	104.00	101.40	104.00	84.00	149.71	84.00	104.00	[illegible]	104.00	84.00	[illegible]
RETURNS TO LAND, LABOR, CAPITAL, MACHINERY, OVERHEAD, RISK, AND MANAGEMENT														-[illegible]
ANNUAL CAPITAL	DOL	11.73	16.01	[illegible]	41.00	[illegible]	[illegible]	71.07	78.16	[illegible]	[illegible]	103.77	0.00	[illegible]
MACHINERY LABOR	HR	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	[illegible]
EQUIPMENT LABOR	HR	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	[illegible]
LIVESTOCK LABOR	HR	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	[illegible]
TOTAL LABOR	HR	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00	374.40

MACHINERY AND EQUIPMENT COSTS PER MONTH

ITEM	TYPE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	HRS USE
PICKUP, 1/2 TON	VAR.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	[illegible]	2.730
	FIXED	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	[illegible]	
STOCK TRAILER, 16 FT	VAR.	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	14.47	1.[illegible]
	FIXED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BLDGS (1000SQFT)	VAR.	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	15.81	
	FIXED	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	116.13	
5-WIRE 12.5 AC FENCE	VAR.	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	[illegible]	
	FIXED	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	[illegible]	
FEEDING & WATERING	VAR.	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	15.71	
	FIXED	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	[illegible]	
TACK, CLOTHING, GRO	FIXED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	

MACHINERY FIXED AND VARIABLE COSTS PER HOUR

IMPLEMENT FIXED AND VARIABLE COSTS PER HOUR

IMPLEMENT	DEPR	INSR	TAX	TTL FIX	REPAIR	FUEL	LUBE	TTL VAR	INT	HRVTIME
31 PICKUP, 1/2 TON	ERR	ERR	ERR	0	ERR	0	0	0	0	0
32 STOCK TRAILER, 16 FT	[illegible]	[illegible]	0.107	1.1174[illegible]	0.7[illegible]	0	0	0.74[illegible]	[illegible]	1

POWER UNIT FIXED AND VARIABLE COSTS PER HOUR

POWER UNIT	DEPR	INSR	TAX	TTL FIX	REPAIR	FUEL	LUBE	TTL VAR	INT	HRVTIME
31 Pickup, 1/2 Ton	1.[illegible]	[illegible]	0.14[illegible]	2.[illegible]	2.2[illegible]	2.744	[illegible]	[illegible]	[illegible]	1
32 Pickup, 1/2 Ton	1.[illegible]	[illegible]	0.14[illegible]	2.[illegible]	2.2[illegible]	2.744	[illegible]	[illegible]	[illegible]	1

INFORMATION FROM MACHINERY COMPLEMENT

IMPLEMENTS	WIDTH (FEET)	88 LIST / LIST	SPEED	FLD EFF / EFNCY	RC1 / RC1	RC2 / RC2	RC3 / RC3	HRUSE/Y / USE	YRSOWN / OWNED	RFV1 / RFV1	RFV2 / RFV2	PURCHS / PRICE	FUELTYP / TYPE	HRS LIFE / LIFE	HP / POWE	FUELMULT / MULT.
31 PICKUP, 1/2 TON			0													
32 STOCK TRAILER, 16 FT	5	1070	0.7	0.17	0.0	[illegible]	1.3	100	[illegible]	[illegible]	[illegible]	1070	0	[illegible]	0	0

POWER UNITS	WIDTH	88 LIST	SPEED	FLD EFF	RC1	RC2	RC3	HRUSE/Y	YRSOWN	RFV1	RFV2	PURCHS	FUELTYP	HRS LIFE	HP	FUELMULT
31 Pickup, 1/2 Ton	100	11[illegible]	[illegible]	[illegible]	0.0	[illegible]	1.4	[illegible]	0	[illegible]	[illegible]	11[illegible]	1	[illegible]	130	[illegible]
32 Pickup, 1/2 Ton	100	11[illegible]	[illegible]	[illegible]	0.0	[illegible]	1.4	[illegible]	0	[illegible]	[illegible]	11[illegible]	1	[illegible]	130	[illegible]

ANNUAL COST SUMMARY FOR EQUIPMENT

ITEM	DEPR	INTEREST	INSUR	TAXES	TTLOWNR	REPAIRS	FUELALUB	TTL OPER	CODE	SIZE	UNIT	TYPE
49 BLDGS (1000SQFT)	27.[illegible]	71.[illegible]	4.[illegible]	[illegible]	[illegible]	15.[illegible]	0	15.[illegible]	0	1	[illegible]	2
50 5-WIRE 12.5 AC FENCE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]	0	1	MILE	2
51 FEEDING & WATERING	11.[illegible]	[illegible]	[illegible]	[illegible]	12.[illegible]	15.71[illegible]	0	15.71[illegible]	0	1	HEAD	2
52 TACK, CLOTHING, GRO	0	[illegible]	[illegible]	[illegible]	11.7[illegible]	0	0	0	0	1	HEAD	2

EQUIPMENT INFORMATION FROM ECOM

TABLE 25 (CONTINUED)

	ITEM	SIZE	UNIT	TYPE	LIST $	PURCH$	YRS LIFE	SALVPROP	REP PRO	F&L PRO	HRLAB/YR
49	BLDGS (1000SQFT)	1	20	2	1166	1166	30	0.2	0.4	0	3
50	3-WIRE 12.5 AC FENCE	1	MILE	2	1700	1700	25	0.3	0.6	0	10
51	FEEDING & WATERING	1	HEAD	2	110	110	7	0.25	1	0	0
52	TACK, CLOTHING, ETC	1	HEAD	2	[illegible]	[illegible]	0	1	0	0	0

ANNUAL COST SUMMARY FOR LIVESTOCK

	ITEM	DEPR	INTERES	INSUR	TAXES	T OWNER	REPAIRS	FL & LUB	T OPER
66	HORSE	81	138.0000	0	0	81	0	0	0

LIVESTOCK INFORMATION FROM ECON

	ITEM	SIZE	UNIT	TYPE	LIST $	PURCH $	YRS LIFE	SALVPROP	REP PRO	F&L PRO	HRLAB/YR
66	HORSE	1	1	1	1700	1700	10	0.7	0	0	0

ASSUMES 1 [illegible] HORSE, WORKING CLASS, LIGHT INTENSITY WORK

WALKER, FREEMAN, ELLIOTT

[illegible]

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DEVELOPED AND PROCESSED BY DEPARTMENT OF AGRICULTURAL ECONOMICS

OKLAHOMA STATE UNIVERSITY

working horse of light intensity work. The assumed feeding arrangements include a confined system providing all nutritional requirements with a feed ration consisting of 25% grain and 75% hay. The two feed sources are an 11%-12% crude protein grain source and 7%-8% grass hay source. It is assumed that the horse owner provides all livestock labor.

1. 11%-12% Protein Feed: Assuming an 11%-12% crude protein feed, the daily grain portion of the feed ration for an 1,100 lb. light working horse is figured at 0.5% of the horse's body weight which equals 5.5 pounds per day. The ration along with the specified hay ration meets the National Research Council (NRC) nutrient requirements for the described horse. In many cases, the nutrient requirements may change and feeding should be adjusted accordingly. Situations which would require an increase adjustment to nutrient requirements would include a larger horse or a horse performing at a higher level of physical activity. For example, horses in training for competition, horses that are used heavily for cattle operations, or a mare in gestation or lactation. Situations requiring a decrease adjustment to nutrient requirements would include a horse of lower activity, a smaller horse, or a horse receiving any nutrients from other sources such as pasture. The NRC or other feeding guides are available to guide the horse owner in the proper adjustments needed for the different type of horse operations or activities and also for alternative sources of feeds. There are several sources of commercial feeds who provide a selection of horse feeds of different crude protein levels or the grain ration can be custom mixed.

2. Grass Hay: Assuming a 7%-8% crude protein grass hay, the daily hay portion of the feed ration for an 1,100 lb. light working horse is figured at 1.5% of the horse's body weight which equals 16.5 pounds per day. The ration along with the specified grain ration meets the National Research Council (NRC) nutrient requirements for the described horse. Any adjustments for the hay ration would follow the same reasoning as described in the grain ration notes. There are several types of hays such as grass, alfalfa, and timothy which could be included as the forage source or part of the forage source and their respective crude protein levels should be considered when calculating the proper hay requirements.

3. Salt & Minerals: A mature horse is assumed to require approximately 10 pounds of salt per year. Salt blocks with trace minerals are available and can be provided to the horse on a free choice basis. The salt and mineral sources are offered to the horse in 5 pound blocks twice a year. There are numerous sources of minerals, vitamins, and supplements available for horses at a wide range of costs. This particular input item depends largely on the preferences of the horse owner and can be adjusted easily in the budget.

4. Farrier: Farrier costs for the hobby horse operation are assumed to include trimming and shoeing the horse every 8 weeks at a cost of $40 each time. Farrier practices may substitute shoeing the horse with re-setting the shoes which usually costs approximately $5-$10 less. If horse shoes are not used, periodic trimming is even less costly at approximately $15 each

time. Horse activities, ground surface conditions, and personal preferences are primary factors which determine the type of farrier practices used in a horse operation. Farrier costs can be easily adjusted in the budget.

5. Vet Medicine: Vet medicine in the budget assumes a non-injury health care plan which includes deworming of the horse every 90 days or 4 times per year. Two of the deworming schedules are assumed to be administered by the horse owner using a commercial dewormer product with the approximate cost of $15 per treatment. Hobby horse owners responding to the survey and reporting vet medicine costs reported an average of $3.30 per month per horse for items including medicine, parasite control, etc. An average of $.80 per month for vet medicines which includes 2 deworming treatments per year at a cost of $15 per treatment sums up to $39.60 per horse per year. This total is consistent with what was reported by hobby horse owners.

6. Vet Services: Vet services in the budget is a basic horse health maintenance plan for the described horse operation. The assumed health plan includes schedules and costs for twice a year visits to the veterinarian, which includes two tube treatment dewormings at $18 each, two Coggins Tests at $6.50 each, a health certificate for each visit at $5 each, and a $15 exam charge for each visit. The plan also assumes $22 of annual vaccinations which include an Eastern and Western Encephalomyelitis with tetanus toxoid and a rabies vaccination at $10. Other optional vaccinations, that are not included in the budget, are available for preventive health care

when horses are exposed to transient horses. These include an Influenza vaccination each 3-6 months at $10 each and a Viral Rhinopneumonitis each 3-6 months at $10 each. Annual teeth floating is estimated at $30. Estimated vet services costs for the budget are $111.00 per year.

7. Utilities: Horse related utilities used for water, heating, electricity, etc. were estimated using the response data from section III of the survey. Respondents reporting utility costs reported an average of $6.23 per horse per month. Estimated utilities costs for the budget are $74.76 per year.

8. Tack & Misc. Supplies: Tack & misc. supplies included tack and grooming supplies, special clothing purchases, miscellaneous supplies and expendables, magazines, memberships, and other miscellaneous expenditures related to the hobby horse operation. The estimated expense for this item also came from the responses data from section III of the survey. Respondents who reported having these expense items reported an average cost of $31.06 per horse per month. The estimated costs for tack and miscellaneous supplies are $372.00 per year for the budget.

9. Bedding: Bedding included shavings and straw. Horse owners were asked to report all bedding expenses which included straw that was raised as well as purchased. The average expense for bedding by owners who reported the expense was $68.26 per horse per year. The estimated annual expense for bedding in the budget is $68.00.

10. Entry Fees, Travel Expenses, Horse Training, and Rider Training: The next 4 items on the budget include entry fees, travel expenses, horse

training, and rider training. These operation expenses represent a wide range of values between different types of hobby horse operations. No values were estimated for these items in the budget but a space is provided for the budget user to include the values for all or any of these four expenses that are included in his/her hobby horse operation.

11. Annual Operating Capital: Annual operating capital is estimated at $660.14 for the year at a price of 8.6%. The total estimated cost of operating capital in the budget sums up to $59.94 for the year.

12. Machinery, Equipment, and Livestock Labor: Labor for horse operations include machinery and equipment operation for tasks such as hauling horses, hauling feed and supplies, repairing fences just to mention a few. Livestock labor is also involved, which includes feeding and watering, grooming, training, etc. In the development of this horse budget, no value was given to the three labor categories assuming that the horse owner provides all of the labor. The labor cost was excluded for the expense estimation because of the nature of a hobby horse operation. It is assumed that the horse owner is receiving personal satisfaction and enjoyment from the hobby horse operation and is not involved in the operation for profit. Therefore, the participation in the activities of the operation which includes all of the labor is not counted as a cost to the horse owner. However, the estimated hours of labor for each of the labor categories are included in the budget.

13. Machinery and Equipment Fuel, Lube, and Repairs: Fuel, lube, and repairs for machinery and equipment are calculated by the OSU Budget Generator. The budget generator uses standardized estimating equations along with descriptive and operation data of the machinery and equipment specified for the budget. The data describing the machinery and equipment specified for the budget is presented on the second and third page of the budget (Table 25).

14. Fixed Costs: Fixed costs are also summarized and presented on the budget below the operating inputs summary. Fixed costs are also generated by the budget generator. These costs are generated using standardized equations and data describing the machinery, equipment, and livestock. Interest is assumed at 9.25% for machinery, equipment, and livestock and interest, depreciation, taxes, and insurance are all estimated for the hobby horse operation. Data describing the purchase price, years of life, salvage value, and physical description of all of the machinery, equipment, and livestock of the operation are presented in the budget.

Reasons for Owning a Horse

Question 22 of section III of the survey asked the respondents to write a short summary of why they are a horse owner. There were 77 responses to the question out of the 87 survey responses for hobby horse operations. Several of the respondents indicated two or more reasons for owning a horse. Table 26 presents a summary of the responses to question 22.

TABLE 26

REPORTED REASONS FOR OWNING A HORSE BY HORSE OWNERS IN ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Reason	Number of Responses
Pleasure and enjoyment	63
Competition	25
Youth project	18
Cattle operation	16
Always had a horse	17
Always wanted a horse	6
Brake, train, and/or lessons	7
Basis of future business	3
Small income project	1
Horses from past business	1
Inherited horses	2
No responses	10

A total of 63 horse owners (72%) reported owning a horse because of the pleasure and enjoyment they received from horse ownership. The respondents expressed that they received pleasure and enjoyment from the many leisure activities involving horses which included riding, training, different levels of competition, breeding and raising young horses, and social functions just to name a few. Many of the respondents reported that their horses and horse activities provided a channel of stress relief and relaxation.

Competition was another of the more popular reasons for horse ownership. A reporting total of 25 horse owners (29%) indicated that they owned horses for competition reasons. Competition activities that were reported included showing, rodeo events, and horse club events.

A total of 18 (21%) respondents indicated that they owned a horse for the reason of providing a project for a youth. Respondents reported providing horses for their own children, grandchildren, great grandchildren, and nephews and nieces. Many of the horse owners expressed that they had grown up owning a horse and wanted their children to have those same type of experiences.

Owning horses for a cattle operation was another reported reason with 16 (18%) of the hobby horse owners specifying that reason. Most of the respondents indicated the horses were for their own cattle operations but some reported using them for other cattle operations belonging to other family and friends.

A total of 17 (20%) of the horse owners reported that they owned a horse because they had been raised owning horses and had been around them all of their lives. Six (7%) reported that they owned because they had always wanted a horse when they were growing up and became an owner as soon as they had the opportunity.

Seven (8%) of the respondents indicated that they owned horses because they provided horse related services which included horse breaking, horse training, and/or lessons such as riding or other horse activities.

There were 3 respondents who reported that their owned horses were the basis for a future horse business, 1 reported his owned horses were remnants of a past horse business, and 1 reported that owned horses provided a means of making a small profit out of a hobby.

Two respondents reported horse ownership as a result of inheritance and 10 of the reporting hobby horse operations did not respond to the question.

Characteristics of Hobby Horse Owners: Question 22 targeted information describing some personal characteristics of hobby horse owners in Rogers and Pontotoc counties. Questions included the respondents age, number of years involved in horse activities, educational background, and total household income. The average age reported was between 44 and 45 years, the average number of years of involvement in horse related activities was between 26 and 27 years, the average level of education completed was between 2 to 5 years of college and college graduate, and the average total household income reported was between the ranges of $30,001-40,000 and $40,001-50,000.

