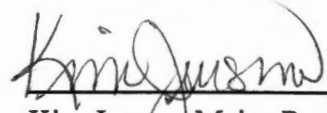


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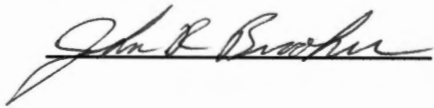
I am submitting herewith a thesis written by John C. Colvett entitled "Marketing Assistance Needs of Value-Added Agribusiness and Forest Products Firms." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirement of the degree of Master of Science, with a major in Agricultural Economics.



Kim Jensen, Major Professor

We have read this thesis
and recommend its acceptance





Accepted for the Council



Associate Vice Chancellor
and Dean of The Graduate
School

**MARKETING ASSISTANCE NEEDS OF VALUE-ADDED
AGRIBUSINESSES AND FOREST PRODUCTS FIRMS**

**A Thesis Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville**

**John C. Colvett
August 2000**

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This thesis is dedicated to my wife and my sister

**Stacy L. Colvett
and
Sherra J. Jackson**

**who have sacrificed for my education and have supported
me in all that I have done.**

ACKNOWLEDGEMENTS

I would first like to thank Dr. Kim Jensen, chairman of my thesis committee, whom is owed the greatest debt for her support and remarkable assistance in the writing of my thesis. Without her help and guidance with all the revisions, the thesis would not have been possible and completed. I would also express my deep appreciation to my Thesis Committee, including Dr. Wes Harrison and Dr. John Brooker, for their time, support and encouragement.

Thank you to all my fellow colleagues for making my life at the University of Tennessee a wonderful experience. Especially, Alice Rhea for being part of the dynamic duo, Butch Shrader, Zach Vaughn, and Art Whaley for the study breaks playing golf.

Lastly, I would thank my wife Stacy. Without her help and encouragement I would have never reached this moment in my life.

ABSTRACT

Previous studies have researched the most important types of assistance needs of businesses, but few have examined how needs may differ across firm characteristics. The purpose of this study was to ascertain the domestic marketing assistance needs of value-added agribusiness and forest products firms. The first objective of the study was to ascertain the overall importance of various types of business assistance. Secondly, the objective was to evaluate the effects that future market growth, firm size, firm types, business experience, number of employees, total sales, and predicted growth of sales may have on the needs of assistance. The results of the study indicated that locating and identifying potential buyers was the most needed type of assistance, while compliance with product and/or shipping regulations was the least needed type of assistance.

Agribusinesses with relatively a few years in business and agribusinesses with small number of employees are more likely to need assistance. Moderately sized agribusinesses are more likely to need assistance than small or large size agribusinesses. Looking at the forest products industry, firms without very much business experience and firms that expect their growth to be small are more inclined to need assistance than experienced firms. The forest products firms assistance needs are evenly distributed among the different sizes of firms, based on total sales, without any emphasis on small, moderately, or large size firms. Overall, the information from this study should prove useful in the targeting of assistance services to the types of firms that are in most need.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION AND OBJECTIVES.....	1
II. LITERATURE REVIEW.....	4
Benefits of Business Assistance Agencies.....	4
The Impact of Assistance Agencies.....	6
Problems Facing Assistance Agencies.....	7
The Problems of Small Businesses.....	8
Agribusiness Companies Assistance Needs and Problems.....	10
Forest Products Companies Assistance Needs and Problems.....	11
III. DATA AND METHODOLOGY.....	15
Methods of Analysis.....	20
IV. RESULTS.....	29
Overall Importance of Agribusiness Assistance Needs.....	29
Overall Importance of Forest Products Assistance Needs.....	31
Models of Agribusiness Assistance Needs.....	33
Models of Forest Products Assistance Needs.....	45
V. CONCLUSION.....	57
REFERENCES.....	62
APPENDIX.....	65
VITA.....	93

LIST OF TABLES

TABLE	PAGE
Table 1. Characteristics of the Sample Agribusiness Firms	17
Table 2. Characteristics of the Responding Agribusiness Firms.	19
Table 3. Variable Names and Definitions	23
Table 4. Means Comparison Tests of Marketing Assistance Needs Ratings By Agribusiness Firms	30
Table 5. Means Comparison Tests of Marketing Assistance Needs Ratings By Forest Products Firms	32
Appendix Tables 1. Estimated Logit Models of Assistance Needs By Agribusiness Firms': ' PROMO, TRANS, BUYER.	67
Appendix Table 2. Estimated Logit Models of Assistance Needs By Agribusiness Firms': ' SHOW, NEWPROD, FINAN.	69
Appendix Table 3. Estimated Logit Models of Assistance Needs By Agribusiness Firms': ' RESEARCH, PILOT, PLAN.	71
Appendix Table 4. Estimated Logit Models of Assistance Needs By Agribusiness Firms': ' CALL, INPUTS, SUPPLIES.	73
Appendix Table 5. Estimated Logit Models of Assistance Needs By Agribusiness Firms': ' DISPLAY, ASSOC, INTERNET, REGUL. *	75
Appendix Tables 6. Estimated Logit Models of Assistance Needs By Forest Products Firms Firms': ' PROMO, TRANS, BUYER.	77
Appendix Table 7. Estimated Logit Models of Assistance Needs by Forest Products Firms': ' SHOW, NEWPROD, FINAN.	79
Appendix Table 8. Estimated Logit Models of Assistance Needs by Forest Products Firms': ' RESEARCH, PILOT, PLAN.	81
Appendix Table 9. Estimated Logit Models of Assistance Needs by Forest Products Firms': ' CALL, INPUTS, SUPPLIES.	83
Appendix Table 10. Estimated Logit Models of Assistance Needs by Forest Products Firms': ' DISPLAY, ASSOC, INTERNET, REGUL.	85

CHAPTER I

INTRODUCTION and OBJECTIVES

The Tennessee Governor's Council on Agriculture and Forestry emphasized the need for expansion of value-added agricultural and forest products. Expansion of these value-added sectors may rely in part on effective assistance services being provided to firms in this sector. In particular, small and new agribusiness firms may face special problems that require a focused set of assistance services.

The National Research Council proposed in a study that small to medium size businesses many times lack the inside capabilities to improve their business performance. Therefore, small agribusinesses and secondary forest products companies may not have the capabilities within the company to acquire market knowledge and increase business and marketing activities to improve the status of the companies. Problem areas for small businesses are accounting/finance, marketing, management and legal issues (Davis, Wichman, and Young). Small agribusinesses indicated the need of assistance with sources of capital, product safety and regulations, marketing, financial analysis and domestic sales (Torek and Schroeder and Torek *et. al.*). The secondary forest products companies stated the need of assistance with marketing, environmental issues, product differentiation, and market analysis (Bratkovich and Miller, Booth and Vertinsky, and Bush *et. al.*).

While agencies exist for the specific purpose of assisting small businesses, problems may occur in matching the services with the needs of the small businesses.

Chrisman *et. al.* and Weinstein *et. al.* stated that the Small Business Development Centers and the Small Business Institute are providing valuable assistance but could improve in areas such as closer working relationships of clients and consultants. Small businesses were unable to obtain low interest funding due to decreased investments from Small Business Administration after 1992 (Brewer and Hesna) indicating another need not being met by outside agencies. Young and Welsch stated the problem areas for small businesses indicating the areas of needed assistance were general management, operations, finance, and marketing.

Information regarding the assistance needs of firms can be helpful in understanding which assistance needs are most important overall and how needs may differ across firm characteristics. Knowledge of how needs may vary across firm characteristics can be helpful in targeting of services to firms that are in most need. The purpose of this study was to ascertain the domestic marketing assistance needs of value-added agribusiness and forest products industry firms. The study consists of two parts. The first study examines the assistance needs of agribusiness firms. The second study examines the assistance needs of secondary forest products firms. In each section of the study, an objective is to ascertain the overall importance of various types of business assistance. A second objective of the study is to evaluate the effects that future market growth, firm size, firm types, business experience, number of employees, total sales and predicted sales growth may have on the needs for assistance. The results of this study are helpful to service providers in understanding which services are most important overall. The results are also helpful in providing insights for tailoring services to firms according to firm size, firm

types, total sales and gross sales.

The literature review includes articles addressing two primary issues. The first set of articles address the benefits, impact and problems of business assistance agencies. The next set addresses the problems and assistance needs of small businesses, agribusiness companies and forest product companies. A summary of how the agribusiness data were obtained will be presented in the data chapter. The estimated model is presented in the results chapter. The conclusions chapter examines some of the implications from the study for domestic assistance providers.