CHAPTER IV

RESULTS AND ANALYSIS - DECISION MAKING BY HORSE BUSINESS MANAGERS

This chapter uses information from section IV of the survey to analyze characteristics and decision processes of horse business managers. First, the information is used to describe some specific characteristics of horse farm managers in the two counties and to discover their assessments of some issues concerning the Oklahoma horse industry. Then, the information is used to describe an experiment on decision making behavior of horse farm managers for three specified decision scenarios.

Sixty three of the 150 total respondents identified themselves as managers of a horse business. However, the analysis in this chapter may include up to 75 observations for any of the questions analyzed. Several survey respondents who identified themselves as owners of hobby horse operations completed the horse business section of the survey in addition to the hobby horse section of the survey. Twelve respondents were considered and accepted for this particular part of the analysis because they had expressed past experience in the horse business as a manager or had worked closely to management of a horse business. Some of those respondents indicated that they were working towards establishment of a

horse business. Each of the 12 respondents was accepted for the horse business analysis if the response appeared to improve the data set depth without impairing the quality of the data set.

Characteristics and Attitudes of Horse Business Managers

Information describing some personal characteristics of the horse farm managers and their assessments of some issues in the Oklahoma horse industry are provided in this section. A statistical summary of the responses to these questions from section IV of the survey are also presented in Tables 27 and 28. The survey copy in Appendix A is provided for referencing.

Questions A1A, A1B, A2, A3A, A3B, and A3C target information on managers' experience and range of activities in the horse industry and in agriculture. Questions A1A, A1B, and A2 were designed to measure the manager's level of experience in terms of years involved with horse related activities, years in the horse business, and years involved in agriculture. The horse farm managers reported between 20 and 30 years of experience on average for all three questions (Table 27). Questions A3A and A3C were "yes/no" type questions indicating experience and activeness of the manager's attendance of and participation in horse events in 1991. Question A3B measured the number of horse events each manager attended in 1991. Ninety-four percent of the respondents said that they attended horse events in 1991, with an average of 24 to 25 horse events per respondent for that year. Seventy-eight percent of the respondents said that

TABLE 27

SUMMARY STATISTICS OF RESPONSES TO PART A AND C OF SECTION IV OF THE SURVEY, 1992 SURVEY, OKLAHOMA

Variable	N	Mean	Standard Deviation	Sum	Minimum	Maximum
A1A. yrs w/ horse act	69	28.26	15.77	1950.0	4.0	84.0
A1B. yrs in horse bus	69	21.03	13.22	1451.0	1.0	70.0
A2. yrs in agri	61	28.08	17.85	1713.0	0.0	80.0
A3B. horse evnts '91	65	24.51	32.57	1593.0	2.0	150.0
A5. bus/eco records	71	3.37	1.07	239.0	1.0	5.0
A6. dev econ records	69	2.51	1.43	173.0	1.0	5.0
A8. bre/ani records	65	3.42	1.29	222.0	1.0	5.0
A9. others knowledge	71	3.01	1.04	214.0	1.0	5.0
A10. own knowledge	72	3.32	0.89	239.0	1.0	5.0
A12. % pos return	72	23.82	18.41	1715.0	0.0	70.0
A13. expect pos ret	72	3.74	0.84	269.0	1.0	5.0
A14. full analysis	73	3.27	1.12	239.0	1.0	5.0
A15. non-profit reas	72	3.65	0.89	263.0	1.0	5.0
A16A.like horses	63	1.40	0.87	88.0	1.0	5.0
A16B.family living	53	3.08	1.30	163.0	1.0	5.0
A16C.high $ payoff	52	4.21	1.13	219.0	1.0	5.0
A16D.life style	54	3.02	1.00	163.0	1.0	5.0
A16E.industry glamour	54	3.13	1.21	169.0	1.0	5.0
C1. age	68	51.90	12.07	3529.0	32.0	89.0
C2[a]. education	70	3.80	1.82	266.0	1.0	8.0
C3[b]. income	68	5.79	2.53	394.0	1.0	10.0

[a] The 8 possible response choices to this survey question are identified with the numerical values 1 through 8.

[b] The 10 possible response choices to this survey question are identified with the numerical values 1 through 10.

TABLE 28

SUMMARY STATISTICS OF YES/NO RESPONSES TO PART A AND C OF SECTION IV OF THE SURVEY, 1992 SURVEY, OKLAHOMA

Variable	N	Yes Responses	No Responses	Percent Yes Responses	Percent No Responses
A3A. attend evnts '91	70	66	4	94%	6%
A3C. part evtns '91	63	49	14	78%	22%
A4. keep bus/econ rec	73	64	9	88%	12%
A7. keep bre/ani rec	73	52	21	71%	29%
A11A. ag related ed	65	17	48	26%	74%
A11B. livest related ed	69	26	43	38%	62%
A11C. bus related ed	65	41	24	63%	37%

they participated in the horse events that they attended. An individual's experience in an industry depends partly on the number of years he/she is involved with the industry and also on how much that person interacts in the industry's activities and events. The numbers that were reported by the reporting sample of this research indicate that an average manager possesses considerable experience in the horse industry. The range and standard deviation provide information about the overall distribution of experience for the responding sample.

Questions A4, A5, A6, A7, and A8 were included to generate information on record keeping habits of horse farm managers. The questions dealt with business/economic records and animal breeding/performance records. Questions A4 and A7 were "yes/no" questions intended to

discover if the managers kept business/economic records and breeding/animal records for their horse businesses. Eighty-eight percent of the reporting managers indicated that they kept business/economic records and 71% of the managers said that they kept breeding/animal records. Question A5 asked respondents to rate the completeness and overall adequacy of their business/economic records on a scale ranging from poor (1) to excellent (5) and question A6 asked how often they developed actual or projected balance sheets, income statements, and summaries of cash flow on a scale ranging from seldom (1) to regularly (5). The results said that the average rating of completeness and overall adequacy of business/economic records was 3.37 on the scale of 1 through 5 and the average rating of frequency for developing the balance sheets, income statements, and cash flows was 2.51 on the scale of 1 through 5. Question A8 asked each manager to rate the completeness and overall adequacy of breeding/animal performance records on a scale ranging from poor (1) to excellent (5). The average rating for reportings to this question was 3.42 on the scale of 1 through 5.

Record keeping habits described in these questions provide an indication of the level of involvement the manager has in his/her business. Record keeping involves the manager in processing and generating information pertaining to the business and industry. The average ratings that the managers reported for the completeness and overall adequacy of their records were not a perfect 5, but a 3.37 rating for the business

economic records and a 3.42 rating for the breeding/animal performance records both in the upper range of the scale of 1 to 5. The rating for how frequently the managers developed balance sheets, income statements, and cash flows was 2.51 which would be considered low. Improved record keeping and record development practices would be very beneficial to the farm business and the managers involved especially in an industry that has a tight profit margin. More and better information provides for more optimal decision making. Higher involvement, as with record keeping and use of the results, reflects decision processes used.

Questions A9 and A10 provide information on the responding horse manager's assessment of other horse managers' knowledge of the horse business and also assesses his/her own knowledge of the horse industry compared to others in the industry. Question A9 asked the respondents to rate the average knowledge level of horse business economics of other horse business managers that they have known on a scale ranging from low (1) to high (5). The average rating for all respondents was 3.01 on the scale of 1 through 5 which can be interpreted as a knowledge level of about average. Question A10 asked the respondents to objectively rate their own knowledge level of the horse industry compare to others in the industry. The average rating over all responses was 3.32 which was higher than where they rated other managers they knew in the industry at 3.01. Knowledge levels of an industry is difficult to measure using a general information survey of this type, but most of the horse business managers

responding to the survey feel that they are slightly more knowledgeable than other horse business managers that they know.

Questions A11A, A11B, A11C, and C2 were included to collect information describing the educational background of managers in the horse industry. Questions A11A, A11B, and A11C were "yes/no" type questions identifying whether the respondents had an agriculture, livestock, or business related education. Twenty-six percent of those reporting indicated they had an agriculture related education, 38% reported a livestock related education, and 63% reported having a business related education. Some of the respondents indicated they had an education in more than one of the identified areas. Question C2 gathered information concerning the level of education of each of the respondents. The levels of education on the survey along with their associated identification numbers were high school (1), technical school (2), less than 2 years of college (3), 2 to 5 years of college (4), college graduate (5), less than 2 years of post graduate college (6), 2 to 4 years of post graduate college (7), and more than 4 years of post graduate college (8). The reported results for question C2 produced an average value of 3.8 which indicated an education completion level between 2 to 5 years of college and college graduate for all respondents. It is believed that there is a positive correlation between better decision making practices and education. People completing higher levels of education are more likely to be exposed to decision making techniques, tools, and other aids that help people improve their decision making skills and practices. The average level

of education reported by the sample of horse managers of this study is just short of college graduate level which would indicate that most of them have likely been exposed to some decision making techniques, tools, etc.

Questions A12 and A13 generate information on the horse managers' assessment of the profitability of the Oklahoma horse industry. Question A12 asked the respondents to indicate what percentage of horse owners they believed to have a positive horse business return after paying all economic costs. The question provided a scale ranging from 0 to 100% and the average for all responses was about 23.82%. This measure of profitability indicates that only about one forth of all horse businesses are operating as a profitable entity. Question A13 asked if they believe that horse people they know expected to have a positive horse business return when they entered the business. The response choices to the question were: Strongly disagree, Disagree, Don't know, Agree, Strongly agree; with the possible responses identified with the numerical values of 1, 2, 3, 4, and 5 respectively. The average response for the question was 3.74 which is between the responses of Don't Know and Agree which are identified as response 3 and 4 respectively. The consensus of the response is that they agree with the statement that most of the horse business people they know expected to have a positive horse business return when they entered the business.

The response results to question A12 and A13 provide somewhat conflicting assessments. The response summary to question A12 indicated

that only about one forth of horse businesses are operating profitably and the response summary to question A13 indicated most horse people expected to have a positive horse business return when they entered the business. Given these two assessments of the horse industry, could it be that the horse business sector is more profitable than the respondents indicated? This could be the case if prospective horse business people are properly and fully analyzing the prospective horse business and perhaps they are. On the other hand, prospective horse people may not be properly and fully analyzing the business before entering. Possibly the prospective horse business people are over-confident about a positive horse business return before entering the business. These possible scenarios provide a good setting to study influencing factors that affect decision making behavior of the managers.

Questions A14, A15, A16A, A16B, A16C, A16D, and A16E provide information describing reasons why people are in the horse business. Question A14 asked the respondents if a horse owner or producer would not enter the business if he/she had benefit of a full economic analysis of the prospective business. The response choices to the question were like question A13's and ranged from Strongly disagree to Strongly agree identified with the numerical values 1 through 5. The average response was 3.27 which is also between the responses of Don't know and Agree. The response information indicates that, overall, they agree that these horse people would not enter the horse business if benefit of a full economic

analysis of the prospective business was available. This supports the idea that horse businesses on average are not profitable and the information from a full economic analysis would signal a prospective horse business person to avoid the business. However, if the prospective horse business person was motivated to enter the business for reasons other than profit, the "red light" signal from a full economic analysis of the business may be insignificant. Appropriately, question A15 asks the surveyed horse managers if people enter the horse business for reasons other than profit. The response choices for this question, like those of A13 and A14, ranged from Strongly disagree to Strongly agree with the identifying values of 1 through 5. The average response was 3.65 which again is between the response choices Don't know and Agree which indicates mild agreement that people do enter the horse business for reasons other than profit. If people do enter the horse business for other reasons than profit, then full economic analysis may not be as influential. Question A16 sticks with the subject of reasons why people enter the horse business. The question provides 5 possible reasons why people enter the horse business and the respondent was asked to rank them in the order of 1 through 5 why they believe people enter the horse business. Table 29 provides a response summary of the five possible reasons that people enter the horse business with the average response values and overall ranking.

The response summary strongly supports the notion that people enter the horse business for reasons other than profit. The reason "like horses

TABLE 29

RESPONSE SUMMARY FOR REASONS PEOPLE ENTER THE HORSE BUSINESS, 1992 SURVEY, OKLAHOMA

Reasons	Rating	Rank
A16A - Like horses and enjoy horse activities	1.40	1
A16B - Expect to make a profit/family living	3.08	3
A16C - Offers a chance of a very high financial payoff	4.21	5
A16D - Attractive lifestyle and work/life setting	3.02	2
A16E - Glamour of the industry and business	3.13	4

and enjoy horse activities" was the number 1 reason of the 5 choices and the reason "offers a chance of a very financial payoff" was the least likely reason that people enter the horse business. The reasons described as "attractive life style and work/life setting", "expect to make a profit/family living", "and glamour of the industry and business" ranked 2, 3, and 4 overall and each had comparatively close value ratings. The order of the final rankings for the five reasons indicate that people enter this business first of all for non-economic reasons such as the association with horses along with the life style and setting of the business. Economic reasons for entering the business which include making a profit and a means to provide a family living seem to be secondary according to the opinions of the sample of horse farm managers who responded to the question.

Questions C1 and C3 were included to gather information that describe the age and total household income of the responding managers of the survey. Question C1 was the question of age and the average for the respondents was 51.90 or almost 52 years. Question C3 was the question of total household income. The question was provided with 10 possible responses to choose from. Table 30 presents the 10 possible responses along with their assigned values.

TABLE 30

POSSIBLE RESPONSE VALUES FOR TOTAL HOUSEHOLD INCOME OF HORSE BUSINESS MANAGERS, QUESTION C3 OF SECTION IV OF THE 1992 OKLAHOMA HORSE INDUSTRY SURVEY

Income Level	Value
$10,000 or less	1
$10,001 - 20,000	2
$20,001 - 30,000	3
$30,001 - 40,000	4
$40,001 - 50,000	5
$50,001 - 60,000	6
$60,001 - 75,000	7
$75,001 - 100,000	8
$100,001 - 150,000	9
More than $150,000	10

The average overall response value for total household income was 5.79 which is between the ranges $40,001 - 50,000 and $50,001 - 60,000. The value of 5.79 implies that the average income level would be more in the range of $50,001 - 60,000 on the scale. If we calculate the total household income by taking the midpoint of each of the possible responses with response 1 assigned to $5,000 and response 10 assigned to $150,000, the average overall response value for total household income was $63,566. Responses of exact values for total household income are preferred for survey analysis, however, most respondents do not have specific information available at the time of completing the survey and they are more likely to respond to a possible range of values opposed to filling in a blank for the exact dollar value.

Decision Making Processes of Horse Business Managers

Difference Between Two Means Analysis

Part B of the survey featured three different decision scenarios designed to present decision problems that a horse business manager would likely encounter in a horse business operation. The three scenarios were designed to present decisions of different importance levels which included the purchase of a breeding stallion, the purchase of a winter feed supply, and the purchase of a few replacement brood mares. The survey respondents were asked to rate the importance of the three decision scenarios by a scale

of 1 through 5. The value of 1 was labeled as "not very important" and the value 5 was labeled as "very important". Hypotheses were that the stallion purchase would rate as the most important, the brood mare replacements as the next most important, and the winter feed purchase would rate as the least important of the three decisions. Table 31 presents the importance rating means and number of responses for the three decision scenarios.

TABLE 31

IMPORTANCE LEVEL RATING RESPONSE SUMMARY FOR THE STALLION, MARES, AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Decision Scenario	Rating Mean	Number of Observations
1. Stallion Purchase	4.819	72
2. Winter Feed Purchase	4.500	68
3. Brood Mares Purchase	4.708	65

The value of the means support the hypothesis of the rating order of the three decisions. The hypothesis of the rating order of the three decisions was tested using the difference between two means of unmatched samples. Table 32 presents the results to the tests.

TABLE 32

DIFFERENCE BETWEEN TWO MEANS ANALYSIS RESULTS FOR THE IMPORTANCE LEVEL RATING OF THE STALLION, MARES, AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Difference Between Means	t-Score (Pooled Variance)	Probability of t-Score
Decision 1 and 2	2.55	0.99
Decision 1 and 3	1.12	0.73
Decision 2 and 3	-1.46	0.85

The t-score tests the significance of the difference between two means of the two samples and the higher the t-score is, the more significant the difference between the sample means are. The probability of the t-score is the probability that the difference between the means of the two samples did not arise by chance. Generally, if it is above 0.90 or .095 we accept that there is a significant difference betweens the means of the two samples. The difference between means tested significantly different between the importance of the stallion purchase and the winter feed purchase with a 0.99 probability of the t-score. However, the difference between the means of the stallion purchase and the replacement mares purchase was not significantly different with a 0.73 probability of the t-score. The difference between the means of the replacement mares purchase and the feed decision also was not significantly different with a

0.85 probability of the t-score but was not far from the 0.90 probability level which is considered an acceptable level of significance by statistical standards.