CHAPTER II

LITERATURE REVIEW

BENEFITS OF BUSINESS ASSISTANCE AGENCIES

Small business assistant agencies, such as the Small Business Development Center, promote small businesses by giving assistance to promote the welfare of these businesses. There are several articles that deal with benefits and impact of these assistant agencies. Chrisman *et. al.* (1987) examined the impact of the Small Business Development Centers (SBDC) in South Carolina and Georgia by mail surveying the pre-venture clients serviced in these two areas. The results from this study determined that the management assistance by SBDC promoted greater than expected business starts and higher than expected survival rates of these businesses. By telephone surveying 87 Small Business Institute (SBI) clients who received marketing assistance over the four year period, Weinstein *et. al.* (1992) determined client satisfaction with the SBI performance. The authors concluded that the SBI provided valuable assistance to the entrepreneurs through actionable strategies. The study also produced areas of improvement by the small business clients. These areas of improvements are: closer working relationships between clients and consultants, more practical training by the students of the SBI program, and post-study follow up by the SBI/SBDC professional staff.

Chrisman and Katrishen (1995) surveyed, by mail questionnaire, 2,607 Small Business Development Center clients examining the satisfaction level of clients,

employment levels and sales revenues. The study concluded that sales and employment levels are significantly greater than if they had not received assistance and the satisfaction level of the clients were highly significant.

By using a survey of 1,430 small business owners that received a small business loan and 1,790 small business owners that did not receive a small business loan, Mandel examined the effects of the loan program on small businesses. The study concluded that the loan program helps small businesses: 1) grow and achieve success, 2) create jobs, taxes, economic advancement, profits, and 3) hire people who have difficulty finding employment.

Hofer and Sandberg (1987) determined the three most important factors that have a substantial impact on new venture performance. These factors are structure of industry entered, the business strategy used by the new venture, and the behavioral characteristics of the founding entrepreneur. They also said that outside help is always needed because it is hard for one person to do it all themselves. Thus, outside help could provide a better business strategy and help the entrepreneur with his behavioral characteristics by providing assistance in his needed areas.

By using a survey of 1,691 small businesses in rural Georgia, Variyam and Krayhill (1994) examined the relative contributions of major categories of managerial inputs. The results of the study indicate that small business assistance programs contribute toward rural economic growth and that they should provide training in planning and in the use of new technology.

THE IMPACT OF ASSISTANCE AGENCIES

The impact that the assistance agencies has on society depends directly on the performance of the assisted businesses. Although there is much debate over the methodology of determining the impact of the assistance agencies, more articles point toward positive impacts of these agencies rather than the negative. The following three articles deal with the positive impacts, while the last article deals with the negative impact.

Chrisman *et. al.* (1985) surveyed 327 small businesses by phone and mail that received in-depth counseling to test the effectiveness of the SBDC consulting programs in Georgia and South Carolina. The effectiveness was measured by the contribution to tax revenues that resulted from the performance of these small business consulted by the SBDC. The results of this study suggest that the SBDC has been operating in a cost-effective manner since the returning of tax dollars has been in excess of the cost of the program. In comparing state by state, Georgia's tax dollars covered the expenditure of the program while South Carolina covered over 70 percent of the cost of the program.

McMullan *et. al.* (1986) assessed the economic value of the new university based new-venture outreach program by telephone surveying 50 entrepreneurs who had projects in the program. The entrepreneurs were asked to measure and determined the value of the assistance that the program offered to them. The results of the study concluded that the computed value added was \$1.75 million (CDN), compared to the cost of the start up cost of 75,000 (CDN). The average value added for each dimension was \$6,097.50

By mail surveying the pre-venture clients serviced by the Small Business Development Centers (SBDC) in South Carolina and Georgia, Chrisman *et. al.* (1987)

examined the impact of the SBDC in these two areas. One result of this study determined that new tax revenues generated by businesses assisted by these SBDC exceeded the cost of delivering the services.

Wood (1994) argues that the small business assistance agencies do not propose any benefits to the overall wealth of society because they only use tax revenue. The author examines whether or not the government should use tax-funded programs to help small businesses by comparing previous studies on the cost-benefit analysis of small business. Wood disagrees with previous research that estimates that small business assistance programs achieve 23 to 1 benefit-to-cost ratio and therefore be continued and expanded. Woos's main argument is that an increase in sales for a client with assistance is only an increase for the client and not an increase in the economy sales. Thus, the assistance program only redistributes sales rather than create new sales. Wood also writes that to generate new sales and jobs that are new to the American Economy, clients must gain all their new sales from export demand previously satisfied by a non-U.S. firm, or relieve genuine involuntary unemployment from workers who otherwise would have remained unemployed. Wood's conclusion of the study states that small business assistance programs should be dropped because he believes that entrepreneurship will thrive without any help.

PROBLEMS FACING ASSISTANCE AGENCIES

Although there are articles fore and against assistance agencies, there are still articles that examine the problems facing these agencies. From examining the SBA

database on all SBICs, Brewer and Hesna (1994) determined that SBIC investments increased from 1983-1992, but then decreased after 1992. Thus, small businesses that were unable to obtain funding after 1992 probably could not have developed because of the lack of funding. The percentages of funds allocated by all SBICs to different activities were more for operating capital and acquisition of existing businesses than consolidation of debt, acquisition of machinery and land, research and development, construction, and marketing.

Masten and Hartman (1991) found assistance problems faced by the agencies and recommendations for these problems by surveying one hundred and nine representatives from small business assistance agencies in South Africa. The main problems faced in South Africa, which are needs of small business agencies in the United States, are the lack of capital and marketing assistance. With the development of programs to solve these problems for small business, small businesses will thrive and the economy will grow.

THE PROBLEMS OF SMALL BUSINESSES

There are several articles that explore the types of problems in which small businesses need assistance. In 1989, Chrisman examined 249 long-term, pre-ventured clients that the SBDC spent 12 or more hours consulting to study the value and which types of assistance were more helpful. The main finding of the study was that assistance from outside sources in formulating a new venture business strategy is the most useful advice. The SBDC was most useful in determining the feasibility, both financial and market, than with assistance with the administrative and operating problem.

Through researching 103 small businesspeople by telephone, Davis *et. al.* (1981) explored the types of needs the small businesspeople desired prior to becoming involved in their business and at present time. The study concluded that the top five assistance needed prior to starting the business was: 1) accounting 2) marketing 3) management 4) feasibility and start-up 5) finance. The top five assistance needed after starting the business is: 1) finance 2) marketing 3) management 4) legal 5) feasibility and start-up.

By surveying 29 minority-owned small businesses that are members of the Dallas Chamber of Commerce, Price (1992) identified the needs and problems of these small business owners. Although the article dealt more with the tax law, the article concluded that the small business owners needed assistance in dealing with the administrative duties of business and tax abidance.

Personal interview of 148 small businesses participating in the Small Business Institute Program, Gobeli *et. al.* (1991) examined the needs of these small businesses and if they think the CPA's are qualified. The study concluded that over 50% of the small businesses needed assistance in business plans, marketing plans, business consulting, computer systems, new venture planning, tax planning, tax preparation, financial planning, and financial statements. The small business owners viewed CPA's as preparers of tax returns and financial statements only.

Young and Welsch (1983) studied the relationship between problems of small businesses and which type of information (e.g. professional, personal, written, institutional, electronic) source to receive assistance by surveying 193 entrepreneurs by mail questionnaire. The study concluded that professionals were highly significant to all

four problem areas in which entrepreneurs needed assistance. These four problem areas were general management, operations, finance, and marketing.

By studying 762 responses of Small Business Institute cases in Alaska and Wyoming, Wichmann examined problems facing small businesses in these areas. Wichmann determined that accounting and marketing are the main problems that the small businesses were facing. The accounting problem included areas of cash control, cost control, record keeping, and use of accounting information. The marketing problem areas were advertising and promotion, defining target market, layout and appearance, location, pricing, inadequate sales, and seasonal variation in sales.

Peterson examined the needs and sources of small business management assistance by surveying 793 small business owners and managers. Peterson concluded the primary assistance needs of small business were long term business planning, marketing techniques, and preparing various government forms and documents. The small business owners also stated that programs stressing employee relations, inventory management, or basic accounting were not as needed. The management assistance source that provided the most satisfaction to small business owners were accountants and lawyers, not government sponsored agencies.