Because of the insignificant difference between the means of the stallion and replacement mares purchase, it appears that data did not indicate a significant difference between the level of importance of two described decisions. On the other hand, the difference between the means of the replacement mares purchase and feed purchase was close enough to the 0.90 significance level that the level of importance between the two decisions was considered for further analysis.

Further testing was done on the difference between the means with respect to the importance of the decisions. The stallion purchase and the replacement mare purchase decisions were pooled into a single purchase decision defined as a breeding stock purchase decision. Table 33 presents the importance rating means and number of responses for the modified breeding stock purchase decision and the winter feed purchase decision.

The original hypothesis of importance rating level for each decision was maintained with the modified decision scenarios. The breeding stock purchase decision was hypothesized to rate higher with respect to importance compared to the winter feed purchase decision. Again, the hypothesis of the importance rating of the two decisions was tested using the difference between two means of unmatched samples. Table 34 presents the results to the tests.

TABLE 33

IMPORTANCE LEVEL RATING RESPONSE SUMMARY FOR THE BREEDING STOCK AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Decision Scenario	Rating Mean	Number of Observations
1. Breeding Stock Purchase	4.766	137
2. Winter Feed Purchase	4.500	68

TABLE 34

DIFFERENCE BETWEEN TWO MEANS ANALYSIS RESULTS FOR THE IMPORTANCE LEVEL RATING FOR THE BREEDING STOCK AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Difference Between Means	t-Score (Pooled Variance)	Probability of t-Score
Decision 1 and 2	2.49	0.99

The difference between the two means tested significant between the importance rating of the breeding stock purchase and the Winter Feed Purchase with a 0.99 level of probability of the t-score. Therefore, the hypothesis is supported that purchasing breeding stock is a more important decision than purchasing a winter feed supply. Attention should be given to the fact that this does not discredit the importance of purchasing a winter

feed supply for the horse operation. For the winter feed supply purchase decision, respondents indicated a high average rating value of 4.5 on a scale of 1 to 5 with the value of 5 as the highest rating for the importance of a decision.

The level of importance of the decision is believed to have an effect on the decision process and the influence that the manager's personal characteristics will have on the decision making process. Since the data for the different decisions reflect a significant variance in importance between them, each of the decisions will be analyzed separately for the influence of the manager's characteristics on their decision making processes.

For each decision scenario, the survey respondents were asked to choose the kind of decision making process they thought managers in the horse industry would use. Asking the survey respondent to indicate how they think someone else would answer a particular question is a technique sometimes uses in survey analysis. It has been proven that sometimes survey respondents will respond to a question with what they think is the correct response as opposed to a response that applies to them. The basis of the questioning technique used is that the respondents will actually indirectly describe how they themselves would respond to the question when they are predicting how they think others would respond to the question.

The survey respondents were given a choice of four described decision making processes. The decision process choices were labeled with the

values 1 through 4. Decision process "1" is designed as a high involvement and high analytical process. Decision process "2" is analytical but was designed as a lower involvement and lower analytical process compared to process "1". Decision process "3" involves little manager involvement and very little analysis and is designed to represent experiential decision making. Decision process "4" is designed to represent behavioral decision making which is also a non or low analytical decision making process. The hypothesis was that the respondents would rate the stallion purchase decision scenario with the most involved and analytical decision making process followed by the brood mare replacement decision scenario and then the winter feed purchase decision scenario rating with the least involved and analytical decision making process. Table 35 presents the decision making process rating means and number of responses for the three decision scenarios.

TABLE 35

DECISION MAKING PROCESS RATING RESPONSE SUMMARY FOR THE STALLION, MARES, AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Decision Scenario	Rating Mean	Number of Observations
1. Stallion Purchase	1.785	65
2. Winter Feed Purchase	2.484	64
3. Brood Mares Purchase	1.823	62

The means of the decision processes used for the three decisions support the hypothesis as the value "1" defines the decision making process describing the most involvement and analysis. The means were tested using the difference between two means of unmatched samples. The tests results are presented in Table 36.

TABLE 36

DIFFERENCE BETWEEN TWO MEANS ANALYSIS RESULTS FOR THE DECISION MAKING PROCESS RATING OF THE STALLION, MARES, AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Difference Between Means	t-Score (Pooled Variance)	Probability of t-Score
Decision 1 and 2	-4.25	1.00
Decision 1 and 3	-0.27	0.21
Decision 2 and 3	4.00	1.00

The difference between means tested significantly different between the decision making processes for the stallion purchase and the winter feed purchase and also for the brood mare replacements purchase and the winter feed purchase. Both tests of the difference between the means were significant with a probability level of 1.0 of the t-score. On the other hand, the difference between the means of the decision making process used for

the stallion purchase and the brood mare replacements purchase was not significant with only a probability level of 0.21 that the difference between the means of the two samples did not happen by chance.

In order to stay consistent with previous analysis efforts, the stallion purchase and the replacement brood mare purchase decisions were pooled into a single purchase decision defined as the breeding stock purchase decision and tested the difference between means of the decision process used for the two decisions. Table 37 presents the decision making process rating means and number of responses for the modified breeding stock purchase decision and the winter feed purchase decision.

TABLE 37

DECISION MAKING PROCESS RATING RESPONSE SUMMARY FOR THE BREEDING STOCK AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Decision Scenario	Rating Mean	Number of Observations
1. Breeding Stock Purchase	1.804	127
2. Winter Feed Purchase	2.484	64

The original hypothesis of decision making process used for each decision was maintained with the modified decision scenarios. The breeding

stock purchase decision was hypothesized to rate with a more involved and analytical decision making process compared to the winter feed purchase decision. The breeding stock purchase decision had an average rating closer to "1" than the winter feed purchase decision which supports the hypothesis. Again, the hypothesis of the decision making process of the two decisions was tested using the difference between two means of unmatched samples. Table 38 presents the results to the tests.

TABLE 38

DIFFERENCE BETWEEN TWO MEANS ANALYSIS RESULTS FOR THE DECISION MAKING PROCESS RATING OF THE BREEDING STOCK AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Difference Between Means	t-Score (Pooled Variance)	Probability of t-Score
Decision 1 and 2	-5.02	1.00

The difference between the means tested significant between the decision making process used for the breeding stock purchase decision and the winter feed purchase decision with a 1.0 level of probability of the t-score. Therefore, the hypothesis is supported that the breeding stock purchase decision will produce a more involved and analytical decision process than the winter feed purchase decision.

The third part of each scenario provided a list of information sources for each of the decision scenarios and asked the respondents to rank the information sources in their order of importance for each of the purchase decisions. Each decision scenario was accompanied with a list of 9 information sources which would likely be used during the information search process of each of the particular decisions. It should be noted that there was one error in the survey. The error occurred in the final draft of the survey and was not noticed during final verification before it was sent out to the sampled population of the horse industry. The error was that the correct list of information sources for the winter feed supply purchase decision was not included and was accidently replaced with the list of information sources of the few brood mare replacements purchase decision. However, the list was still usable for the winter feed supply purchase decision since most of the information sources were applicable and relevant to the decision. The mistake did provide a rough measure of the dedication of the survey respondents. Most of the respondents to the question gave a good effort to make use of the information sources and rank them. Some of the respondents to the question either indicated that some sources in the list were not applicable while others just skipped over the non-applicable information sources. The information sources lists for the three decision scenarios are presented in Table 39, along with the average response ranking and rank order.

TABLE 39

INFORMATION SOURCE RANKING RESPONSE SUMMARY FOR THE STALLION, MARES, AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Stallion Purchase Decision Information Sources	Data Points	Average Ranking	Overall Ranking
1. Horse Industry magazines and other publications	48	6.458	8
2. Stallion and breeding farm visits	51	4.686	4
3. Economic information	49	4.735	5
4. Stallion information	54	2.000	1
5. Consultation with a knowledgeable person or expert	47	4.915	6
6. Business/economic records and projections	48	5.813	7
7. Breeding/animal performance records	52	2.904	2
8. Other sources not mentioned	34	8.265	9
9. The manager's previous knowledge and experience	52	4.250	3

Winter Feed Purchase Decision Information Sources	Data Points	Average Ranking	Overall Ranking
1. Horse Industry magazines and other publications	35	6.143	8
2. farm visits	38	5.211	6
3. Economic information	49	2.837	2
4. Mare information	34	5.471	7
5. Consultation with a knowledgeable person or expert	46	3.413	3
6. Business/economic records and projections	42	4.881	4
7. Breeding/animal performance records	40	4.925	5
8. Other sources not mentioned	29	6.414	9
9. The manager's previous knowledge and experience	52	2.404	1

Brood Mares Purchase Decision Information Sources	Data Points	Average Ranking	Overall Ranking
1. Horse Industry magazines and other publications	47	6.489	8
2. farm visits	49	5.245	6
3. Economic information	48	4.750	5
4. Mare information	52	2.115	1
5. Consultation with a knowledgeable person or expert	49	4.714	4

TABLE 39 (CONTINUED)

Brood Mares Purchase Decision Information Sources	Data Points	Average Ranking	Overall Ranking
6. Business/economic records and projections	46	5.739	7
7. Breeding/animal performance records	52	2.558	2
8. Other sources not mentioned	30	8.333	9
9. The manager's previous knowledge and experience	50	3.940	3

The overall ranking of the information sources between the stallion purchase decision and the brood mares purchase decision was very similar. The only differences between their overall ranking was that farm visits and consultation with a knowledgeable person or expert were ranked inversely as 4 or 6 between the two scenarios. The overall ranking order of information sources for the winter feed supply purchase decision and the two different breeding stock purchase decisions was quite different.

Table 40 summarizes and presents the responses to the ranking of the information sources for the pooled stallion purchase and brood mares purchase decision which is referred to as the breeding stock purchase decision as described in earlier analysis. Considering the information source average ranking value and overall ranking value between the breeding stock purchase decision and the winter feed supply purchase decision, we can see that they are very different. The difference in the ranking values between the two decisions is believed to be due to factors such as the level of importance and the financial risk differences between the two decisions.

TABLE 40

INFORMATION SOURCE RANKING RESPONSE SUMMARY FOR THE BREEDING STOCK AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Breeding Stock Purchase Decision Information Sources	Data Points	Average Ranking	Overall Ranking
1. Horse Industry magazines and other publications	95	6.474	8
2. Stallion and breeding farm visits	100	4.960	6
3. Economic information	97	4.742	4
4. Stallion information	106	2.057	1
5. Consultation with a knowledgeable person or expert	96	4.813	5
6. Business/economic records and projections	94	5.777	7
7. Breeding/animal performance records	104	2.731	2
8. Other sources not mentioned	64	8.297	9
9. The manager's previous knowledge and experience	102	4.098	3

Winter Feed Purchase Decision Information Sources	Data Points	Average Ranking	Overall Ranking
1. Horse Industry magazines and other publications	35	6.143	8
2. farm visits	38	5.211	6
3. Economic information	49	2.837	2
4. Mare information	34	5.471	7
5. Consultation with a knowledgeable person or expert	46	3.413	3
6. Business/economic records and projections	42	4.881	4
7. Breeding/animal performance records	40	4.925	5
8. Other sources not mentioned	29	6.414	9
9. The manager's previous knowledge and experience	52	2.404	1

The ranking of the manager's previous knowledge and experience (source 9) for both decision scenarios is of particular interest in this study. The hypothesis is that the horse farm manager will rely more on his/her

previous knowledge and experience over other external information sources for the winter feed purchase decision compared to the breeding stock purchase decision. The average or mean ranking and number of data points for the breeding stock purchase decision and the winter feed supply purchase decision for source 9 are presented in Table 41.

TABLE 41

MANAGER'S PREVIOUS KNOWLEDGE AND EXPERIENCE RANKING RESPONSE SUMMARY FOR THE BREEDING STOCK AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Decision Scenario	Ranking Mean	Number of Observations
1. Breeding Stock Purchase	4.098	102
2. Winter Feed Purchase	2.404	52

The hypothesis of the ranking value of the information source was tested using the difference between two means of unmatched samples. The tests results are presented in Table 42.

The difference between the two means tested significant between the average ranking of the manager's previous knowledge and experience compared to other external information sources in the breeding stock purchase and the Winter Feed Purchase with a 1.00 level of probability of

TABLE 42

DIFFERENCE BETWEEN TWO MEANS ANALYSIS RESULTS FOR THE MANAGER'S PREVIOUS KNOWLEDGE AND EXPERIENCE RANKING OF THE BREEDING STOCK AND WINTER FEED SUPPLY PURCHASE DECISION SCENARIOS, 1992 SURVEY, OKLAHOMA

Difference Between Means	t-Score (Pooled Variance)	Probability of t-Score
Decision 1 and 2	3.94	1.00

the t-score. Therefore, the hypothesis is supported that the horse farm manager will rely more on his/her previous knowledge and experience for the winter feed supply purchase decision than for the breeding stock purchase decision. The result could be attributed to some obvious reasons, such as the winter feed purchase decision is likely to be a more routine and simpler decision task than the breeding stock purchase decision and the winter feed decision has a lower financial risk and short term affect on the business. Horse feed purchases occur more frequently in the business operation process and the manager is likely to be up to date on feed sources, types, and prices and therefore does not need to rely as much on information search processes. The breeding stock purchases usually come annually or even less often and the farm manager is more likely to place more effort into searching out information for the best stallion or brood mare purchase that is available for the horse operation's needs, goals, and budget. Breeding stock purchases usually require a much larger source of funds than a feed

purchase and presents a higher level of financial risk for the purchase. A poor decision for a feed purchase is also easier to recover from than a poor decision for a stallion or brood mare purchase.

The importance ranking of the other eight information sources was not statistically measured or tested for this analysis. However, the overall importance rankings of each of the information sources in the three decision scenarios are summarized and presented back in Table 999. Appendix III provides cross tabulations of managers' personal characteristics and attributes against decision process and information source responses. Questions A1B, A5, A10, A12, A13, A14, C1, C2, and C3 were selected for their representation of the manager's personal characteristics and attributes concerning the horse industry. The results of the cross tabulations gave guidance for developing the logit analysis described in the following section.

Logit Analysis

A binomial logit model was used to statistically analyze what decision making processes managers use given the presence of certain personal characteristics. A binomial logit model is designed to predict the probability of two values of a dependent variable given the presence of the independent variables.

As described before, the questionnaire provided four possible choices of decision making processes for each of the three decision scenarios which

were the high-involvement analytical, low-involvement analytical, experiential, and behavioral decision making processes with the assigned values of 1, 2, 3, and 4 respectively. The descriptions of the four decision processes were reviewed earlier.

Because of the low number of data points from the survey, certain restrictions were imposed on the analysis to better use the information available in the data set. In the case of the binomial logit model, decision making processes 1 and 2 are combined into a single process defined as an analytical decision process. Decision processes 3 and 4 are also combined into a single process defined as a non-analytical decision process. Therefore, in the binomial logit model, the dependent variable has two possible outcomes which are now decision processes valued 1 or 2 with 1 defined as analytical and 2 defined as non-analytical.

The independent variables used in the analysis were chosen from five questions from the blue section (section IV) of the survey and are defined and presented in Table 43.

The manager's involvement can be measured in various ways, but for this study it is measured in terms of how frequently the manager develops business/economic records as described in question A6 in section IV of the survey. The survey respondent was asked to indicate how frequently he/she developed business/economic records by ranking on a scale between 1 and 5. The value 1 is labeled "seldom" and the value 5 is labeled "regularly".

TABLE 43

INDEPENDENT VARIABLE USED FOR LOGIT ANALYSIS

Survey Question	Independent Variable
Question A6	Business Involvement
Question A10	Industry Knowledge
Question C1	Manager's Age
Question C2	Manager's Education
Question C3	Total Household Income

Managers responding with higher values on the scale are described as more involved.