AGRIBUSINESS COMPANIES ASSISTANCE NEEDS AND PROBLEMS

Agribusinesses face the same and different types of problems than non-agribusiness because agribusinesses are affected by natural wonders. By surveying 115 small businesses in Wyoming and 79 small businesses in Montana, Torok and Schroeder

determined that the business problems and technical assistance needs vary between the agribusinesses and non-agribusiness sector and within agribusinesses. The business problems and technical assistance needs by agribusinesses that were determined are increasing domestic sales, product safety and labeling regulations, construction and zoning regulations, obtaining long term loans and financing new technology.

Torok *et. al.* interviewed 115 food and kindred products processors in Wyoming to outline factors affecting small business management ability to employ management assistance services and to identify specific management assistance needs of small businesses. These agribusiness firms identified the obstacles in obtaining needed information which are accessibility in locating information/services, high costs, timeliness, and availability. The firms also identified the top ten management assistance needs. These needs by the firms are sources of capital, government rules/regulations, advertising, preparing a marketing plan, pricing strategies, financial analysis, starting a business, inventory planning/control, sales and merchandising, and tax planning.

FOREST PRODUCTS COMPANIES ASSISTANCE NEEDS AND PROBLEMS

Forest products companies are similar to other agribusinesses in their needs and problems, but are different in their own particular way. West and Sinclair measure the innovativeness of firms in the wood household furniture industry by surveying 122 large and small firms in this industry. Their results indicated that large firms tend to be more innovative than smaller firms because the larger firms were more willing to take the risk of new process innovations. By the results, small firms needs arises. Small firms stated a

need to utilize latest manufacturing technologies which would require technical assistance that would allow them to use new technology on trial basis or through a demonstration project. The authors also state that without the assistance to small businesses with the adoption of technically superior process, the smaller firms cannot remain competitive and therefore go out of business.

By mail surveying 35 Ohio sawmill operators, Bratkovich and Miller determined educational needs of these operators. The authors concluded that forest products marketing and environmental awareness were the two areas with the highest educational needs of these forest products companies. The other needs that were conferred from the study were sawmill production, communications, business management, and equipment maintenance and management.

The authors, Booth and Vertinsky, investigated the extent to which geographical and product diversification provide firms in the forest products industry with means for coping in a turbulent environment. By surveying eighteen Canadian and twenty-five American firms, the study concluded that unrelated-product diversification and geographical diversification reduce risk, but at a reduction of profits. Product differentiation and investment in new technology provide opportunities for increased returns and risk reduction. Therefore, the needs of forest products industry are the development of product differentiation and availability of new technology.

Bush *et. al.* examined the ways the hardwood lumber companies compete, the competitive strategies they use, and trends in the industry that affects competition by interviewing executives of the 20 largest hardwood lumber manufacturers in the United

States. The authors concluded that competition is based on quality, customer service, and price. The primary aspects of quality are accurate lumber manufacturing and packaging. Customer service deals with product availability and delivery schedules. The primary aspects of price includes level and consistency which is how often prices change. The authors also concluded that different size companies use different strategies. The large companies and a few medium companies use quality and customer service as competitive tools instead of pricing. Giant companies are more willing to compete on price but still use customer service and quality. Small companies are production oriented and rely on channel intermediaries to market their products or quasi-captive arrangements with lumber users. Bush *et. al.* also concluded that the trends in the industry include shortened distribution channels, increased specialization of orders, and the movement of the inventory carrying function backward in the distribution channel.

Bush and Sinclair examined the business-level competitive strategy for different sizes of the hardwood lumber industry by surveying 72 of the largest hardwood lumber producers. The authors defined business-level strategy as a strategic focus that is comprised of investment, political, and competitive sub strategies. Investment strategies address the allocation of resources while political strategies deal with how the firm interacts with external groups. Finally there is competitive sub strategies which address the problem of achieving and maintaining a competitive advantage within an industry or product market. The authors concluded that companies in the hardwood lumber industry use a variety of strategies. The largest companies are moving toward the differentiation strategy while maintaining a competitive price instead of the low-cost strategy. The small

companies are not stated as to be committed to a particular strategy. The authors stated that the small companies are “stuck in the middle” because they are not committed to a strategy. Thus, the authors suggest that the small companies develop a focus strategy to focus on a particular market because it would help to avoid direct competition with the large companies.

Rich analyzed recent shifts in competitive strategies in the U.S. forest products industry by surveying 42 major forest products companies. The conclusion stated that forest products companies were shifting from an overall cost leadership strategy toward a differentiation and/or focus strategy. The author also concluded that medium to small size companies had a larger profit margin when they shifted to a differentiation or focus strategy.

Hansen and Smith assessed the educational needs of the forest products industry in Oregon and Virginia by surveying 339 large firms and 329 small firms. The results of the study concluded that there is evidence of educational needs in the forest product industry. The primary educational need that was established by the authors was the area of marketing/management area. The top three educational needs for small manufacturers were product pricing, plant management/finance, and identifying new markets.

CHAPTER III

DATA AND METHODOLOGY

The survey instrument was developed in conjunction with the Tennessee Department of Agriculture, Market Development and Promotions Group. University of Tennessee Extension Service personnel also provided input regarding the survey. The survey contained questions regarding marketing assistance needs, marketing situation, and plans. The survey also included questions regarding firm characteristics, including number of employees, value of sales and years in business. A copy of the survey is provided in the Appendix at the end of this document.

The survey was conducted via mail following procedures outlined by Dillman. A pretest was sent to nine firms to provide final revisions to the survey instrument. The pretest firms list was provided by the Tennessee Department of Agriculture. Of these nine firms, six completed the pretest. The pretest was conducted in December, 1998. In March and April of 1999, a mail survey was sent to agribusiness manufacturers and processors across Tennessee. The sample included 1,662 Tennessee firms. The sample list was obtained from American Business Information. The firms were selected on the basis of standard industry classification (SIC) codes. The sample included nursery growers, food and kindred products processors, textile milling, apparel and textile products manufacturing, lumber and wood products processors, furniture manufacturers, and paper and applied products manufacturers. When the firms had more than one

location, either the headquarters or largest location (in terms of number of employees) was selected. Firms were asked to provide information for their Tennessee locations only.

A breakdown of the sample by SIC code category, value of sales category, and number of employees category is shown in Table 1. The shares of firms across major product types are similar to those found in Bureau of Census, *County Business Patterns*, estimates for non-nursery firms. According to the 1996 *County Business Patterns*, 13 percent of the non-nursery agribusinesses were food and kindred products processors, 7 percent were textile millers, 20 percent were apparel and textile manufacturers, 42 percent were lumber and wood products manufacturers, 12 percent were furniture manufacturer, and 7 percent were paper and allied products manufacturers. Due to the large number of nursery/greenhouse farms, only a portion of these firms were sampled randomly (10 percent) from the American Business Information list. (The Census of Agriculture shows that there are 1846 farms). After removing multiple locations and undeliverable responses, the final sample included 88 nursery greenhouse firms. The largest percent of the sample was from lumber and wood products, with other large shares from food and kindred products processors, and apparel and textile mill products. Over one quarter of the sample firms had less than \$500,000 per year in sales and only 12.2% had \$20 million or greater in sales. Nearly 30% of the firms had 1-4 employees. About 39.4% of the sample firms were located in the eastern region of the state, 33.7% were located in middle Tennessee, and 26.9% were located in west Tennessee. Shelby, Davidson, Hamilton, Knox and Bradley were the counties with the largest numbers of agribusinesses firms according to both the survey sample and *County Business Patterns* estimates.

Table 1. Characteristics of the Sample Agribusiness Firms

Characteristic	Percent of Sample
Product Category (N=1,662)	
Nursery Growers	5.3
Food and Kindred Products	27.8
Textile Milling	8.8
Apparel and Textile Products	15.4
Lumber and Wood Products	30.1
Furniture and Fixtures	9.2
Paper and Allied Products	8.7
Value of Sales (N=1561)	
<\$500,000	26.5
\$1 million-\$2.5 million	19.2
\$2.5- \$5 million	12.2
\$5 million- \$10 million	10.6
\$10 million- \$20 million	8.3
\$20 million or greater	12.2
Number of Employees (N=1,605)	
1-4	29.0
5-9	13.6
10-19	13.0
20-49	15.5
50-99	10.8
100-249	10.4
250-499	4.6
500 or greater	3.1
County (N=1,662)	
Davidson	8.2
Hamilton	5.6
Knox	5.6
Shelby	13.8
Others	66.8

Of the 1,662 firms surveyed, 312 responded to the survey, giving an 18.8% response rate. There were 182 agribusiness firms that responded to all the questions needed for the logit analyses ,in which, 97 where forest products firms. Information about basic characteristics of the responding agribusiness firms is shown in Table 2. As with the overall sample, the greatest shares of respondents were lumber and wood products and food and kindred products firms. However, a comparison of the sample breakdowns by SIC code with the responding firms' SIC codes suggests that response rates were higher from nursery growers, food processors, and lumber and wood products firms than from textile mill, apparel and textile products, furniture and fixtures, and paper and allied products firms. The responding firms appeared to be fairly representative of the overall sample in terms of value of sales and number of employees. About 44.2% of the responding firms were located in the eastern region of the state, 30.1% were located in middle Tennessee, and 25.6% were located in west Tennessee. As with the overall sample, the most common locations were in Davidson, Hamilton, Knox, and Shelby counties.

Table 2. Characteristics of the Responding Agribusiness Firms

Characteristic	Percent of Respondents
Product Category (N=312)	
Nursery Growers	9.3
Food and Kindred Products	26.0
Textile Milling	7.1
Apparel and Textile Products	8.3
Lumber and Wood Products	37.2
Furniture and Fixtures	7.1
Paper and Allied Products	5.1
Value of Sales (N=296)	
<\$500,000	21.3
\$500,000- \$1 million	12.2
\$1 million- \$2.5 million	23.0
\$2.5- \$5 million	16.9
\$5 million- \$10 million	9.5
\$10 million- \$20 million	6.8
\$20 million or greater	10.4
Number of Employees (N=302)	
1-4	26.8
5-9	13.6
10-19	14.2
20-49	20.9
50-99	9.6
100-249	10.9
250-499	3.0
500 or greater	1.0
County (N=312)	
Davidson	6.4
Hamilton	4.8
Knox	6.4
Shelby	11.9
Others	70.7

METHODS OF ANALYSIS

Analysis of Overall Importance of Assistance Needs

The degree of assistance needed by the j th firm, $ASSIST_{ij}$, is classified by five levels. These include negligible ($i=1$), low ($i=2$), moderate ($i=3$), high ($i=4$), and extreme ($i=5$). The overall importance of the agribusinesses and secondary forest products assistance needs are compared through means comparisons tests. The test statistic

$$t = \left| \overline{ASSIST_{type1}} - \overline{ASSIST_{type2}} \right| / s\sqrt{n}$$

is calculated by comparing the mean ratings of the two types of assistance, where s is the pooled standard deviation.

Analysis of Assistance Needs Across Firm Characteristics

Differences in assistance needs across firm characteristics and market situations and plans are examined through ordered logit models. The models estimated in this study hypothesize that product categories, market situation and plans, and firm characteristics influence the need for business assistance. The j th firm is hypothesized to have an unobservable set of preferences regarding assistance as defined by Z_j . These unobservable preferences regarding assistance are hypothesized to be a function of explanatory variables, X , such that:

$$Z_j = g(Pr(ASSIST_{ij} \leq i | X) = \alpha + \beta' X_j$$

where

$$j = 1, \dots, N$$

N = number of firms

$$k = 5$$

$$1 \leq i \leq k$$

The probability of observing the i th assistance need is then:

$$\Phi(\alpha + \beta' X_j), \quad i=1$$

$$\Phi(\alpha_2 + \beta' X_j) - \Phi(\alpha_1 + \beta' X_j), \quad i=2$$

$$\Pr(\text{ASSIST}_j = i | X_j) = \Phi(\alpha_3 + \beta' X_j) - \Phi(\alpha_2 + \beta' X_j), \quad i=3$$

$$\Phi(\alpha_4 + \beta' X_j) - \Phi(\alpha_3 + \beta' X_j), \quad i=4$$

$$1 - \Phi(\alpha_4 + \beta' X_j), \quad i=5$$

where

$$\Phi = \frac{e(\beta' X_i)}{1 + e(\beta' X_i)}$$

the cumulative logic distribution. The likelihood function is:

$$L = \prod_{\text{ASSIST}=1} [\Phi(\alpha_1 + \beta' X_i)] \prod_{\text{ASSIST}=2} [\Phi(\alpha_2 + \beta' X_j) - \Phi(\alpha_1 + \beta' X_j)] \prod_{\text{ASSIST}=3} [\Phi(\alpha_3 + \beta' X_j) - \Phi(\alpha_2 + \beta' X_j)] \prod_{\text{ASSIST}=4} [\Phi(\alpha_4 + \beta' X_j) - \Phi(\alpha_3 + \beta' X_j)] \prod_{\text{ASSIST}=5} [1 - \Phi(\alpha_4 + \beta' X_j)]$$

Substituting the explanatory variables for X, the hypothesized model is:

$Pr(ASSIST = i) = f(\text{firm type, market channel, market scope, market growth, years in business, employees, total sales, growth sales}).$

The complete listing of variable names and definitions can be found in Table 3.

The variables, SIC 18- SIC 26, are dummy variables indicating whether an agribusiness is in one of these SIC categories or firm types. The RETAIL, WHLSL, and INET dummy variables represent the channel of selling that the agribusiness is involved in, whether it is retail, wholesale, and/or Internet. The dummy variables LOCAL, REGION, NATL, and INTL represent the scope of the market for the agribusiness. GREGION, GNATL, and GINTL dummy variables measures where the agribusiness expects most of their market growth to occur in the next five years, whether that be regionally, nationally, or internationally. The variable YRBUS measures how many years the agribusiness been in business. The expectation of this variable is that agribusinesses that have been in business longer will not need as much as assistance as younger businesses. The variable LEMP measures the firm size by the number of employees with the expectation that businesses with lower number of employees will need more assistance. The TSALES variables measures the agribusinesses' 1998 total sales. The dummy TSALES1 equals 1 if sales < \$250,000, TSALES2 = 1 if \$250,000 <= sales < \$499,999, TSALES3 = 1 if \$500,000 <= sales < \$999,999, TSALES4 = 1 if \$1 million <= sales < \$2.49 million, TSALES5 = 1 if \$2.5 million <= sales < \$4.99 million, TSALES6 = 1 if \$5 million <= sales < \$9.99 million, TSALES7 = 1 if \$10 million <= sales < \$19.99 million, and TSALES8 = 1 if sales > \$20 million. If the firm variable does not have a particular category of sales, then the sales

Table 3. Variable Names and Definitions

Variable Names	Description	Unit of measurement
PRODUCT CATEGORIES		
SIC18	Nursery Growers	1 if firm type, 0 otherwise
SIC20	Food and Kindred Products	1 if firm type, 0 otherwise
SIC22	Textile Milling	1 if firm type, 0 otherwise
SIC23	Apparel and Textile Milling	1 if firm type, 0 otherwise
SIC24	Lumber and Wood Products	1 if firm type, 0 otherwise
SIC25	Furniture and Fixtures	1 if firm type, 0 otherwise
SIC26	Paper and Allied Products	1 if firm type, 0 otherwise
MARKETING ASSISTANCE		
PROMO	Promoting products/advertising	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
TRANS	Locating reliable transportation /distribution	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
BUYER	Locating and identifying potential buyers	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
SHOW	Trade show/fair representation	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
NEWPROD	New product development	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
FINAN	Obtaining financing	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme

Table 3. Continued

Variable Names	Description	Unit of Measurement
RESEARCH	Market research or finding market information	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
PILOT	Access to new pilot plants or test kitchen facilities	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
PLAN	Formulating a marketing plan	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
CALL	Help in preparing to call on marketing outlets	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
INPUTS	Obtaining adequate supplies of local inputs	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
SUPPLIES	Locating local suppliers and contracts	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
DISPLAY	Help with development of sales display types and designs	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
ASSOC	Locating or forming local industry associations	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
INTERNET	Marketing across the Internet	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme
REGUL	Compliance with product and/or shipping regulations	1 if need is negligible, 2 if need is low, 3 if need is moderate, 4 if need is high, 5 if need is extreme

Table 3. Continued

Variable Names	Description	Unit of Measurement
FIRM CHARACTERISTICS		
Channel of selling:		
RETAIL	Sell through retail market channel	1 if use, 0 otherwise
WHLSL	Sell through wholesale market channel	1 if use, 0 otherwise
INET	Sell through Internet	1 if use, 0 otherwise
Scope of market:		
LOCAL	In-state and local markets of	1 if sell in markets, 0 otherwise
REGION	Regional markets of products	1 if sell in markets, 0 otherwise
NATL	National markets of products	1 if sell in markets, 0 otherwise
INTL	International markets of products	1 if sell in markets, 0 otherwise
Market potential:		
GREGION	Most growth in regional in next five years	1 if future market growth, 0 otherwise
GNATL	Most growth in national in next five years	1 if future market growth, 0 otherwise
GINTL	Most growth in international in next years	1 if future market growth, 0 otherwise
Firms features:		
YRBUS	Years in business prior to 1999	Years
LEMP	Number of employees	Number of Employees