The manager's knowledge of the industry can also be measured in various ways, but for this study the respondent was asked to rate his/her knowledge of the horse industry compared to others in the industry. The scale provided ranged from 1 to 5 with the value of 1 labeled as "low" and the value of 5 labeled as "high". The variables age, education, and income are self explanatory. A sample of the survey is provided in the appendix for further review of the questions used to collect the data for these three variables.

The empirical model specified to predict the odds that a horse business manager will choose a cognitive decision making process is expressed as:

$$P_{COG} = \alpha + \beta_1 INVOLVEMENT + \beta_2 KNOWLEDGE + \beta_3 AGE + \beta_4 EDUCATION + \beta_5 INCOME \quad (4.1)$$

where,

P_{COG}	=	probability that a manager will choose a cognitive type decision making process.
α	=	the estimated intercept value of the model.
β	=	the estimated coefficients of the independent variables.
INVOLVEMENT	=	measured by the frequency that the manager develops balance sheets, income statements, and cash flows, a scale 1 to 5.
KNOWLEDGE	=	level of knowledge of the horse business measured by a scale 1 to 5.
AGE	=	age of the manager in years.
EDUCATION	=	level of education completed in years.
INCOME	=	level of total household income in dollars.

Binomial logit models for the two described decisions (breeding stock and winter feed supply purchases) were estimated using the regression computer package called LIMDEP. The results of the LIMDEP estimation are presented in Tables 44 and 45.

Table 44 provides the result for the binomial logit model for the pooled data of the stallion purchase and the brood mare replacements decisions. Involvement is defined in terms of the manager's record development habits as described above. Respondents indicated their management efforts of periodically developing actual or projected balance sheets, income statements, and summaries of cash flow by ranking on a scale of 1 through 5. The value 1 indicates "seldom" and the value 5 indicates "regularly". The estimated coefficient for involvement produced a negative relationship between manager involvement and type of decision making process (Table 44). This means that as involvement in the business increased in terms of

TABLE 44

BINOMIAL LOGIT ANALYSIS: POOLED BREEDING STALLION AND MARES PURCHASE DECISION

Explanatory Variable	Coefficient	(T-Stat)
Constant	-4.04870	(-1.758)*
Involvement	-0.17204	(-0.978)
Knowledge	0.12044	(0.427)
Age	0.05165	(2.503)**
Education	-0.02909	(-0.292)
Income	0.00489	(0.791)
Log-Likelihood	-63.56835	
Chi-Square	8.85728	
Significance Level	0.11489	

* significant at the 10 percent level
** significant at the 5 percent level

TABLE 45

BINOMIAL LOGIT ANALYSIS: WINTER
FEED SUPPLY PURCHASE DECISION

Explanatory Variable	Coefficient	(T-Stat)
Constant	1.61510	(0.568)
Involvement	-0.38123	(-1.646)**
Knowledge	0.69988	(1.815)*
Age	0.03322	(1.248)*
Education	-0.34366	(-2.309)**
Income	0.00663	(0.913)
Likelihood	-39.78405	
Chi-Square	13.29869	
Significance Level	0.02073	

* significant at the 10 percent level
** significant at the 5 percent level

frequency of record development, the more likely the manager will use an analytical process in a breeding stallion purchase decision. This estimated relationship between the two variables is supported by decision theory and can be further explained. A more involved manager who is devoting more time and effort developing the business/economic records is likely concerned with the marginal analysis of the business. A manager portraying this type of management efforts would more likely be analytical toward making an important capital investment such as breeding stock purchase. The estimate was not statistically significant but the sign was consistent with decision theory.

The estimated coefficient for knowledge produced a positive relationship with the dependent variable. The survey respondent was asked to rate his/her knowledge of the horse industry compared to other horse managers as described above by using a scale of 1 to 5 with 1 labeled as "low" and 5 labeled as "high". A positive relationship means that as the manager's knowledge of the industry increases, the more likely the manager will use a non-analytical decision making process. This relationship was expected since decision makers possessing greater levels of knowledge will tend to rely more on that knowledge and less on other external sources of information when making decisions. This estimate was not statistically significant but did express a relationship consistent with decision theory.

Age of the manager is an explanatory variable of key interest. A positive coefficient was estimated meaning that as the manager gets older,

the more likely he/she is to use a non-analytical decision making process. This relationship was expected because as people get older, they gain experience and store more internal information. This knowledge becomes substitutes for external information search efforts and therefore they are less active in the analytical decision processes such as searching for and processing information. The estimated coefficient was statistically significant at the .012 level for a two-tail test. Decision theory gives strong support to the described relationship and therefore would be even more significant at the .006 level with a one-tail test.

Education was another explanatory variable of key interest. Each respondent was asked for the highest level of education completed. The coefficient estimate expressed a negative relationship with the dependent variable. A negative relationship implies that as the manager's education increases, the more likely he/she is to use an analytical decision process. This is the expected relationship for education. As people become more knowledgeable of the decision making tools and techniques available and their contribution to decision making performance, the more likely they are to use them. Decision theory also strongly supports this relationship but the estimate was not statistically significant.

Each respondent was asked to report the level of their total household income. The coefficient estimated for income was positive but was not significant. If the positive relationship were to be considered, it would mean that as the manager's total household income increased, then he/she would

be more likely to use a non-analytical decision making process when buying breeding stock. This type of relationship might imply that as income levels increased, incentives to conduct more analytical decision procedures may become less important or unnecessary. A possible reason for this relationship could be that higher incomes might allow the breeding stock buyer to simply purchase the breeding stallion he/she wants instead of using an analytical process for finding the best stallion for what is financially feasible. Another possible reason is that the business becomes more motivated by non-profit reasons and analytical decisions become less important. Studies of income's effect on types of decision making processes mostly indicate that as income increases, decision makers are less analytical. However, some studies have determined a non-linear relationship between the two variables. The estimate was not statistically significant.

The binomial logit model results for the winter feed purchase decision are presented in Table 45. As before, business involvement is measured in terms of business/economic record development. The estimated coefficient for involvement indicates a negative relationship meaning that as the manager increases business/economic record development frequency, the more likely he/she is to use an analytical decision making process. This was the relationship expected with respect to decision theory. The more involved manager could be described as cost of production conscious and would likely take a more analytical approach searching out alternative feed sources and feed prices for more optimal decision making. The estimation

for involvement was significant at the .10 level for a two-tail test and the .05 level for a one-tail test. Decision theory strongly supports the relationship described for involvement and therefore a one-tail test is valid.

The coefficient estimated for the effect of knowledge produced a positive relationship. This estimate implies that as the manager ranks his knowledge level of the horse business higher (closer to one on the 1 to 5 scale), the more likely he will use an analytical decision making process. Again, theory supports this relationship which can be explained that as the manager ranks his/her knowledge, the less likely he/she is to engage in extensive information searching of feed sources and prices. On the other hand, the manager might become more efficient in the analytical decision process of achieving the most optimal winter feed purchase. If this is the case the manager may in fact be just as analytical or more than with lower knowledge. The estimate was significant at the .07 level for a two-tail test.

Age was also estimated to have a positive effect on the feed decision making process. This relationship suggest that as the manager gets older, the more likely he/she is to engage in a non-analytical decision process. Decision theory strongly supports this relationship and can be described that older managers have been in the business longer and have had more experience with feed purchases. Experience is usually accompanied with higher levels on internal information which becomes a substitute for external information search in the decision process. The age coefficient tested with a one-tail test is borderline significant at the .105 level.

Education was estimated as having a negative effect on the feed decision process. This expected relationship implies that as the manager's degree of education is increased, the more likely he/she is to use an analytical decision process for the winter feed purchase. Again, theory supports this relationship and suggests that as the manager's education level increases, he/she learns analytical decision making and the benefits from its use. The education estimate was statistically significant at the .02 level with a two-tail test and at the .01 level with a one-tail test.

Finally we will consider the effect of income on the feed decision process. Income was estimated to have a positive relationship meaning that as the manager's total household income increased, the more likely he/she was to use a non-analytical decision process for the feed purchase. Suggestions for this relationship could be that with higher income levels, the manager is not as pressured to achieve the optimality in this purchase decision that might be labeled less important compared to other decisions such as capital purchases or it is a more routine decision not demanding repetitive analysis compared to an occasional decision such as a breeding stock purchase. The estimate for income was not statistically significant for the winter feed purchase decision.

Summary and Discussion

The analysis results from this part of the study can be generalized into three basic areas. The results, first of all, provide information of important

personal characteristics of horse farm managers and how they assess some of the important issues and aspects unique to the horse industry. This type of information provides a foundation of knowledge of the industry that helps guide day-to-day activities for people involved with this industry and it also helps guide future planning and progress for the industry.

Secondly, the results indicate that horse farm managers do address various types of business decisions differently. The results revealed that the managers distinguished between different types of decisions in terms of importance to the business, involvement devoted to the decision, and the process approach to the decision.

Thirdly, the results present evidence that some personal characteristics of the manager do influence the type of process the manager follows during decision making.

The point was made earlier that more information enhances optimal decision making at all levels of an industry. The information made available from this study will be useful for the people and businesses related to the Oklahoma horse industry. The information from the experiment of horse business managers' decision making processes will be instrumental toward future research, teaching, and extension efforts in decision making at the firm level and possibly in other areas.

Summary statistics to the responses of section IV of the survey are provided in Appendix B and additional tables providing supportive statistical data from section IV of the survey are provided in Appendix D.

CHAPTER V

GENERAL CONCLUSIONS

Summary and Conclusions

Three objectives were proposed at the beginning of this study and all three objectives were accomplished. The three objectives were to present statistics describing certain characteristics of the Oklahoma horse industry, develop an enterprize budget for an Oklahoma hobby horse operation, and learn more about decision making behavior of horse farm managers.

The information gained through the study is not perfect information, but it does provides insight into the Oklahoma horse industry. This study primarily focused on the economics of the industry in terms of its economic contribution to the state, local communities, and individual families.

Chapter I of the research report presented the foundation and scope of the research study. The chapter includes background information on the current Oklahoma horse industry along with a summary of the history of the Oklahoma horse industry from pre-statehood to the present. Chapter I also includes the research problem statement, objectives, and a review of procedures and content of the thesis report.

Chapter II presents the literature review and a thorough description of the research procedures. The literature review includes summaries of reviewed research and reports in the areas of economic decision theory, consumer decision theory, information search in consumer decision theory, and judgment in managerial decision making. These previous studies were instrumental in guiding the research of this study. The description of the research procedures of the thesis included how the data was developed, how the data was analyzed, and what analysis tools were used.

Chapter III presents the analysis results that include the data describing the characteristics of the horse industry in Rogers and Pontotoc counties and it also presents the hobby horse budget that was generated from the survey data.

The data describing the characteristics of the horse industry provides instrumental information for all players directly and indirectly involved in the horse industry. The information includes types of horse activities, horse numbers, horse operation investments and expenses, and horse operation types for the two counties surveyed. This information is useful to horse producers, horse owners, horse operation input suppliers, policy makers, and others directly affected by the horse industry. The information is also useful to others who are indirect beneficiaries of the horse industry, for example, local merchants who benefit from horse events and activities such as shows, rodeos, races, etc.

The hobby horse budget will be a useful tool by providing estimated cost information for prospective and present horse owners. Even though most hobby horse operations are not profit motivated, decision making relative to the economics of the operations is important and most likely affects the personal satisfaction of the horse owner. Getting the most enjoyment per dollar spent on the hobby horse operation is an important objective to any horse owner and a decision tool such as the hobby horse budget can help the horse owner achieve that objective.

Chapter IV presents the analysis results that include characteristics describing horse business managers and their assessments of some issues of the Oklahoma horse industry. The chapter also presents the results of the experiment on decision making behavior of horse farm managers who were surveyed.

Overall the responding sample indicated that the horse industry was unprofitable for most horse businesses, but they tend to agree that most people felt they were going to make a profit when they entered the horse business. On average, respondents also expressed agreement that most people would not enter the horse business if they had access to full economic analysis prior to entering the business.

The responding horse business managers were part of an experiment to measure how some of their personal characteristics influenced their decision making processes for three different decision scenarios. The results of the experiment supported the hypothesis that personal characteristics (personal

variables) influence whether a manager uses a higher or lower involvement decision making process for a specified decision problem. The results also supported the hypothesis that managers rank importance levels of decisions differently depending on the nature of the decision. These findings help us to understand decision making processes better and also identified some variables that influences managerial decision making. These findings can help guide development of decision tools that better fit decision making processes of farm managers and also guide future teaching, research, and extension efforts in managerial decision making.

Limitations and Need for Further Research

Research is not only a learning process through the information we learn from the analysis results but we also learn how to improve future research and results through the process. Research almost always includes mistakes, weaknesses, and/or limitations. It is important to document any research limitations to help the reader evaluate the results and to help future researchers avoid making mistakes.

Any research study that includes a survey, usually has some problems with the survey. The primary limitation of this research was the survey. The main objectives of any survey is to produce clear understandable data and to achieve a good response rate from the survey. A good response rate is defined differently depending on who you ask, but the main point is to receive as many responses as possible. The response rate for this particular

survey was below 20%, which was disappointing. The low response rate was likely due to several factors. First of all, the survey was long and may have been intimidating to the recipient when it was removed from the envelop. The survey was 12 pages long including the cover letter and it required quite a lot of reading and attention. Secondly, the survey was mailed third class mail and third class mail is not forwarded in the case of an address change and is not returned to the sender is the case of an incorrect address. Thirdly, the survey contained some questions which turned out to be vague to the survey recipient, resulting in confusing and unusable or no responses to the question. The survey also contain an error on part C of decision scenario #2 in section IV. The information source list was not the correct list for the specified decision and basically made it impossible for the respondent to answer the question.

A few suggestions to future researchers who are going to use a survey for data collection include: (1) Don't make the survey too long or too "busy" looking. Most researchers try to get as much data as possible from a survey and often include numerous questions. The important thing to acknowledge is that there is a point when additional questions or pages to a survey result in decreasing the response rate. It is impossible to put a finger on the optimal length of a survey, but time spent considering the survey audience, the survey subject, and other important factors involved can help design a well received survey. (2) I would suggest mailing the surveys first class opposed to third class. It is important to know where all of the

surveys are so they can be accounted for as received or not. First class is, of course, more expensive but it will improve the research procedures and analysis if all surveys are accounted for. (3) Make a special effort to structure all questions to avoid vagueness and confusion to the survey recipient. Distinguish exactly what kind of data is needed in the analysis process and structure the survey questions to avoid getting unusable data. Pre-test the survey thoroughly before the final survey distribution and get suggestions for improvement from experienced researchers, colleagues, and others who are willing to help in the pre-test effort. (4) Thoroughly review the survey before sending it out or distributing it to avoid mistakes and errors. It would be a good idea to review it several times yourself and ask other people to review it.

This research produced valuable information towards understanding the horse industry and understanding decision making behavior of horse farm managers. There has not been much research done in the horse industry compared to other agriculture industries and there has not been much research in the area of managerial decision making behavior compared to other areas such as consumer decision making behavior. This research can be considered ground breaking research along with the other previous research in these two areas and there is much research yet to do that can extend from this study. The horse industry in Oklahoma needs to be studied on a state-wide level and include all operations. There is an abundant amount of data in this industry that is ready for the taking and has the

potential to benefit the state of Oklahoma. Further research in the area of managerial decision making of farm managers would extend towards studying and identifying more specific personal and situational variables that influence their decision making. More supportive data is needed to educate the decision makers of the future in our agriculture industries.

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APPENDIXES

APPENDIX A

SURVEY AND SURVEY REMINDER

OKLAHOMA STATE UNIVERSITY
DEPARTMENTS OF
AGRICULTURAL ECONOMICS AND ANIMAL SCIENCES
STILLWATER, OKLAHOMA
HORSE INDUSTRY SURVEY, SUMMER 1992

Date: July 13, 1992

To: ROGERS COUNTY HORSE OWNER

To: PONTOTOC COUNTY HORSE OWNER

From: Odell L. Walker, Ph.D., Professor, Agricultural Economics
David W. Freeman, Ph.D., Associate Professor, Animal Sciences
Lance A. Elliott, Graduate Research Assistant, Agricultural Economics

Subject: 1992 ROGERS COUNTY HORSE INDUSTRY SURVEY- FACTS AND PURPOSES

Subject: 1992 PONTOTOC COUNTY HORSE INDUSTRY SURVEY- FACTS AND PURPOSES

1. Results of this survey will provide important insights to characteristics and economics of horse activities in your County. Individual horsemen, businesses, public leaders and policy makers can use the information for better decision making. Comparable information reflecting the economic importance of horses is not available elsewhere in Oklahoma.