Table 3. Continued

Variable Names	Description	Unit of Measurement
TSALES	1998 Total Sales	TSALES1 =1 if sales <\$250,000, 0 otherwise; TSALES2 =1 if \$250,000 <= sales < \$499,999, 0 otherwise; TSALES3 =1 if \$500,000 <= sales < \$999,999, 0 otherwise; TSALES4 =1 if \$1 million <= sales < \$2.49 million, 0 otherwise; TSALES5 =1 if \$2.5 million <= sales < \$4.99 million, 0 otherwise; TSALES6 =1 if \$5 million <= sales < \$9.99 million, 0 otherwise; TSALES7 =1 if \$10 million <= sales < \$19.99 million, 0 otherwise; TSALES8 =1 if sales > \$20 million, 0 otherwise;
GSALES	Projected percent growth in sales in next five years	Percent

category variable is 0. The total sales of businesses will affect the need for assistance because smaller businesses usually need more assistance than larger companies. Thus, total sales will influence the need for assistance depending on firm size. The variable GSALES represents the projected percent growth in sales in the next five years. The expectation of GSALES is that businesses that expect to grow will need more assistance than businesses that do not expect to grow.

This study examines the relationship of the variables listed in the model above to ASSIST (type of assistance). The potential types of assistance include (See Table 3):

- (1) Promoting products/advertising
- (2) Locating reliable transportation/distribution
- (3) Locating and identifying potential buyers
- (4) Trade show/fair representation
- (5) New product development
- (6) Obtaining financing
- (7) Market research or finding market information
- (8) Access to new pilot plants or test kitchen facilities
- (9) Formulating a marketing plan
- (10) Help in preparing to call on marketing outlets
- (11) Obtaining adequate supplies of local inputs
- (12) Locating local suppliers and contacts
- (13) Help with development of sales display types and designs
- (14) Locating or forming local industry associations
- (15) Marketing across Internet
- (16) Compliance with product and/or shipping regulations.

Several measures can be used to access the statistical fit of the logit models. The log-likelihood ratio tests compares the log-likelihood functions of the full model and an intercept only model to access the significance of the model. The likelihood ratio is calculated as

$$LLR = \log L_r - \log L_{ur}$$

given that L_r is the log-likelihood from the model containing only an intercept, and L_{ur} is the log-likelihood from the model containing the intercept and covariates. The LLR is distributed as Chi-Square with k degrees of freedom, where k is the number of covariates. Another measure of the overall model is the percent of observations correctly classification.

$$\text{Percent Correctly Classified} = \frac{\# \text{ observations correctly classified by model}}{\text{Total observations}} * 100$$

The Wald Statistic is calculated as

$$W = \hat{\beta}_k V_k^{-1} \hat{\beta}_k,$$

where β_k is the coefficient of interest and V_k is the estimated asymptotic covariance of β_k .

The value for W is distributed as Chi-Square. The Wald Statistic describes whether an individual coefficients are significantly different from zero.

CHAPTER IV

RESULTS

OVERALL IMPORTANCE OF AGRIBUSINESS ASSISTANCE NEEDS

The mean values of the ratings of the agribusiness assistance need and the percentage of each level of assistance need are displayed in Table 4. In Table 4, the small letters in the last column that are the same indicate the needs are not significantly different from one another. For example, market research or finding market information and promoting products/advertising are not significantly different with one another since they have the same letter b, but are significantly different with all the other types of assistance. The highest assistance need for agribusinesses was locating and identifying potential buyers. The next highest assistance need was promoting products/advertising. The least needed assistance was compliance with product and/or shipping regulations and restrictions.

The greatest need for assistance was for locating and identifying potential buyers. Over 50% of the firms expressed at least a moderate need for this form of assistance. The second highest assistance need promoting products/advertising was not significantly different from market research. The lowest level of need is for assistance with compliance with product and/or shipping regulations. There were not any firms that indicated moderate, high, or extreme needs for this assistance. The next lowest group of assistance needs are access to new pilot plants or test kitchen facilities and locating or forming local

Table 4. Means Comparison Tests of Marketing Assistance Needs By Agribusiness Firms¹

Assistance	Percent of Responses					Rating Means/ Standard Deviations	
	Negligible	Low	Moderate	High	Extreme		
Locating and identifying potential buyers (including contracts in established marketing channels)	20.9	22.5	22.0	25.8	8.8	2.79 (1.28)	a
Promoting products/advertising	24.7	25.8	27.5	13.7	8.2	2.55 (1.23)	b
Market research or finding market information	24.7	26.4	29.1	13.7	6.0	2.5 (1.18)	b
New product development	31.9	29.7	17.6	14.8	6.0	2.34 (1.24)	c
Marketing across the Internet	37.4	23.6	18.1	10.4	10.4	2.33 (1.35)	c,d
Formulating a marketing plan	35.2	27.5	25.3	9.9	2.2	2.16 (1.08)	d,e
Obtaining financing	35.2	33.5	17.0	9.3	4.9	2.15 (1.15)	d,e
Locating reliable transportation/ distribution	39.6	30.2	14.8	11.0	4.4	2.10 (1.17)	e,f
Locating local suppliers and contracts	33.5	34.6	21.4	8.8	1.6	2.10 (1.02)	e,f
Trade show/fair representation	36.3	35.2	18.1	7.1	3.3	2.06 (1.06)	e,f
Help in preparing to call on marketing outlets	39.0	31.3	18.7	8.2	2.7	2.04 (1.08)	f
Help with development of sales display types and designs	43.4	33.0	12.6	9.9	1.1	1.92 (1.03)	g
Obtaining adequate supplies of local inputs	38.5	37.4	21.4	2.7	0.0	1.88 (0.84)	g
Access to new pilot plants or test kitchen facilities	54.4	25.8	12.6	5.5	1.6	1.74 (0.99)	h
Locating or forming local industry associations (ex: grower or processor associations)	50.0	31.3	15.9	1.6	1.1	1.72 (0.87)	h
Compliance with product and/or shipping regulations and restrictions	47.8	52.2	0.0	0.0	0.0	1.52 (0.5)	i

¹ Assistance needs with the same letters in the last column indicate the mean need ratings are not significantly different from one another at $\alpha = .05$.

industry associations. Moderately needed forms of assistance included new product development, marketing across Internet, formulating a marketing plan, obtaining financing, locating reliable transportation/distribution, locating local suppliers and contract, trade show/fair representation, help in preparing to call on marketing outlets, help with development of sales display types and designs, and obtaining adequate supplies of local inputs. Overall, the means of each of the assistance needs were in the low to moderate level with the range being from negligible to extreme.

OVERALL IMPORTANCE OF FOREST PRODUCTS ASSISTANCE NEEDS

The mean values of ratings by the forest products firms assistance needs and percentage level of each assistance need are shown in Table 5. The small letters on the far right column in Table 5 indicate the needs are not significantly different from one another if they are the same. The most needed form of assistance was locating and identifying potential buyers. Over 50% of the firms indicated at least a moderate need. The lowest rated need assistance was compliance with product and/or shipping regulations and restrictions. Moderately needed forms of assistance included marketing across the Internet, locating local suppliers and contracts, locating reliable transportation/distribution, obtaining financing, new product development, formulating a marketing plan, trade show/fair representation, help in preparing to call on marketing outlets, and obtaining adequate supplies of local inputs. Overall, the mean value of the assistance needs were between low to moderate with the range being from negligible to extreme.

Table 5. Mean Comparison Tests of Marketing Assistance Needs By Forest Products Firms¹

Assistance	Percent of Responses					Rating Means/ Standard Deviations	
	Negligible	Low	Moderate	High	Extreme		
Locating and identifying potential buyers (including contracts in established marketing channels)	20.6	21.6	18.6	32.0	7.2	2.83 (1.28)	a
Promoting products/advertising	24.7	27.8	25.8	13.4	8.2	2.53 (1.23)	b
Market research or finding market information	24.7	28.9	29.9	11.3	5.2	2.43 (1.14)	b,c
Marketing across the Internet	39.2	23.7	16.5	11.3	9.3	2.28 (1.34)	c,d
Locating local suppliers and contracts	33.0	33.0	22.7	8.2	3.1	2.15 (1.07)	d,e
Locating reliable transportation/distribution	35.1	34.0	17.5	9.3	4.1	2.13 (1.12)	d,e
Obtaining financing	38.1	32.0	14.4	10.3	5.2	2.12 (1.18)	d,e
New product development	35.1	34.0	19.6	7.2	4.1	2.11 (1.10)	e
Formulating a marketing plan	36.1	32.0	24.7	6.2	1.0	2.04 (0.98)	e,f
Trade show/fair representation	37.1	37.1	17.5	6.2	2.1	1.99 (0.99)	e,f
Help in preparing to call on marketing outlets	39.2	35.1	15.5	9.3	1.0	1.98 (1.01)	e,f
Obtaining adequate supplies of local inputs	36.1	42.3	19.6	2.1	0.0	1.88 (0.79)	f
Help with development of sales display types and designs	49.5	30.9	13.4	6.2	0.0	1.76 (0.91)	f,g
Locating or forming local industry associations (ex: grower or processor associations)	52.6	34.0	9.3	2.1	2.1	1.67 (0.88)	g,h
Access to new pilot plants or test kitchen facilities	62.9	21.6	10.3	5.2	0.0	1.58 (0.88)	h
Compliance with product and/or shipping regulations and restrictions	46.4	53.6	0.0	0.0	0.0	1.53 (0.50)	i

¹ Assistance needs with the same letters in the last column indicate the mean need ratings are not significantly different from one another at $\alpha = .05$.

MODELS OF AGRIBUSINESS ASSISTANCE NEEDS

The logit models for each of the assistance need variables are presented in Appendix Tables 1-5. A total of 182 observations were used to estimate each model. Using the LLR tests for model significance, the assistance need variable models that were significant overall were those for PROMO, SHOW, NEWPROD, PLAN, DISPLAY, INET, and REG. The LLR tests was conducted at a significance level of $\alpha = .05$. The models TRANS, BUYER, FINAN, RESEARCH, PILOT, CALL, INPUTS, SUPPLIES, and ASSOC were found to be not significant overall at $\alpha = .05$. The models which accurately classified the greatest number of observations included the models for INTERNET, DISPLAY, PILOT, REGUL and SHOW, with percentage values of 75.0, 73.1, 71.7, 70.3 and 69.7. The models with the lowest percentage correct of the model were SUPPLIES, FINAN, BUYER, RESEARCH and ASSOC with percentage values of 63.7, 65.1, 66.3, 66.3 and 66.4.

Promoting products/advertising

The channel of selling variable that was significant in the model was INET, while the other variables RETAIL and WHLSL were not. Selling through the Internet had a positive influence on the probability of needing assistance with PROMO. Only one of the variables dealing with the scope of the market, REG, was significant. Selling products regionally had a negative influence on the probability of not needing assistance with PROMO and a positive influence on probability of extreme need for assistance with PROMO. The coefficients on the other variables LOCAL, NATL, and INTL were not

significantly different from zero.

One market potential variable, GINTL, was found significant while the other variables GREGION and GNATL were not significant. The market potential of growth in the international market in the next five years has a negative influence on the probability of not needing assistance with PROMO and a positive influence on probability of the need of assistance with PROMO compared with firms anticipating local growth. The only firm characteristic variables significant were TSALES2, TSALES3, and TSALES4. The coefficients on each of these variables were negative. Their significance would indicate these moderately sized firms have greater need for PROMO than the very smallest and largest firms. The other firm characteristic variables, YRBUS, LEMP, were found insignificant. Product category variables were not significant in the model. In addition, sales growth expectations GSALES was not found to be significant.

Locating reliable transportation/distribution

The only variable significant in the TRANS model is GREGION. The sign on the coefficient was negative suggesting regional growth in the next five years has a negative impact on the probability of the negligible need for TRANS and has a positive impact on the probability of needing assistance with TRANS.

Locating and identifying potential buyers

Only one of the product category variables, SIC25, was significant. The other product categories variables SIC18, SIC20, SIC22, SIC23, and SIC24 were not

significant. The product category SIC25, furniture and fixtures, had a negative influence on the probability of not needing assistance with BUYER and a positive influence on the probability of extreme need for assistance with BUYER. Of the variables dealing with the scope of the market, only one REG was significant. Selling of products regionally had a negative impact on the probability of not needing assistance with BUYER and a positive impact on the probability of extreme need for assistance with BUYER. The other variables LOCAL, NATL, and INTL were not significant in the model.

One market potential variable, GINTL, was found significant while the other variables GREGION and GNATL were not significant. Growth mostly in international markets in next five years had a negative influence on the probability of not needing assistance with BUYER and a positive influence on the probability for need with assistance with BUYER. The variables describing the firms characteristics that were significant were TSALES2 and TSALES3. The total sales variables indicate that businesses that are moderately sized need assistance with locating and identifying potential buyers while very small and large companies have less need for assistance. The other firms characteristic variables YRBUS, TSALES4, TSALES5, TSALES6, TSALES7, TSALES8 and GSALES were not significant.

Trade show/fair representation

Channel of selling variable, RETAIL, was significant while the other variables WHLSL and INET were not significant. Selling through retail market channels had a negative influence on the probability of not needing assistance with SHOW and a positive

influence on the probability of extreme need for assistance with SHOW. Each of the variables representing scope of anticipated market growth were significant and carried negative signs on their coefficients. Compared with firms expected local growth, these firms were more likely to have an extreme need for SHOW.

The firm characteristic variables that were significant were TSALES2, TSALES3, and TSALES4. The other firm characteristic variables that were not significant are YRBUS, TSALES5, TSALES6, TSALES7, and TSALES8. The total sales variables within the range of \$250,000 to \$2.49 million were significant indicating that moderately sized businesses have a higher probability of extreme need for SHOW compared with the smallest and largest sized businesses. Product category variables and scope of market variables were not significant.

New Product Development

Product categories, SIC23 and SIC24, were significant, while the other product categories SIC18, SIC20, SIC22, and SIC26 were not significant. Apparel and textile milling had a positive influence on the probability of not needing assistance with NEWPROD and a negative influence on the extreme need for NEWPROD. SIC24, lumber and wood products, had a positive influence on the probability of not needing assistance with NEWPROD and a negative influence on the extreme need for assistance with NEWPROD. Therefore, compared with paper and allied product firms, those firms were less likely to have an extreme need for NEWPROD.

Two of the market potential variables were significant in the model NEWPROD. GREGION and GNATL had a negative influence on the probability of not needing assistance with NEWPROD and a positive influence on the probability of extreme need for NEWPROD. The other market potential variable, GINTL, was not significant in the model NEWPROD. These results suggest expansion in regional and national markets may magnify the need for new product development assistance. The firm characteristic variables that were significant were EMP, TSALES2, and TSALES3. The other firm characteristic variables YRBUS, TSALES4, TSALES5, TSALES6, TSALES7, and TSALES8 were not significant. The number of employees had a negative impact on the probability of negligible need and a positive impact on the probability of the need being extreme for assistance with NEWPROD. The total sales categories between \$250,000 and \$999,999 were significant indicating the need for assistance with NEWPROD. Therefore, moderately sized companies have a higher probability of extreme need for NEWPROD, compared with small and large size companies. The channel of selling and scope of the market variables were not significant in the NEWPROD model.

Obtaining Financing

The variables YRBUS, TSALES2, and TSALES6 were found significant. The number of years in business influenced the probability of not needing assistance with FINAN positively and negatively influenced the probability of extreme need for assistance with FINAN. Therefore, newer firms were more likely to need assistance with FINAN. Total sales in 1998 ranging between \$250,000-\$499,999 impacted the probability of not

needing assistance negatively and had a positive influence on the probability of extreme need for assistance with FINAN. Total sales businesses that ranged between \$4.99 million-\$9.99 million needed assistance for FINAN since they had a positive influence toward the probability of extreme need for assistance with FINAN. Therefore, small and moderately sized businesses have a higher probability of extreme need for FINAN. Product categories, channel of selling variables, scope of market, and market potential variables were not found to be significant.

Market Research or Finding Market Information

The scope of anticipated market growth variables GREGION, GNATL, and GINTL were significant. In each case, the signs on the coefficients were negative. Compared with firms expecting local growth, these firms were more likely to have an extreme need for RESEARCH.

The firm characteristic variables TSALES2, TSALES3 and TSALES4 were found significant, while the other firm characteristic variables YRBUS, LEMP, TSALES5, TSALES6, TSALES7, and TSALES8 were insignificant. TSALES2, TSALES3, and TSALES4 with total sales ranging from \$250,000-\$2.49 million had a positive influence on the probability of extreme need for RESEARCH. The range of total sales variables that were significant indicate that moderately sized companies need assistance with RESEARCH more than small and large companies. Product categories, channel of selling, and scope of market variables were not significant.