2. The survey will support a research project by Departments in the Division of Agricultural Sciences and Natural Resources, Oklahoma State University. A candidate for a Master's Degree in Agricultural Economics will use the results for his research thesis. Horse industry leaders and County Agricultural Extension personnel are cooperating in the effort and urge your response.

3. Information will be summarized only for the whole County- NO INDIVIDUAL INFORMATION WILL BE DIVULGED! The number on your return envelope allows us to know you have responded. (We may need to send a reminder to those who have not.) When you respond, the individual identification will be destroyed. BUT, IF YOU HAVE STRONG OBJECTIONS TO THIS IDENTIFICATION, MARK OUT THE NUMBER BEFORE YOU MAIL. WE PLEDGE FULL CONFIDENTIALITY!

4. Please complete ONLY PARTS of the questionnaire depending on whether you have a HORSE BUSINESS or a HORSE HOBBY (See Section II, Question 12):

   HORSE BUSINESS- COMPLETE SECTIONS I, II, AND IV.
   HOBBY-PLEASURE HORSES- COMPLETE SECTIONS I, II, AND III.

5. Full reports from the study will be made available through Agricultural Extension and County horse organizations. Please take some time to complete the survey parts that apply to your horse activities and mail in the enclosed, addressed and stamped return envelope. Please do it while the survey is in hand and on your mind. THANK YOU.

OKLAHOMA STATE UNIVERSITY
DEPARTMENTS OF
AGRICULTURAL ECONOMICS AND ANIMAL SCIENCES
STILLWATER, OKLAHOMA
HORSE INDUSTRY SURVEY, SUMMER 1992

SECTION I.

1. On March 1, 1992, did you operate any land in Oklahoma on which equine (horses, mules, donkeys or ponies) were located?

   ____ No, please continue this Section. ____ Yes, please go to Section II.

2. Did you own any equine as of March 1, 1992?

   ____ No, please mail this Questionnaire back in the enclosed envelope. ____ Yes, please go to Section II.

SECTION II. GENERAL INFORMATION

1. Please check all of the following activities that apply to your operation and horse activities.

   a. Commercial breeding horse farm ____
   b. Suburban residence with barns, etc. ____
   c. Owner with horses boarded elsewhere ____
   d. Training stable (e.g. racing or performance) ____
   e. Commercial stable (e.g. boarding and riding) ____
   f. Farm (produce crops and/or livestock) ____
   g. Small acreage with barns and paddocks ____
   h. Other_____ ____

2. Which one of the above is your primary activity? ____ (letter)

3. Please indicate the primary use of equine you own.

USE	NUMBER OF EQUINE	PARTICIPATION EVENTS (trail, roping, jumping, etc.)
PLEASURE RIDING	____	_____
RACING	____	_____
SHOWING	____	_____
RODEO EVENTS	____	_____
OTHER COMPETITION	____	_____
TRAINING	____	_____
WORKING LIVESTOCK	____	_____
OTHER WORK	____	_____
BREEDING	____	_____
_____	____	_____

4. How many rented and/or owned acres of land are used for your equine operation? _____Acres

5. What is the current market value of owned and/or rented acreage designated for equine use? $_____

6. What is the current market value of the buildings, fencing and other facilities on that acreage, excluding homes? $_____

7. What is the approximate current market value of all equine related capital equipment in your operation? (Include trailers, pickups, trucks, other depreciable equipment.) $_____

8. What is the current market value of all equine related tools, tack, special clothing, supplies, etc. not included above? $_____

9. What is your estimate of your total farm cash horse expenses in 1991? (Include labor; feeds, supplies and other expended inputs; vet; farrier; insurance; advertising; bedding, repairs, electricity, etc.) $_____

10. What is your estimate of your total cash travel expenses in connection with horse operations in 1991? In Oklahoma? $_____ Out of State? $_____

11. a. Please indicate total number of horses owned: Registered_____ Unregistered_____
    b. Please indicate the total number of horses owned by breed with estimated market values.

	BREED	NUMBER	TOTAL VALUE
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
6.	_____	_____	_____

12. Choose the item which best describes your place and answer questions in the appropriate section:

    a. This is a horse business. (Skip to Section IV, BLUE COLOR CODE)

    b. This is not a horse business but instead provides various horse activities for: (Check all appropriate responses) Adult(s)__, Youth 4-H member(s)__, Youth Horse Club member(s)__, Other youth__, A family___, A riding club member__, A roundup club member__, Other_____.

    (If this is not a horse business, skip to Section III, GREEN COLOR CODE)

SECTION III. ESTIMATION OF SPECIFIC COST ITEMS FOR HOBBY-PLEASURE HORSES

We would like estimates of individual expense and receipt items for your pleasure horses. Please indicate expenses for horse related activities for 1991. If you can not separate expenses (i.e., feed and boarding), record the total under the item representing the majority of the expense. Please give your best estimates of costs for your total horse activities. (If you do not use an item in your operation, place an "X" in the blank.) WE KNOW THE QUESTIONS MAY BE HARD TO ANSWER. USE YOUR RECORDS, JUDGEMENT AND MEMORY AND DO YOUR BEST! YOU WILL HELP US.

EXPENSE ITEM	1991 EXPENSES TOTAL $ PER FARM
1. Boarding costs paid to others	_____
2. Bedding (shavings, straw- raised and purchased)	_____
3. Rent/lease:	
Pasture (Acres?_____)	_____
Facilities	_____
4. Feed:	
Hay: (% Alfalfa_____ % other_____)	_____
Grain Mix: (Major type_____)	_____
Protein Supplement	_____
If you can not break down costs of feed, what was your total feed bill for 1991, excluding boarding?	_____
5. Horse health inputs	
a. Veterinarian services	_____
b. Medicine, parasite control, etc. not included in veterinary services	_____
6. Farrier (trimming, shoeing, shoes, other)	_____
7. Tack & grooming supplies	_____
8. Special clothing purchases	_____

9. Towing vehicle(s) and trailer(s)

	Vehicle A	Vehicle B	Vehicle C
Size (tons)	_____	_____	_____
Total miles driven/year	_____	_____	_____
Horse activity miles/year	_____	_____	_____
Percent of miles w/trailer	_____	_____	_____
Trailer size (horses)	_____	_____	_____

10. Total cost for fuel, lube and repairs/year for horse activities.	_____
11. Maintenance & repair (labor & materials for maintenance or repair of bldgs., facilities, fences, equip., etc.)	_____
12. Utilities (horse related - e.g. water, heat, elec., etc.)	_____
13. Insurance premiums:	
Horses	_____
Horse facilities	_____
Horse vehicles and trailers	_____

(1991 $/farm)

14. Expenses for participating in events:
    - Entry Fees for horses and riders _____
    - Day trips for events _____
    - Overnight trips for events _____

15. Other services:
    - Horse training _____
    - Riding/showing/performing lessons _____
    - Breeding fees _____

16. Hired labor: (not included in items reported elsewhere)
    - Skilled labor (average hours per week during the year ____) _____
    - Unskilled labor (avg. hours per week during the year ____) _____

17. Miscellaneous
    - Supplies and expendables _____
    - Magazines, memberships, etc. _____
    - Other _____

18. Please record revenues received from horse projects.

HORSE REVENUES	1991 TOTAL DOLLARS
Show or other competition winnings	_____
Stud fees	_____
Production sales	_____
Custom work (e.g. working cattle)	_____
Training, riding lessons given, etc.	_____
Boarding horses	_____
Other (specify)	_____

19. If you board horses out, please indicate: Number of horses___ Rate/day $___

    If you take horses in for board, please indicate: Number of horses___ Rate/day $___

    What items are included in the boarding fees? (Check all appropriate responses) Feed ____, Medicine ____, Vet care ____, Exercising ____, Stalls ____, Pasture ____.

20. You earlier estimated aggregate investments in various horse equipment. Would you give us your estimate of the current market value of the following individual capital and equipment items you own?

	CAPITAL ITEM	TOTAL DOLLAR VALUE
1.	Barns & special horse fences	_____
2.	Feeding and watering equipment	_____
3.	Horse tack	_____
4.	Special clothing	_____
5.	Grooming equipment	_____
6.	Horse trailers	_____
7.	Towing vehicles for trailers	_____
8.	Other _____	_____

21. Please write a short summary of why you are a horse owner.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

22. May we have the following information for the person completing this questionnaire?

Age _____

How many years have you been involved in horse activities? ____

Educational Background Completed: (Check all appropriate)

High school	____
Technical school	____
College	
less than two years	____
two to five years	____
graduate	____
Post College Graduate	
less than two years	____
two to four years	____
more than four years	____

Total Household Income: (Check one)

$10,000 or less	_____
$10,001-20,000	_____
$20,001-30,000	_____
$30,001-40,000	_____
$40,001-50,000	_____
$50,001-60,000	_____
$60,001-75,000	_____
$75,001-100,000	_____
$100,001-150,000	_____
More than $150,000	_____

SECTION IV. (FOR HORSE BUSINESSES)

This section is intended to give us an idea of how horse business managers think about horse business problems and how they view the economics of the horse business. We first ask some background questions about you and the horse business. Then, we ask you to describe how you think managers would proceed to solve some example horse business decision problems. The information that you provide will be used to analyze decision strategies horse managers use in their horse businesses and to identify factors that influence those strategies. We hope you can answer the questions without too much expenditure of your important time. We appreciate your patience.

A. Background

1. How long have you been: a) involved with horse related activities? _____ Yrs. b) in the horse business? _____ Yrs.

2. How long have you been involved in agriculture? _____ Yrs.

3. Did you attend any horse events in 1991? (circle one) Yes/No. About how many?_____. Did you participate? Yes/No

4. Do you keep business/economic records? (circle one) Yes/No.

5. How would you rate the completeness and overall adequacy of your records? (choose the applicable number on the scale)

poor<----------->excellent
1 2 3 4 5

6. Do you periodically develop actual or projected balance sheets, income statements, and summaries of cash flow?

seldom<----------->regularly
1 2 3 4 5

7. Do you keep breeding/animal performance records? (circle one) Yes/No.

8. How would you rate the completeness and overall adequacy of those records?

poor<----------->excellent
1 2 3 4 5

9. Considering horse business managers you have known, how would you rate the average horse manager's knowledge of horse business economics?

low<----------->high
1 2 3 4 5

10. Modesty and humility aside, how do you rate your knowledge compared to others in the industry?

low<----------->high
1 2 3 4 5

11. Is your formal education: (circle yes or no as appropriate) Agriculture related? Yes/No; Livestock related? Yes/No; Business related? Yes/No

12. Select the percentage of horse owners who you believe have a positive horse business return after paying all economic costs. (circle one)

0 10 20 30 40 50 60 70 80 90 100

13. Horse business people I know expected to have a positive horse business return when they entered the business. (circle one)

    Strongly disagree Disagree Don't know Agree Strongly agree

14. A horse owner or producer would not enter the business if he/she had benefit of a full economic analysis of the prospective business. (circle one)

    Strongly disagree Disagree Don't know Agree Strongly agree

15. People enter the horse business for reasons other than profit. (circle one)

    Strongly disagree Disagree Don't know Agree Strongly agree

16. Rank the following as reasons you believe people enter the horse business. (Rank 1 through 5.)

    ____ Like horses and enjoy horse activities.
    ____ Expect to make a profit/family living.
    ____ Offers a chance of a very high financial payoff.
    ____ Attractive live style and work/life setting.
    ____ Glamour of the industry and business.

B. This section describes selected horse business scenarios which periodically require a horse business manager's attention. We would like to know how horse business managers might respond to each of the problem situations.

Scenario #1: Suppose that a stallion currently owned and used in a mare operation must be replaced within the next year. The manager is faced with the decision task of finding and purchasing a new stallion.

a. Using your experience in the horse business, rate the importance of this decision. (circle one)

Not very<----------->very
1 2 3 4 5

b. If managers you know were faced with making this decision, which of the following best describes the decision process they would use? (Circle 1, 2, 3 or 4)

1. They would seek information from various sources including:

   - Reviewing horse magazines, newspapers, sale bills, and other relevant publications.
   - Contact and/or visit numerous farms.
   - Secure economic information relative to the purchase such as stallion prices and prospective breeding fees.
   - Obtain and review information concerning pedigree, soundness, and performance of the stallion prospects.
   - Contact and consult knowledgeable persons or experts on the issues.
   - Create and review business/economic projections such as cash flows, balance sheets, income statements.

   This information would be used to evaluate alternative stallion prospects. After comparing costs, estimated performance and payoff, other goals, and risks, they would chose the optimal stallion for their needs.

2. The decision process would involve acquiring sufficient information regarding a few stallion prospects. They would engage in the following:

   - Contact and/or visit farms they know have prospective stallions.
   - Inquire about pedigree, soundness, and performance of the stallion prospects.
   - Determine if they can make financial arrangements for the purchase.

   After finding a few adequate prospects, they would choose the stallion most likely to meet their needs.

3. They would already know which pedigree and conformation type they want and could quickly find a stallion and make the purchase. Little analysis would be needed.

4. The right stallion will show up at the right time so the stallion replacement problem would not be very difficult.

c. Please rank the the following information sources in their order of importance for the stallion business decision. (Rank 1 through 9 if you can.)

_____ Horse industry magazines and other publications.
_____ Stallion and breeding farm visits.
_____ Economic information (prices, estimated expenses).
_____ Stallion information (pedigree, soundness, performance).
_____ Consultation with a knowledgeable person or expert.
_____ Business/economic records and projections (cash flow, balance sheet, income statements).
_____ Breeding/animal performance records.
_____ Other source not mentioned (specify,_____).
_____ The manager's previous knowledge and experience.

Scenario #2. The next decision for your consideration concerns the winter supply of hay and grain/supplement rations for mature horses, mares, foals and yearlings in a brood mare operation. The manager needs to decide what to feed and arrange for the winter supplies.

a. Using your experience in the horse business, rate the importance of this decision. (circle one)

Not very<----------->very
1 2 3 4 5

b. If managers you know were faced with making this decision, which of the following best describes the decision process they would use. (Circle 1, 2, 3 or 4)

1. They would seek information from various sources including:

   - Reviewing horse magazines, newspapers, and other relevant publications.
   - Contacting and/or visiting numerous feed dealers and producers.
   - Securing economic information relative to the purchase, such as feed and hay prices and other costs.
   - Obtain and review information concerning horse nutrition.
   - Contact and consult knowledgeable persons or experts on nutrition.
   - Create and review business/economic projections such as cash flows, balance sheets, income statements.

   This information would be used to evaluate alternative feeding strategies. After comparing costs, estimated performance and payoff, other goals, and risks, they would chose the optimal feeds for their needs.

2. Their decision process would involve acquiring sufficient information regarding a few feed and hay alternatives. They would engage in the following:

   - Contact and/or visit a few dealers/producers they know about supplying their feed needs.
   - Inquire about nutritional adequacy of the feeds offered.
   - Determine if they can make financial arrangements for the purchase.

   After finding a few adequate feed sources, they would chose the ones most likely to meet their needs.

3. They would already know which hays and rations they want and could quickly decide how much to buy and make the purchases. Little analysis would be needed.

4. Feed purchases would be pretty much an automatic reaction by an experienced manager.

c. Please rank the the following information sources in their order of importance for the feed decision. (Rank 1 through 9 if you can.)

_____ Horse industry magazines and other publications.
_____ Farm visits.
_____ Economic information (prices, estimated expenses).
_____ Mare information (pedigree, soundness, performance).
_____ Consultation with a knowledgeable person or expert.
_____ Business/economic records and projections (cash flow, balance sheet, income statements).
_____ Breeding/animal performance records.
_____ Other source not mentioned (specify,_____).
_____ The manager's previous knowledge and experience.