Access to New Pilot Plants or Test Kitchen Facilities

The channel of selling variable, INET, was significant, while the other channel of selling variables, RETAIL and WHLSL, were not significant. Selling through the Internet had a positive influence on the probability of not needing assistance with PILOT and a negative influence on the probability of extreme need for assistance with PILOT. The scope of the anticipated market growth variable GREGION was significant, while GNATL and GINTL were not significant. Most growth within the next five years regionally negatively affected the probability of not needing assistance with PILOT and positively affected the probability for extreme need for assistance with PILOT. This suggest that anticipated growth into regional markets may increase the need for access to pilot plants. Scope of the market and firms characteristic variables were not significant in the model PILOT.

Formulating a Marketing Plan

The channel of selling variable, RETAIL, was significant, while the other variables WHLSL and INET were not significant. Selling through the retail marketing channel had a negative influence on the probability of not needing assistance with PLAN and a positive influence on the probability of extreme need for assistance with PLAN. The market potential variables that were significant were GREGION and GNATL. Anticipated regional growth had a negative impact on the probability of a negligible need of assistance with PLAN and a positive impact on the probability of extreme need for assistance with PLAN. National growth in the next five years negatively influenced the probability of

negligible assistance need for PLAN and positively influenced the probability of extreme assistance need for PLAN. The other market potential variable GINTL was not significant. These results indicate that regional or national growth may increase the need for help with a marketing plan compared with only anticipating local growth.

Firms characteristic variables, TSALES2 and TSALES3, were significant while the other firms characteristic variables YRBUS, LEMP, TSALES4, TSALES5, TSALES6, TSALES7, and TSALES8 were not significant. The total sales between \$250,000 and \$999,999 had a negative impact on the probability of not needing assistance with PLAN and a positive impact on the probability of extreme need for assistance with PLAN compared with the smallest firms. Therefore indicating that moderately sized businesses appear to need assistance with a marketing plan more than the smallest and largest companies. Product categories, scope of market variables and GSALES were not significant in the PLAN model.

Help in Preparing to Call on Marketing Outlets

The scope of the market variable, NATL, was significant, while the other variables LOCAL, REGION, and INTL were not significant. National marketing of products had a negative influence on the probability of negligible need of the assistance CALL and a positive influence on the probability of extreme need of assistance with CALL. GREGION was the only market potential variable that was significant. The expected growth in the next five years being regional had a negative impact toward the probability of not needing assistance with CALL and positive impact toward the probability of

extreme need for assistance with CALL compared with local growth. The other variables GNATL and GINTL were not significant.

The firm characteristic variables were not significant except for TSALES3. Total sales in 1998 between \$499,999 and \$999,999 negatively influenced the probability of not needing assistance with CALL and positively influenced the probability of extreme need for assistance with CALL. Product categories and channel of selling variables were insignificant in the CALL model. GSALES was found not to be significant in the CALL model.

Obtaining Adequate Supplies of Local Inputs

The channel of selling variable, RETAIL, was significant, while the other variables WHLSL and INET were not significant. Selling through the retail market channel had a negative influence on the probability of not needing assistance with INPUTS and a positive influence on the probability of extreme need for assistance with INPUTS. The firms characteristic variable EMP was significant and the other firm features variables YRBUS, TSALES2, TSALES3, TSALES4, TSALES5, TSALES6, TSALES7, and TSALES8 were not significant. The number of employees had a positive impact on the probability of negligible need of assistance with INPUTS and a negative impact on the probability of extreme need with assistance of INPUTS. Product categories, scope of market, and market potential variables were not significant in the INPUTS model. Gross amount of sales was not significant in the INPUTS model.

Locating Local Suppliers and Contracts

The channel of selling variable, RETAIL, was significant, while the other channel of selling variables, WHLSL and INET, were not significant. Selling through the retail marketing channel had a negative impact on the probability of negligible need of assistance with SUPPLIES and a positive impact on the probability of extreme need for assistance with SUPPLIES. Variables dealing with the scope of the market had only one significant variable, INTL. International marketing of products had a positive influence on the negligible need of assistance with SUPPLIES and a negative influence on the extreme need of assistance with SUPPLIES. The other scope of the market variables, LOCAL, REG and NATL, were not significant. Product categories, market potential, firm characteristic, and gross sales did not have any variables that were significant.

Help in Development of Sales Display Types and Designs

The channel of selling variable, RETAIL, was significant, while the other channel of selling variables, WHLSL and INET, were not significant. Selling through retail marketing channels had a negative influence on the probability of not needing assistance with DISPLAY and a positive influence on the probability of needing assistance with DISPLAY. The market potential variables or where most growth in next five years will be has one significant variable, GREGION. Anticipated regional growth had a negative impact on the negligible need for assistance with DISPLAY and a positive impact on the extreme need for assistance with DISPLAY compared with firms expected local growth.

Firm characteristic variables not significant were YRBUS, EMP, TSALES5, TSALES6, TSALES7, and TSALES8. The firm characteristic variables that were significant were TSALES2, TSALES3 and TSALES4. The firms total sales variables representing sales between \$250,000 to \$2.49 million had positive influence on the extreme need for assistance with DISPLAY compared with the smallest firms. Product categories and scope of market did not have any variables significant in the DISPLAY model. GSALES was not significant in the DISPLAY model.

Locating or Forming Local Industry Associations

The product categories variables were not significant except for SIC24. Lumber and wood products had a positive influence on the probability of negligible need of assistance with ASSOC and negative influence on the probability of extreme need for assistance with ASSOC. The channel of selling variable, RETAIL, was significant, but the other channel of selling variables, WHLSL and INET, were not significant. Selling through retail marketing channels had a negative impact on the probability of not needing assistance with ASSOC and a positive impact on the probability of extreme need for assistance with ASSOC. Scope of the market, market potential, gross sales and firms characteristic variables were not significant in the model for ASSOC.

Marketing Across the Internet

Selling through retail marketing channels was significant and had a negative impact on the probability of not needing assistance with INTERNET and a positive impact on the

probability of needing assistance with INTERNET. In-state and locally marketing of products (LOCAL) had a negative impact on the probability of negligible need of assistance with INTERNET and a positive impact on the probability of extreme need for assistance with INTERNET. The other scope of market variables, REG, NATL and INTL, were not significant.

GREGION and GNATL were significant. Anticipated national or regional growth had a negative influence on the probability of not needing assistance with INTERNET and a positive influence on the probability of extreme need for assistance with INTERNET compared with firms anticipating mostly local growth.

Several of the firm characteristic variables were significant. The number of years in business (YRBUS) had a positive influence on the probability of negligible need of assistance with INTERNET and a negative influence on the probability of extreme need for assistance with INTERNET. The sales category variables TSALES2, TALES3, and TSALES4 were significant. The 1998 total sales ranging from \$250,000 to \$2.49 million had a positive influence on the probability of needing assistance with INTERNET indicating that moderately sized businesses need assistance with the INTERNET more than the smallest and largest companies. Firm characteristic variables EMP, TSALES5, TSALES6, TSALES7, and TSALES8 were not significant. Product categories did not have any variables that were significant in the INTERNET model. Gross sales was not significant in the model for INTERNET.

Compliance with Product and/or Shipping Regulations and Restrictions

The scope of markets variable INTL was significant, while LOCAL, REGION, and NATL variables were not significant. International marketing of products had a negative influence on the probability of not needing of assistance with REGUL and a positive influence on the probability of extreme need for assistance with REGUL. All the market potential variables, GREGION, GNATL and GINTL, were significant. Anticipated growth in regional, national, or international markets had a negative impact on the probability of negligible need of the assistance REGUL and a positive impact on the probability of extreme need for assistance with REGUL compared with firms anticipating local growth.

Two of the firm characteristic variables, TSALES3 and TSALES6, were significant while YRBUS, EMP, TSALES2, TSALES4, TSALES5, TSALES7, and TSALES8 were not significant. Total sales in the range \$250,000 and \$499,999 and also the range of \$4.99 million-\$9.99 million had a positive influence on the probability of extreme need with assistance REGUL indicates that medium sized firms need assistance with REGUL more than the smallest firms. Product categories, gross sales, and channels of selling variables were not significant in the REGUL model.