Scenario #3. The final decision problem for your consideration is that a few mares in the brood mare band must be replaced. The manager needs to make the replacement decisions and take the action.

a. Using your experience in the horse business, rate the importance of this decision. (circle one)

Not very<----------->very
1 2 3 4 5

b. If horse business managers you know were faced with making this decision, which of the following best describes the decision process they would use. (Circle 1, 2, 3 or 4)

1. They would seek information from various sources including:

   - Review horse magazines, newspapers, sale bills, and other relevant publications.
   - Contact and/or visit numerous farms.
   - Secure economic information relative to the purchase such as mare prices and other costs.
   - Obtain and review information concerning pedigree, soundness, and performance of the mare prospects.
   - Contact and consult knowledgeable persons or experts on the issues.
   - Create and review business/economic projections such as cash flows, balance sheets, income statements.

   This information would be used to evaluate alternative mare prospects. After comparing costs, estimated performance and payoff, other goals, and risks, they would chose the optimal mares for their needs.

2. Their decision process would involve acquiring sufficient information regarding a few mare prospects. They would engage in the following:
   - Contact and/or visit farms they know have prospective mares.
   - Inquire about pedigree, soundness, and performance of the mare prospects.
   - Determine if they can make financial arrangements for the purchase.

   After finding a few adequate prospects, they would chose the mares most likely to meet their needs.

3. They would already know which pedigree and conformation type they want and could quickly find replacement mares and make the purchases. Little analysis would be needed.

4. The right mares will show up at the right time so the mare replacement problem would not be very difficult.

c. Please rank the the following information sources in their order of importance for the mare business decision. (Rank 1 through 9 if you can.)

_____ Horse industry magazines and other publications.
_____ Farm visits.
_____ Economic information (prices, estimated expenses).
_____ Mare information (pedigree, soundness, performance).
_____ Consultation with a knowledgeable person or expert.
_____ Business/economic records and projections (cash flow, balance sheet, income statements).
_____ Breeding/animal performance records.
_____ Other source not mentioned (specify,_____).
_____ The manager's previous knowledge and experience.

C. May we have the following information for the person completing this questionnaire?

Age _____

Educational Background Completed: (Check all appropriate)

High school	____
Technical school	____
College	
less than two years	____
two to five years	____
graduate	____
Post College Graduate	
less than two years	____
two to four years	____
more than four years	____

Total Household Income: (Check one)

$10,000 or less	____
$10,001-20,000	____
$20,001-30,000	____
$30,001-40,000	____
$40,001-50,000	____
$50,001-60,000	____
$60,001-75,000	____
$75,001-100,000	____
$100,001-150,000	____
More than $150,000	____

SURVEY REMINDER

Dear Oklahoma Horseowner:

A few weeks ago, you received a survey concerning the characteristics and economics of horse activities in your county. You can provide valuable information to benefit you and other horse people. The information you provide will be summarized only for the whole county and we pledge full confidentiality of your personal information. We need your help in the effort to foster and promote the important Oklahoma horse industry.

The information that you provide will also be valuable in helping me complete the thesis project for my masters degree. There is no other way to acquire this kind of information so I hope you will take time to complete and return the survey. If you have already mailed your survey back, please disregard this reminder. If you need another survey or have questions, please call me at 405-744-6834.

Thank you for your cooperation.

Lance Elliott
Masters Student, O.S.U.

APPENDIX B

SURVEY RESPONSE STATISTICS

TABLE 46

DESCRIPTIVE STATISTICS OF RESPONSES TO SECTION I OF THE SURVEY, 1992 HORSE INDUSTRY SURVEY, OKLAHOMA

Variable	Yes Responses	No Response	Blank Responses
1	139	44	3
2	97	36	53

TABLE 47

DESCRIPTIVE STATISTICS OF RESPONSES TO SECTION II OF THE SURVEY, 1992 HORSE INDUSTRY SURVEY, OKLAHOMA

Variable	N	Mean	Standard Deviation	Sum	Minimum	Maximum	Range
3A	68	2.49	2.20	169.0	1.0	12.0	11.0
3B	15	3.07	3.28	46.0	1.0	14.0	13.0
3C	34	2.56	1.44	87.0	1.0	6.0	5.0
3D	22	2.18	1.10	48.0	1.0	5.0	4.0
3E	14	3.93	4.92	55.0	1.0	20.0	19.0
3F	15	3.87	4.93	58.0	1.0	20.0	19.0
3G	28	3.18	2.21	89.0	1.0	10.0	9.0
3H	1	1.00	0.00	1.0	1.0	1.0	0.0
3I	42	4.52	4.85	190.0	1.0	26.0	25.0
3J	11	3.55	4.97	39.0	1.0	18.0	17.0
4	143	66.46	114.59	9503.2	1.0	950.0	949.0
5	106	77224.1	184064.9	8185750.0	1000.0	1750000.0	1749000.0
6	106	26761.8	46289.0	2836750.0	200.0	300000.0	299800.0
7	108	18294.4	19611.8	1975800.0	200.0	150000.0	149800.0
8	112	4490.3	4843.4	502915.0	100.0	20000.0	19900.0
9	108	7626.1	10591.5	823619.0	250.0	60000.0	59750.0
10A	82	1438.5	1684.2	117955.0	25.0	10000.0	9975.0
10B	30	1556.7	1378.7	46700.0	250.0	5000.0	4750.0
11A1	110	8.56	12.54	942.0	0.0	73.0	73.0
11A2	60	2.12	3.64	127.0	0.0	25.0	25.0
11Bnum	122	8.86	12.45	1081.0	1.0	73.0	72.0
11Bval	108	28990.7	72127.8	3131000.0	350.0	540000.0	539650.0

TABLE 48

DESCRIPTIVE STATISTICS OF RESPONSES TO SECTION III OF THE SURVEY, 1992 HORSE INDUSTRY SURVEY, OKLAHOMA

Variable	N	Mean	Standard Deviation	Sum	Minimum	Maximum	Range
1	36	147.61	374.09	5314.0	0.0	1800.0	1800.0
2	42	89.88	200.23	3775.0	0.0	1020.0	1020.0
3acres	6	26.58	16.13	159.5	9.5	50.0	40.5
3A	30	146.33	529.15	4390.0	0.0	2770.0	2770.0
3B	9	0.00	0.00	0.0	0.0	0.0	0.0
4alfalfa	44	6.66	18.16	293.0	0.0	98.0	98.0
4other	46	93.63	17.80	4370.0	2.0	100.0	98.0
4grain	10	13.40	0.97	134.0	12.0	14.0	2.0
4A	61	295.95	305.21	18053.0	0.0	1500.0	1500.0
4B	61	644.39	1401.54	39308.0	0.0	11000.0	11000.0
4C	22	274.14	520.99	6031.0	0.0	2100.0	2100.0
4D	38	720.11	608.21	27364.0	0.0	3100.0	3100.0
5A	64	199.42	252.24	12763.0	0.0	1500.0	1500.0
5B	70	105.71	104.17	7400.0	0.0	500.0	500.0
6	69	248.86	255.78	17171.5	0.0	1350.0	1350.0
7	62	336.29	595.94	20850.0	0.0	3300.0	3300.0
8	39	201.41	350.09	7855.0	0.0	2000.0	2000.0
9Asize	54	0.68	0.20	36.5	0.25	1.0	0.75
9Bsize	12	0.68	0.20	8.0	0.50	1.0	0.50
9Csize	0	0.00	0.00	0.0	0.0	0.0	0.0
9Atotal	45	23394.29	33559.42	1052743.0	200.0	198643.0	198443.0
9Btotal	9	14444.44	11192.76	130000.0	1000.0	40000.0	39000.0
9Ctotal	0	0.00	0.00	0.0	0.0	0.0	0.0
9Ahorse	44	5267.77	5808.47	231782.0	32.0	20000.0	19968.0
9Bhorse	7	3100.00	3744.47	21700.0	200.0	8000.0	7800.0
9Chorse	0	0.00	0.00	0.0	0.0	0.0	0.0
9Apercent	45	63.16	37.58	2842.3	2.0	100.0	98.0
9Bpercent	6	65.83	38.78	395.0	20.0	100.0	80.0
9Cpercent	0	0.00	0.00	0.0	0.0	0.0	0.0
9Atrailer	57	2.70	1.13	154.0	1.0	6.0	5.0

TABLE 48 (CONTINUED)

Variable	N	Mean	Standard Deviation	Sum	Minimum	Maximum	Range
9Btrailer	9	3.22	0.97	29	2.0	4.0	2.0
9Ctrailer	0	0.00	0.00	0.0	0.0	0.0	0.0
10	55	644.73	745.64	35460.0	0.0	3500.0	3500.0
11	66	400.38	509.06	26425.0	0.0	2000.0	2000.0
12	52	151.87	162.90	7897.0	0.0	800.0	800.0
13A	25	113.00	322.99	2825.0	0.0	1500.0	1500.0
13B	33	252.42	361.76	8330.0	0.0	1200.0	1200.0
13C	43	425.66	492.34	18303.5	0.0	2500.0	2500.0
14A	45	513.91	796.02	23126.0	0.0	4000.0	4000.0
14B	36	202.56	257.14	7292.0	0.0	1000.0	1000.0
14C	28	258.93	592.40	7250.0	0.0	3000.0	3000.0
15A	27	375.00	734.29	10125.0	0.0	3600.0	3600.0
15B	23	70.87	153.59	1630.0	0.0	500.0	500.0
15C	24	229.17	614.84	5500.0	0.0	3000.0	3000.0
16A1	0	0.00	0.00	0.0	0.0	0.0	0.0
16A2	20	25.00	91.05	500.0	0.0	400.0	400.0
16B1	0	0.00	0.00	0.0	0.0	0.0	0.0
16B2	19	5.26	22.94	100.0	0.0	100.0	100.0
17A	32	150.63	205.00	4820.0	0.0	1000.0	1000.0
17B	52	74.13	86.84	3854.5	0.0	400.0	400.0
17C	15	18.67	64.24	280.0	0.0	250.0	250.0
18A	26	676.92	1600.68	17600.0	0.0	8000.0	8000.0
18B	15	0.00	0.00	0.0	0.0	0.0	0.0
18C	16	125.00	500.00	2000.0	0.0	2000.0	2000.0
18D	16	25.00	68.31	400.0	0.0	200.0	200.0
18E	19	307.89	921.09	5850.0	0.0	4000.0	4000.0
18F	16	71.88	136.59	1150.0	0.0	400.0	400.0
18G	14	21.43	80.18	300.0	0.0	300.0	300.0
19A	6	1.00	0.00	6.0	1.0	1.0	0.0
19B	5	2.60	4.16	13.0	0.0	10.0	10.0
19C	4	1.50	0.58	6.0	1.0	2.0	1.0

TABLE 48 (CONTINUED)

Variable	N	Mean	Standard Deviation	Sum	Minimum	Maximum	Range
19D	4	4.13	3.67	16.5	1.0	8.0	7.0
19feed	3	NA	NA	NA	NA	NA	NA
19med	1	NA	NA	NA	NA	NA	NA
19vet	0	NA	NA	NA	NA	NA	NA
19excer	3	NA	NA	NA	NA	NA	NA
19stall	3	NA	NA	NA	NA	NA	NA
19past	1	NA	NA	NA	NA	NA	NA
20-1	57	6147.37	7621.24	350400.0	0.0	38000.0	38000.0
20-2	51	305.88	702.53	15600.0	0.0	5000.0	5000.0
20-3	68	1968.38	1750.63	133850.0	100.0	10000.0	9900.0
20-4	36	473.75	600.90	17055.0	0.0	2500.0	2500.0
20-5	57	265.26	533.00	15120.0	0.0	3000.0	3000.0
20-6	56	1837.50	1596.11	102900.0	0.0	8200.0	8200.0
20-7	54	8066.67	5715.78	435600.0	0.0	25000.0	25000.0
20-8	9	355.56	421.64	3200.0	0.0	1100.0	1100.0
22A	79	44.86	13.10	3544.0	17.0	74.0	57.0
22B	75	26.07	16.22	1956.5	0.0	72.0	72.0
22C[a]	76	4.05	2.03	308.0	1.0	8.0	7.0
22D[b]	75	4.72	1.87	354.0	2.0	10.0	8.0

[a] The 8 possible response choices to this survey question are identified with the numerical values 1 through 8.

[b] The 10 possible response choices to this survey question are identified with the numerical values 1 through 10.

TABLE 49

DESCRIPTIVE STATISTICS OF RESPONSES TO SECTION IV OF THE SURVEY, 1992 HORSE INDUSTRY SURVEY, OKLAHOMA

Variable	N	Mean	Standard Deviation	Sum	Minimum	Maximum	Range
A1A	69	28.26	15.77	1950.0	4.0	84.0	80.0
A1B	69	21.03	13.22	1451.0	1.0	70.0	69.0
A2	61	28.08	17.85	1713.0	0.0	80.0	80.0
A3B	65	24.51	32.57	1593.0	2.0	150.0	148.0
A5	71	3.37	1.07	239.0	1.0	5.0	4.0
A6	69	2.51	1.43	173.0	1.0	5.0	4.0
A8	65	3.42	1.29	222.0	1.0	5.0	4.0
A9	71	3.01	1.04	214.0	1.0	5.0	4.0
A10	72	3.32	0.89	239.0	1.0	5.0	4.0
A12	72	23.82	18.41	1715.0	0.0	70.0	70.0
A13	72	3.74	0.84	269.0	1.0	5.0	4.0
A14	73	3.27	1.12	239.0	1.0	5.0	4.0
A15	72	3.65	0.89	263.0	1.0	5.0	4.0
A16A	63	1.40	0.87	88.0	1.0	5.0	4.0
A16B	53	3.08	1.30	163.0	1.0	5.0	4.0
A16C	52	4.21	1.13	219.0	1.0	5.0	4.0
A16D	54	3.02	1.00	163.0	1.0	5.0	4.0
A16E	54	3.13	1.21	169.0	1.0	5.0	4.0
B1A	72	4.82	0.48	347.0	3.0	5.0	2.0
B1B	65	1.78	0.80	116.0	1.0	4.0	3.0
B1C1	48	6.46	2.26	310.0	1.0	9.0	8.0
B1C2	51	4.69	1.94	239.0	1.0	8.0	7.0
B1C3	49	4.73	1.86	232.0	1.0	8.0	7.0
B1C4	54	2.00	1.15	108.0	1.0	5.0	4.0
B1C5	47	4.91	1.87	231.0	1.0	9.0	8.0
B1C6	48	5.81	2.17	279.0	2.0	9.0	7.0
B1C7	52	2.90	1.64	151.0	1.0	7.0	6.0
B1C8	34	8.26	1.73	281.0	1.0	9.0	8.0
B1C9	52	4.25	2.42	221.0	1.0	8.0	7.0

TABLE 49 (CONTINUED)

Variable	N	Mean	Standard Deviation	Sum	Minimum	Maximum	Range
B2A	68	4.50	0.94	306.0	1.0	5.0	4.0
B2B	64	2.48	1.05	159.0	1.0	4.0	3.0
B2C1	35	6.14	2.28	215.0	1.0	9.0	8.0
B2C2	38	5.21	2.03	198.0	1.0	9.0	8.0
B2C3	49	2.84	1.57	139.0	1.0	7.0	6.0
B2C4	34	5.47	2.20	186.0	1.0	9.0	8.0
B2C5	46	3.41	1.72	157.0	1.0	8.0	7.0
B2C6	42	4.88	2.18	205.0	1.0	8.0	7.0
B2C7	40	4.93	2.21	197.0	1.0	9.0	8.0
B2C8	29	6.41	3.18	186.0	1.0	9.0	8.0
B2C9	52	2.40	2.31	125.0	1.0	9.0	8.0
B3A	65	4.71	0.68	306.0	1.0	5.0	4.0
B3B	62	1.82	0.78	113.0	1.0	3.0	2.0
B3C1	47	6.49	1.92	305.0	1.0	9.0	8.0
B3C2	49	5.24	1.73	257.0	1.0	8.0	7.0
B3C3	48	4.75	1.78	228.0	1.0	8.0	7.0
B3C4	52	2.12	1.35	110.0	1.0	8.0	7.0
B3C5	49	4.71	1.94	231.0	1.0	9.0	8.0
B3C6	46	5.74	2.10	264.0	1.0	9.0	8.0
B3C7	52	2.56	1.18	133.0	1.0	6.0	5.0
B3C8	30	8.33	1.35	250.0	4.0	9.0	5.0
B3C9	50	3.94	2.83	197.0	1.0	9.0	8.0
C1	68	51.90	12.07	3529.0	32.0	89.0	57.0
C2[a]	70	3.80	1.82	266.0	1.0	8.0	7.0
C3[b]	68	5.79	2.53	394.0	1.0	10.0	9.0

[a] The 8 possible response choices to this survey question are identified with the numerical values 1 through 8.

[b] The 10 possible response choices to this survey question are identified with the numerical values 1 through 10.

APPENDIX C

SURVEY RESPONSE STATISTICS - SECTION II

TABLE 50

DISTRIBUTION OF TYPES OF HORSE OPERATIONS REPORTED BY ROGERS AND PONTOTOC COUNTIES, 1992 SURVEY, OKLAHOMA

Rogers County

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	11	12.0
B. Suburban Residence	23	25.0
C. Owner Boarding Out	5	5.4
D. Training Stable	4	4.3
E. Commercial Stable	0	0.0
F. Farm or Ranch	26	28.3
G. Small Acreage	16	17.4
H. Other	4	4.3
No Identification	3	3.3
Totals	92	100.0

Pontotoc County

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	8	13.8
B. Suburban Residence	7	12.1
C. Owner Boarding Out	1	1.7
D. Training Stable	4	6.9
E. Commercial Stable	0	0.0
F. Farm or Ranch	21	36.2
G. Small Acreage	12	20.7
H. Other	3	5.2
No Identification	2	3.4
Totals	58	100.0

Horse Businesses

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	19	30.2
B. Suburban Residence	6	9.5
C. Owner Boarding Out	0	0.0
D. Training Stable	6	9.5
E. Commercial Stable	0	0.0
F. Farm or Ranch	12	19.1
G. Small Acreage	10	15.9
H. Other	5	7.9
No Identification	5	7.9
Totals	63	100.0

Hobby Horse Operations

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	0	0.0
B. Suburban Residence	24	27.6
C. Owner Boarding Out	6	6.9
D. Training Stable	2	2.3
E. Commercial Stable	0	0.0
F. Farm or Ranch	35	40.2
G. Small Acreage	18	20.7
H. Other	2	2.3
No Identification	0	0.0
Totals	87	100.0

TABLE 50 (CONTINUED)

Rogers Co. Horse Businesses

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	11	28.9
B. Suburban Residence	5	13.2
C. Owner Boarding Out	0	0.0
D. Training Stable	4	10.5
E. Commercial Stable	0	0.0
F. Farm or Ranch	6	15.8
G. Small Acreage	6	15.8
H. Other	3	7.9
No Identification	3	7.9
Totals	38	100.0

Pontotoc Co. Horse Businesses

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	8	32.0
B. Suburban Residence	1	4.0
C. Owner Boarding Out	0	0.0
D. Training Stable	2	8.0
E. Commercial Stable	0	0.0
F. Farm or Ranch	6	24.0
G. Small Acreage	4	16.0
H. Other	2	8.0
No Identification	2	8.0
Totals	25	100.0

Rogers Co. Hobby Horse Operations

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	0	0.0
B. Suburban Residence	18	33.3
C. Owner Boarding Out	5	9.3
D. Training Stable	0	0.0
E. Commercial Stable	0	0.0
F. Farm or Ranch	20	37.0
G. Small Acreage	10	18.5
H. Other	1	1.9
No Identification	0	0.0
Totals	54	100.0

Pontotoc Co. Hobby Horse Operations

Type of Operation	Total Reported	Percent of Total
A. Breeding Farm	0	0.0
B. Suburban Residence	6	18.2
C. Owner Boarding Out	1	3.0
D. Training Stable	2	6.1
E. Commercial Stable	0	0.0
F. Farm or Ranch	15	45.5
G. Small Acreage	8	24.2
H. Other	1	3.0
No Identification	0	0.0
Totals	33	100.0

TABLE 51

STATISTICS FOR SECTION II RESPONSES OF ROGERS COUNTY, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	90	50	79.9	1 - 360	4,496.2	NA	50
Land; $	65	61,762	82,855	1,500 - 600,000	4,014,500	NA	61,762
Buildings, Fencing, and Facilities; $	62	29,742	45,207	200 - 250,000	1,844,000	NA	29,742
Capital Equipment; $	66	17,647	16,947	200 - 100,000	1,164,700	1	17,384
Tools, Tack, Special Clothing, Supplies, etc.; $	67	4,998	5,228	150 - 20,000	334,865	NA	4,998
Farm Cash Horse Expenses - 1991	66	7,582	9,971	250 - 38,000	500,425	NA	7,582
Cash Travel Expenses in Okla. - 1991	52	1,418	1,866	25 - 10,000	73,755	11	1,171
Cash Travel Expenses out of Okla. - 1991	20	1,615	1,411	250 - 5,000	32,300	17	873
Horses; $	65	27,006	62,024	800 - 317,500	1,755,400	NA	27,006

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

TABLE 52

STATISTICS FOR SECTION II RESPONSES OF PONTOTOC COUNTY, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	53	94.5	153.9	2 - 950	5,007	NA	94.5
Land; $	41	101,738	277,392	1,000 - 1,750,000	4,171,250	NA	101,738
Buildings, Fencing, and Facilities; $	44	26,653	54,927	350 - 300,000	1,172,750	NA	26,653
Capital Equipment; $	42	19,312	23,382	500 - 150,000	811,100	NA	19,312
Tools, Tack, Special Clothing, Supplies, etc.; $	45	3,734	4,148	100 - 15,000	168,050	NA	3,734
Farm Cash Horse Expenses - 1991	42	7,695	11,624	400 - 60,000	323,194	NA	7,695
Cash Travel Expenses in Okla. - 1991	30	1,473	1,342	200 - 5,900	44,200	6	1,228
Cash Travel Expenses out of Okla. - 1991	10	1,440	1,378	300 - 5,000	14,400	9	758
Horses; $	43	31,991	85,886	350 - 540,000	1,375,600	NA	31,991

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

TABLE 53

STATISTICS FOR SECTION II RESPONSES OF HORSE BUSINESSES, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	61	99	145.4	3 - 950	6,040.2	NA	99
Land; $	49	122,633	261,089	4,000 - 1,750,000	6,009,000	NA	122,633
Buildings, Fencing, and Facilities; $	49	49,990	65,403	2,500 - 300,000	2,449,500	NA	49,990
Capital Equipment; $	50	26,512	24,748	600 - 150,000	1,325,600	NA	26,512
Tools, Tack, Special Clothing, Supplies, etc.; $	51	6,706	5,802	500 - 20,000	342,000	NA	6,706
Farm Cash Horse Expenses - 1991	52	13,606	12,682	1000 - 60,000	707,514	NA	13,606
Cash Travel Expenses in Okla. - 1991	47	1,780	1,941	100 - 10,000	83,680	NA	1,780
Cash Travel Expenses out of Okla. - 1991	25	1,394	1,077	300 - 5,000	34,850	6	1,124
Horses; $	45	60,941	103,746	2500 - 540,000	2,742,350	NA	60,941

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/N + Number of respondents reporting 0)

TABLE 54

STATISTICS FOR SECTION II RESPONSES OF HOBBY HORSE OPERATIONS, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	82	42.2	77.2	1 - 400	3,463	NA	42.2
Land; $	57	38,189	41,717	1,000 - 209,000	2,176,750	NA	38,189
Buildings, Fencing, and Facilities; $	57	9,794	11,307	200 - 50,000	558,250	NA	9,794
Capital Equipment; $	58	11,210	9,231	200 - 40,000	650,200	1	11,020
Tools, Tack, Special Clothing, Supplies, etc.; $	61	2,638	2,772	100 - 13,500	160,915	NA	2,638
Farm Cash Horse Expenses - 1991	56	2,073	1,972	250 - 10,500	116,105	NA	2,073
Cash Travel Expenses in Okla. - 1991	35	979	1,132	25 - 5,900	34,275	17	659
Cash Travel Expenses out of Okla. - 1991	5	1,470	1,992	250 - 5,000	7,350	20	294
Horses; $	63	5,640	7,365	350 - 50,000	355,350	NA	5,640

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

TABLE 55

STATISTICS FOR SECTION II RESPONSES OF ROGERS COUNTY HORSE BUSINESSES, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	37	78.8	96.8	3 - 350	2,916.2	NA	78.8
Land; $	30	86,000	109,699	8,000 - 600,000	2,580,000	NA	86,000
Buildings, Fencing, and Facilities; $	29	50,655	58,454	2,500 - 250,000	1,469,000	NA	50,655
Capital Equipment; $	31	26,325	19,872	600 - 100,000	816,100	NA	26,325
Tools, Tack, Special Clothing, Supplies, etc.; $	32	7,547	6,226	500 - 20,000	241,500	NA	7,547
Farm Cash Horse Expenses - 1991	34	12,718	11,682	1,000 - 38,000	432,420	NA	12,718
Cash Travel Expenses in Okla. - 1991	30	1,913	2,271	100 - 10,000	57,380	NA	1,913
Cash Travel Expenses out of Okla. - 1991	16	1,597	1,235	400 - 5,000	25,550	1	1,503
Horses; $	28	54,985	87,180	2,500 - 317,500	1,537,050	NA	54,985

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

TABLE 56

STATISTICS FOR SECTION II RESPONSES OF PONTOTOC COUNTY HORSE BUSINESSES, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	24	130.2	197.1	7 - 950	3,124	NA	130.2
Land; $	19	180,474	395,758	4,000 - 1,750,000	3,429,000	NA	180,474
Buildings, Fencing, and Facilities; $	20	49,025	75,956	3,000 - 300,000	980,500	NA	49,025
Capital Equipment; $	19	26,816	31,764	2,000 - 150,000	509,500	NA	26,816
Tools, Tack, Special Clothing, Supplies, etc.; $	19	5,289	4,834	500 - 15,000	100,500	NA	5,289
Farm Cash Horse Expenses - 1991	18	15,283	14,597	1,200 - 60,000	275,094	NA	15,283
Cash Travel Expenses in Okla. - 1991	17	1,547	1,181	200 - 5,000	26,300	NA	1,547
Cash Travel Expenses out of Okla. - 1991	9	1,033	623	300 - 2,000	9,300	5	664
Horses; $	17	72,859	128,022	6,000 - 540,000	1,238,600	NA	72,859

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

TABLE 57

STATISTICS FOR SECTION II RESPONSES OF ROGERS COUNTY
HOBBY HORSE OPERATIONS, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	53	29.8	58.5	1 - 360	1,580	NA	29.8
Land; $	35	40,986	41,175	1,500 - 200,000	1,434,500	NA	40,986
Buildings, Fencing, and Facilities; $	33	11,364	12,700	200 - 50,000	375,000	NA	11,364
Capital Equipment; $	35	9,960	8,432	200 - 35,000	348,600	1	9,683
Tools, Tack, Special Clothing, Supplies, etc.; $	35	2,668	2,450	150 - 13,500	93,365	NA	2,450
Farm Cash Horse Expenses - 1991	32	2,125	1,879	250 - 7,500	68,005	NA	2,125
Cash Travel Expenses in Okla. - 1991	22	744	711	25 - 3,000	16,375	11	496
Cash Travel Expenses out of Okla. - 1991	4	1,688	2,230	250 - 5,000	6,750	16	338
Horses; $	37	5,901	8,723	800 - 50,000	218,350	NA	5,901

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

TABLE 58

STATISTICS FOR SECTION II RESPONSES OF PONTOTOC COUNTY HOBBY HORSE OPERATIONS, 1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	29	64.9	100.3	1 - 400	1,883	NA	64.9
Land; $	22	33,739	43,154	1,000 - 209,000	742,250	NA	33,739
Buildings, Fencing, and Facilities; $	24	8,010	8,753	350 - 40,000	192,250	NA	8,010
Capital Equipment; $	23	13,113	10,229	500 - 40,000	301,600	NA	13,113
Tools, Tack, Special Clothing, Supplies, etc.; $	26	2,598	3,206	100 - 12,500	67,550	NA	2,598
Farm Cash Horse Expenses - 1991	24	2,004	2,129	400 - 10,500	48,100	NA	2,004
Cash Travel Expenses in Okla. - 1991	13	1,377	1,573	200 - 5,900	17,900	6	942
Cash Travel Expenses out of Okla. - 1991	1	600	NA	600 - 600	600	4	120
Horses; $	26	5,269	4,971	350 - 22,000	137,000	NA	5,269

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

TABLE 59

STATISTICS FOR SECTION II RESPONSES,
1992 SURVEY, OKLAHOMA

Variable	N[a]	Mean	SD[b]	Range	Sum	Respondents Reporting Zero	Mean per Respondent Reporting Item[c]
Land; Acres	143	66.5	114.6	1 - 950	9,503.2	NA	66.5
Land; $	106	77,224	184,065	1,000 - 1,750,000	8,185,750	NA	77,224
Buildings, Fencing, and Facilities; $	106	26,762	46,289	200 - 300,000	2,836,750	NA	26,762
Capital Equipment; $	108	18,294	19,612	200 - 150,000	1,975,800	1	18,127
Tools, Tack, Special Clothing, Supplies, etc.; $	112	4,490	4,843	100 - 20,000	502,915	NA	4,490
Farm Cash Horse Expenses - 1991	108	7,626	10,591	250 - 60,000	823,619	NA	7,626
Cash Travel Expenses in Okla. - 1991	82	1,438	1,684	25 - 10,000	117,955	17	1,191
Cash Travel Expenses out of Okla. - 1991	30	1,557	1,379	250 - 5,000	46,700	26	834
Horses; $	108	28,991	72,128	350 - 540,000	3,131,000	NA	28,991

[a] N = Number responding to question (reportings of zeros excluded)
[b] SD = Standard Deviation
[c] Sum/(N + Number of respondents reporting 0)

APPENDIX D

SURVEY RESPONSE STATISTICS - SECTION IV

TABLE 60

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' YEARS OF EXPERIENCE IN THE HORSE BUSINESS, 1992 SURVEY, OKLAHOMA

Horse Business Experience in Years (Question A1B Section IV) and the Stallion Purchase Decision

Years in Horse Business	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
< 20	33	4.78	1.78	25	7	8	3	5	1	4	7	2	9	6
20 +	36	4.89	1.79	24	5	8	5	4	1	6	7	2	9	3
Totals	69	4.82	1.79	49	12	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

TABLE 60 (CONTINUED)

Horse Business Experience in Years (Question A1B Section IV) and the Winter Feed Supply Purchase Decision

Years in Horse Business	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
< 20	33	4.55	2.61	14	17	8	7	2	6	3	4	5	9	1
20 +	36	4.48	2.38	16	13	9	6	2	7*	3	4	5	7*	1
Totals	69	4.50	2.48	30	30	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

TABLE 60 (CONTINUED)

Horse Business Experience in Years (Question A1B Section IV) and the Few Brood Mare Replacements Purchase Decision

Years in Horse Business	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
< 20	33	4.53	1.87	23	8	8	6	5	1	3	7	2	9	4
20 +	36	4.84	1.76	24	5	8	6	4	1	5	7	2	9	3
Totals	69	4.71	1.82	47	13	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

TABLE 61

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' BUSINESS INVOLVEMENT RATING MEASURED BY HIS/HER COMPLETENESS AND OVERALL ADEQUACY OF BUSINESS/ECONOMIC RECORD KEEPING, 1992 SURVEY, OKLAHOMA

Business Involvement Rating (Question A5 Section IV) and the Stallion Purchase Decision

Business Involvement Rating**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	36	4.78	1.74	26	5	8	5	3	1	6	7	2	9	4
4-5	35	4.85	1.78	25	7	8	4	5	1	6	7	2	9	3
Totals	71	4.82	1.79	51	12	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

** Involvement (record keeping) Scale:
1-3 = low involvement
4-5 = high involvement

TABLE 61 (CONTINUED)

Business Involvement Rating (Question A5 Section IV) and the Winter Feed Supply Purchase Decision

Business Involvement Rating**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	36	4.43	2.38	16	13	8	7	2	6	3	4	5	9	1
4-5	35	4.55	2.52	16	17	7	5	2	8	3	6	4	9	1
Totals	71	4.50	2.48	32	30	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Involvement (record keeping) Scale:
1-3 = low involvement
4-5 = high involvement

TABLE 61 (CONTINUED)

Business Involvement Rating (Question A10 Section IV) and the Few Brood Mare Replacements Purchase Decision

Business Involvement Rating**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	36	4.64	1.90	22	8	8	6	3	1	4	7	2	9	5
4-5	35	4.77	1.74	25	6	8	6	5	1	4	7	2	9	3
Totals	71	4.71	1.82	47	14	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Involvement (record keeping) Scale:
1-3 = low involvement
4-5 = high involvement

TABLE 62

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' RATING OF HIS/HER OWN KNOWLEDGE OF THE HORSE INDUSTRY COMPARED TO OTHERS IN THE INDUSTRY, 1992 SURVEY, OKLAHOMA

Rating of His/Her Own Knowledge of the Horse Industry Compared to Others in the Industry (Question A10 Section IV) and the Stallion Purchase Decision

Knowledge Rating Compared to Others**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	43	4.81	1.77	31	8	8	4	5	1	3	7	2	9	6
4-5	29	4.82	1.80	20	5	7	4	5	1	6	8	2	9	3
Totals	72	4.82	1.79	51	13	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

** Knowledge Rating:
1-3 = low knowledge
4-5 = high knowledge

TABLE 62 (CONTINUED)

Rating of His/Her Own Knowledge of the Industry Compared to Others in the Industry (Question A14 Section IV) and the Winter Feed Supply Purchase Decision

Knowledge Rating Compared to Others**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	43	4.45	2.41	19	18	8	7	2	6	3	5	4	9	1
4-5	29	4.56	2.58	13	13	8	5	2	9	3	4	7	6	1
Totals	72	4.50	2.48	32	31	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Knowledge Rating:
1-3 = low knowledge
4-5 = high knowledge

TABLE 62 (CONTINUED)

Rating of His/Her Own Knowledge of the Horse Industry Compared to Others in the Industry (Question A10 Section IV) and the Few Brood Mare Replacements Purchase Decision

Knowledge Rating Compared to Others**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	43	4.63	1.92	27	9	8	6	5	1	3	7	2	9	4
4-5	29	4.81	1.68	20	5	8	5	4	1	7	6	2	9	3
Totals	72	4.71	1.82	47	14	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Knowledge Rating:
1-3 = low knowledge
4-5 = high knowledge

TABLE 63

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' ASSESSMENT OF PROFITABLE FARM BUSINESSES IN THE HORSE INDUSTRY MEASURED BY PERCENTAGE, 1992 SURVEY, OKLAHOMA

Assessment of Percentage of Profitable Farm Businesses in the Horse Industry (Question A12 Section IV) and the Stallion Purchase Decision

Percentage of Profitable Horse Farm Businesses	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
10 -	34	4.76	1.78	26	6	8	6	4	1	5	7	2	9	3
20	9	4.67	1.67	7	2	7*	6	5	1	4	7*	2	9	3
30	11	5.00	1.63	7	1	8	5*	5*	1	7	4	2	9	3
40	5	4.80	2.20	3	2	7	3	4*	1	4*	8	2	9	6
50	8	4.88	1.50	6	0	4*	2	6	1	4*	8	3	9	7
60 +	5	5.00	2.25	2	2	7	4*	3	1	4*	8	2	9	4
Totals	72	4.82	1.79	51	13	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking

TABLE 63 (CONTINUED)

Assessment of Percentage of Profitable Farm Businesses in the Horse Industry (Question A12 Section IV) and the Winter Feed Supply Purchase Decision

Percentage of Profitable Horse Farm Businesses	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
10 -	34	4.39	2.66	12	17	9	6	2	7	3	5	4	8	1
20	9	4.78	2.22	6	3	6	8	2	9	1	5	7	4	3
30	11	4.40	2.33	5	4	8	7	2	6	3	5	9	4	1
40	5	4.40	2.60	2	3	8	5*	1	4	3	5*	5*	9	2
50	8	4.83	1.67	5	1	5*	5*	7	4	2*	2*	8	9	1
60 +	5	4.50	2.80	2	3	7*	4	5	6	2	7*	3	9	1
Totals	72	4.50	2.48	32	31	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

TABLE 63 (CONTINUED)

Assessment of Percentage of Profitable Farm Businesses in the Horse Industry (Question A12 Section IV) and the Few Brood Mare Replacements Purchase Decision

Percentage of Profitable Horse Farm Businesses	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
10 -	34	4.82	1.97	22	8	8	6	4	1	5	7	2	9	3
20	9	4.13	1.17	6	0	8	5	6*	1	4	6*	2*	9	2*
30	11	5.00	1.78	7	2	8	5*	4	1	5*	7	2	9	3
40	5	4.50	2.20	3	2	8	7	3*	2	3*	6	1	9	5
50	8	4.86	1.33	6	0	5	3	6	1*	4	7*	1*	9	7*
60 +	5	4.40	2.00	3	2	7	8	4*	2	4*	4*	1	9	3
Totals	72	4.71	1.82	47	14	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

TABLE 64

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' ASSESSMENT OF HORSE BUSINESS PEOPLE'S EXPECTED POSITIVE RETURN WHEN ENTERING THE HORSE BUSINESS, 1992 SURVEY, OKLAHOMA

Assessment of Horse Business People's Expected Positive Return When Entering the Horse Business (Question A13 Section IV) and the Stallion Purchase Decision

Expected Positive Return**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	20	4.63	1.76	14	3	8	5*	3	1	7	4	2	9	5*
4-5	52	4.88	1.79	37	10	7	4	5*	1	5*	8	2	9	3
Totals	72	4.82	1.79	51	13	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

** Expected Positive Return Scale:
1-3 = disagree
4-5 = agree

TABLE 64 (CONTINUED)

Assessment of Horse Business People's Expected Positive Return When Entering the Horse Business (Question A13 Section IV) and the Winter Feed Supply Purchase Decision

Expected Positive Return**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	20	4.32	2.50	7	9	9	5	2	7	3	4	6	8	1
4-5	52	4.56	2.45	25	22	8	6	2	7	3	5	4	9	1
Totals	72	4.50	2.48	32	31	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Expected Positive Return Scale:
1-3 = disagree
4-5 = agree

TABLE 64 (CONTINUED)

Assessment of Horse Business People's Expected Positive Return When Entering the Horse Business (Question A13 Section IV) and the Few Brood Mare Replacements Purchase Decision

Expected Positive Return**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	20	4.71	2.06	11	6	8	7	6	1	5	4	2	9	3
4-5	52	4.70	1.73	36	8	8	6	5	1	4	7	2	9	3
Totals	72	4.71	1.82	47	14	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Expected Positive Return Scale:
1-3 = disagree
4-5 = agree

TABLE 65

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' ASSESSMENT OF BENEFIT OF FULL ECONOMIC ANALYSIS PRIOR TO ENTERING THE HORSE BUSINESS, 1992 SURVEY, OKLAHOMA

Assessment of Benefit of Economic Analysis (Question A14 Section IV) and the Stallion Purchase Decision

Assessment of Benefit of Economic Analysis**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	40	4.88	1.66	30	5	8	6	3	1	4	7	2	9	5
4-5	33	4.75	1.93	22	8	7	4	5	1	6	8	2	9	3
Totals	53	4.82	1.79	52	13	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

** Assessment of Benefit of Economic Analysis Scale:
1-3 = disagree
4-5 = agree

TABLE 65 (CONTINUED)

Assessment of Benefit of Economic Analysis (Question A14 Section IV) and the Winter Feed Supply Purchase Decision

Assessment of Benefit of Economic Analysis**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	40	4.27	2.26	20	14	8	7	2	6	3	4	5	9	1
4-5	33	4.77	2.73	12	18	8	5	2	7	3	6	4	9	1
Totals	53	4.50	2.48	32	32	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Assessment of Benefit of Economic Analysis Scale:
1-3 = disagree
4-5 = agree

TABLE 65 (CONTINUED)

Assessment of Benefit of Economic Analysis (Question A14 Section IV) and the Few Brood Mare Replacements Purchase Decision

Assessment of Benefit of Economic Analysis**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-3	40	4.67	1.71	29	6	8	6	4	1	3	7	2	9	5
4-5	33	4.76	1.96	19	8	8	4	5*	1	5*	7	3	9	2
Totals	53	4.71	1.82	48	14	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Assessment of Benefit of Economic Analysis Scale:
1-3 = disagree
4-5 = agree

TABLE 66

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' AGE MEASURED IN YEARS, 1992 SURVEY, OKLAHOMA

Age (Question C1 Section IV) and the Stallion Purchase Decision

Age	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
30-39	8	4.75	1.57	6	1	8	4	5*	1	3	5*	2	9	5*
40-49	23	4.87	1.60	18	2	8	4*	4*	1	6	7	2	9	3
50-59	20	4.79	1.94	14	4	8	3	5	1	6	7	2	9	4
60 +	17	4.76	2.06	11	6	7	4	5	1	6	8	2	9	3
Totals	68	4.82	1.79	49	13	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

TABLE 66 (CONTINUED)

Age (Question C1 Section IV) and the Winter Feed Supply Purchase Decision

Age	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
30-39	8	4.50	2.57	4	3	9	8	2	6	3	4	7	5	1
40-49	23	4.65	2.29	13	8	8	5	2	6	3	4	7	9	1
50-59	20	4.47	2.65	7	10	8	5	2	7	3	6	4	9	1
60+	17	4.53	2.69	6	10	7	6	1	5	3	9	4	8	2
Totals	68	4.82	2.48	30	31	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

TABLE 66 (CONTINUED)

Age (Question C1 Section IV) and the Few Brood Mare Replacements Purchase Decision

Age	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
30-39	8	4.38	1.86	6	1	7*	5	6	1	3*	7*	2	9	3*
40-49	23	4.86	1.65	17	3	8	6	4	2	5	7	1	9	3
50-59	20	4.89	1.95	14	5	8	6	4	1	3	7	2	9	5
60+	17	4.47	2.08	8	5	7	6	4*	2	4*	8	1	9	3
Totals	68	4.71	1.82	45	14	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

TABLE 67

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' EDUCATION MEASURED BY LEVEL COMPLETED, 1992 SURVEY, OKLAHOMA

Education (Question C2 Section IV) and the Stallion Purchase Decision

Education**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-2	15	4.60	1.93	11	3	4*	2	7	1	4*	8	3	9	6
3-4	30	4.87	1.81	21	6	8	5	3	1	6	7	2	9	4
5	16	4.88	1.88	12	4	8	5	6	1	4	7	2	9	3
6-8	8	4.88	1.29	7	0	7	5	6	1	3	8	2	9	4
Totals	69	4.82	1.79	51	13	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

** Level of Education Completed Scale:
1 = high school
2 = technical school
3 = college - less than 2 years
4 = college - 2 to 5 years
5 = college graduate
6 = post college grad - less than 2 years
7 = post college grad - 2 to 4 years
8 = post college grad - more than 4 years

TABLE 67 (CONTINUED)

Education (Question C2 Section IV) and the Winter Feed Supply Purchase Decision

Education**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-2	15	4.67	3.00	4	8	7	3	4	9	1	5	6	8	2
3-4	30	4.79	2.46	13	13	8	6	2	7	3	5	4	9	1
5	16	4.19	2.47	7	10	9	8	1	5	2	4	4	7	3
6-8	8	4.14	1.63	8	0	8	4	2	7	3	6	5	9	1
Totals	69	4.50	2.48	32	31	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Level of Education Completed Scale:
1 = high school
2 = technical school
3 = college - less than 2 years
4 = college - 2 to 5 years
5 = college graduate
6 = post college grad - less than 2 years
7 = post college grad - 2 to 4 years
8 = post college grad - more than 4 years

TABLE 67 (CONTINUED)

Education (Question C2 Section IV) and the Few Brood Mare Replacements Purchase Decision

Education	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-2	15	4.64	2.00	10	2	7	4	8	1	3	6	2	9	5
3-4	30	4.61	1.69	21	5	8	6	4	1	5	7	2	9	3
5	16	4.93	2.07	10	5	8	5*	5*	1	4	7	2	9	3
6-8	8	4.75	1.38	7	1	6	8	4	2	5	6	1	9	3
Totals	69	4.71	1.82	48	13	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Level of Education Completed Scale:
1 = high school
2 = technical school
3 = college - less than 2 years
4 = college - 2 to 5 years
5 = college graduate
6 = post college grad - less than 2 years
7 = post college grad - 2 to 4 years
8 = post college grad - more than 4 years

TABLE 68

RESPONSE SUMMARY FOR THE THREE PURCHASE DECISIONS WITH RESPECT TO RESPONDENTS' INCOME MEASURED IN DOLLARS, 1992 SURVEY, OKLAHOMA

Income (Question C3 Section IV) and the Stallion Purchase Decision

Income**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-2	4	5.00	2.25	3	1	8	7*	3*	1*	5*	5*	1*	7*	3*
3-4	21	4.71	1.94	11	5	4	5	3	1	7	8	2	9	3
5-6	16	4.81	1.56	14	2	8	4	6	1	5	7	2	9	3
7-8	13	4.92	1.77	11	2	8	5	3	1	4	6	2	9	7
9-10	14	4.79	1.71	11	3	8	4	4	1	6	7	2	9	3
Totals	68	4.82	1.79	50	13	8	4	5	1	6	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Stallion and breeding farm visits.
3. Economic information (prices, estimated expenses).
4. Stallion information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* indicates a tie in ranking.

** Income:
1 = $10,000 or less
2 = $10,001-20,000
3 = $20,001-30,000
4 = $30,001-40,000
5 = $40,001-50,000
6 = $50,001-60,000
7 = $60,001-75,000
8 = $75,001-100,000
9 = $100,001-150,000
10 = More than $150,000

TABLE 68 (CONTINUED)

Income (Question C3 Section IV) and the Winter Feed Supply Purchase Decision

Income**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-2	4	4.00	2.33	2	1	9	8	2	7	4	3	5*	5*	1
3-4	21	4.74	2.50	10	8	8	6	1	9	3	5	4	6	2
5-6	16	4.60	2.93	3	11	8	5	3*	1*	3*	7	6	9	1*
7-8	13	4.38	2.42	6	6	8	4*	2	7	1	4*	4*	9	3
9-10	14	4.57	2.14	9	5	9	7	2	8	3	4	5	6	1
Totals	68	4.50	2.48	30	31	8	6	2	7	3	4	5	9	1

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Income:
1 = $10,000 or less
2 = $10,001-20,000
3 = $20,001-30,000
4 = $30,001-40,000
5 = $40,001-50,000
6 = $50,001-60,000
7 = $60,001-75,000
8 = $75,001-100,000
9 = $100,001-150,000
10 = More than $150,000

TABLE 68 (CONTINUED)

Income (Question C3 Section IV) and the Few Brood Mare Replacements Purchase Decision

Income**	Number of Responses	Decision Importance Rating	Decision Process Rating	Number of Cognitive Responses	Number of Subjective Responses	Information Sources and Average Ranking of Sources Used in the Information Search Process								
						#1	#2	#3	#4	#5	#6	#7	#8	#9
1-2	4	5.00	1.50	4	0	7	8	4	3	6	5	2	9	1
3-4	21	4.65	1.80	11	4	8	6	4	1	5	7	2	9	3
5-6	16	4.73	2.07	8	6	8	5*	5*	1	4	7	2	9	3
7-8	13	4.54	1.75	11	1	8	7	4	1	3	5	2	9	6
9-10	14	4.86	1.79	11	3	8	4	6	1	5	7	2	9	3
Totals	68	4.71	1.82	45	14	8	6	5	1	4	7	2	9	3

Information Sources:
1. Horse industry magazines and other publications.
2. Farm visits.
3. Economic information (prices, estimated expenses).
4. Mare information (pedigree, soundness, performance).
5. Consultation with a knowledgeable person or expert.
6. Business/economic records and projections (cash flow, balance sheet, income statements).
7. Breeding/animal performance records.
8. Other source not mentioned.
9. The manager's previous knowledge and experience.

* Indicated a tie in ranking.

** Income:
1 = $10,000 or less
2 = $10,001-20,000
3 = $20,001-30,000
4 = $30,001-40,000
5 = $40,001-50,000
6 = $50,001-60,000
7 = $60,001-75,000
8 = $75,001-100,000
9 = $100,001-150,000
10 = More than $150,000

VITA

Lance Aaron Elliott

Candidate for the Degree of

Master of Science

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