MODELS OF FOREST PRODUCTS ASSISTANCE NEEDS

The logit models for each of the assistance need by forest products firms are presented in Appendix Tables 6-10. Using the LLR tests for model significance, the assistance need variable models that were significant are NEWPROD, DISPLAY and

INTERNET at a significance level of $\alpha = .05$ with 97 observations for each model. The models PROMO, TRANS, BUYER, SHOW, FINAN, RESEARCH, PILOT, PLAN, CALL, INPUTS, SUPPLIES, ASSOC and REGUL were found to be not significant overall with 97 observations. The models correctly classifying the highest percentage of the observations were those for DISPLAY, INTERNET, PLAN, ASSOC and NEWPROD with values of 79.6, 77.8, 75.7, 75.1, 73.6 percent correctly classified, respectively. The models with the lowest percentage correctly classified were RESEARCH, REGUL, SUPPLIES, INPUTS, and TRANS with values of 70.4, 69.9, 68.5, 68.3, and 64.7.

Promoting Products/Advertising

The channel of selling variable INET was significant, while the other variables RETAIL and WHLSL were not significant. Selling through the Internet had a negative influence on the probability of not needing assistance with PROMO and a positive influence on the probability of extreme need for assistance with PROMO. The market potential variable, GINTL, was significant with the other market potential variables GREGION and GNATL being not significant. Anticipated market growth in the international markets had a negative impact on the probability of negligible need for assistance with PROMO and a positive impact on the probability of extreme need for assistance with PROMO. This implies that expansion in international markets may increase the need for PROMO. Product categories, scope of market, firms characteristic, and gross sales variables were not significant in the model PROMO.

Locating Reliable Transportation/Distribution

The firm characteristic variable TSALES7 was significant, while the other firm characteristic variables YRBUS, EMP, TSALES2, TSALES3, TSALES4, TSALES5, TSALES6, and TSALES8 were not significant. Total sales between \$9.99 million and \$19.99 million had a negative influence on the probability of not needing assistance with TRANS and had a positive influence on the probability of extreme need for assistance with TRANS. The total sales variables indicate that medium to large size businesses need assistance with TRANS compared to the smallest size companies. Product categories, channels of selling, scope of market, gross sales, and market potential variables were not significant in the model for TRANS.

Locating and Identifying Potential Buyers

The product category, SIC25, was significant, while the other product category variables were not significant. Furniture and fixtures had a negative influence on the probability of not needing assistance with BUYER and a positive influence on the probability of extreme need for assistance with BUYER. The scope of the market variable, REG, was significant, while the other variables LOCAL, NATL and INTL were not significant. Regionally marketing of products had a negative impact on the probability of negligible need with assistance of BUYER and had a positive impact on the probability of extreme need for assistance with BUYER. Channels of selling, market potential, firm characteristic, and gross sales variables were not significant in the BUYER model.

Trade Show/Fair Representation

The scope of the market variable LOCAL was significant, while REG, NATL and INTL variables were not significant. In-state and locally marketing of products had a negative influence on the probability of not needing assistance SHOW and had a positive influence on the probability of extreme need for assistance with SHOW. The market potential variables that were significant were GREGION and GNATL. Anticipated regional and national had a negative impact on the probability of negligible need for assistance in SHOW and had a positive impact on the probability of extreme need for assistance in SHOW. The other market potential variable, GINTL, was not significant. These results indicate that regional or national growth may increase the need for assistance with trade shows compared with only anticipating local growth. The firm characteristic variable TSALES5 was significant, while the other firm characteristic variables were not significant. Total sales between \$2.49 million and \$4.99 million had positive influence on the probability of extreme need for assistance in SHOW compared with the smallest firms. Therefore indicating that moderately sized businesses appear to need assistance with SHOW more than smallest and largest companies. Product categories and channels of selling did not have any variables significant in the SHOW model. GSALES was not significant in the model.

New Product Development

The product category SIC24 was significant, while the other category SIC25 was not significant. Lumber and wood products had a positive influence on the probability of

negligible need of assistance with NEWPROD and a negative influence on the probability of extreme need of assistance with NEWPROD. Firm characteristic variables, TSALES2 and TSALES3, were significant, while YRBUS, LEMP, TSALES4, TSALES5, TSALES6, TSALES7, and TSALES8 were not significant. The total sales categories ranging from \$250,000 to \$999,999 had a positive impact on the probability of extreme need for assistance with NEWPROD. Therefore, moderately sized companies have a higher probability of extreme need for NEWPROD compared with small and large size companies. The channels of selling, scope of market and market potential variables were not significant in the NEWPROD model. GSALES was not significant in the model..

Obtaining Financing

The channel selling variable WHLSL was significant, while the other variables RETAIL and INET were not significant. Selling through the wholesale marketing channel had a negative impact on the probability of not needing assistance with FINAN and had a positive impact on the probability of extreme need for assistance with FINAN.

The firms characteristic variables YRBUS, TSALES6, and TSALES7 were significant, while EMP, TSALES2, TSALES3, TSALES4, TSALES5, and TSALES8 were not significant. The number of years in business had a positive influence on the probability of negligible need for assistance with FINAN and had a negative influence on the probability of extreme need for assistance with FINAN. Therefore, newer firms were more likely to need assistance with FINAN. Total sales ranging from \$4.99 million to \$19.99 million had a positive impact toward the probability of extreme need for assistance

with FINAN. Therefore, small and moderately sized businesses have a higher probability of extreme need for FINAN. Product categories, scope of market, and market potential were not significant in the FINAN model. GSALES was found not to be significant in the model for FINAN.

Market Research or Finding Market Information

The scope of anticipated market growth variables GREGION, GNATL, and GINTL were significant. In each case, the signs on the coefficients were negative. Compared with most firms expecting local growth, these firms were more likely to have an extreme need for assistance with RESEARCH.

The firm characteristic variable TSALES3 was significant, while none of the other variables YRBUS, EMP, TSALES2, TSALES4, TSALES5, TSALES6, TSALES7, or TSALES8 were significant. Total sales ranging between \$499,999 and \$999,999 had a positive impact on the probability of an extreme need for assistance with RESEARCH indicating that moderate size businesses need assistance with RESEARCH. Product categories, channel of selling, and scope of market variables were not significant in the model for RESEARCH. GSALES was not found to be significant in the RESEARCH model.

Access to New Pilot Plants or Tests Kitchen Facilities

The channel of selling variable, WHLSL, was significant, while the other channel of selling variables RETAIL and INET were not significant. Selling through the wholesale

marketing channel had a negative impact on the probability of not needing assistance with PILOT and a positive impact on the probability of extreme need for assistance with PILOT. The scope of the anticipated market growth variables GNATL and GINTL were both significant and GREGION was not significant. Most growth in the next five years nationally and internationally negatively affected the probability of negligible need for assistance with PILOT and had a positive influence on the probability of extreme need for assistance with PILOT. Product categories, scope of market and firms characteristic variables were insignificant in the PILOT model. GSALES was not significant in the model for PILOT.

Formulating a Marketing Plan

The scope of the market variable NATL was significant, while the other scope of market variables LOCAL, REG, NATL were not significant. The national marketing of products had a negative influence on the probability of not needing assistance with PLAN and had a positive influence on the probability of extreme need for assistance with PLAN. GSALES was significant indicating the sales growth expectations had a negative impact on the probability of negligible need of assistance with PLAN and a positive impact on the probability of extreme need of assistance with PLAN. Product categories, channels of selling, market potential, and firm characteristic variables were not significant in the PLAN model.

Help in Preparing to Call on Marketing Outlets

The scope of the market variable, NATL, was significant, while the other scope of the market variables LOCAL, REG and INTL were not significant. National marketing of products had a negative impact on the probability of not needing assistance with CALL and had a positive impact on the probability of extreme need for assistance with CALL. Product categories, channels of selling, market potential, firms characteristic variables sales growth expectations were not significant in the model for CALL.

Obtaining Adequate Supplies of Local Inputs

Product categories, channels of selling, scope of markets, market potential, firm characteristic, and sales growth expectations variables were not significant in the model INPUTS.

Locating Local Suppliers and Contracts

The scope of the market variable, NATL, was significant, while the other scope of market variables LOCAL, REG, NATL were not significant. National marketing of products had a negative influence on the probability of not needing assistance with SUPPLIES and had a positive influence on the probability of extreme need for assistance with SUPPLIES. The only market potential variable that was significant was GNATL. Anticipated national growth had a positive influence on the probability of negligible need of assistance with SUPPLIES and a negative influence on the probability of extreme need for assistance with SUPPLIES.

GSALES was significant indicating that the sales growth expectations had a negative impact on the probability of negligible need of assistance with SUPPLIES and a positive impact on the probability of extreme need for assistance with SUPPLIES. Product categories, channels of selling, and firm characteristic variables were not significant in the model SUPPLIES.

Help with Development of Sales Display Types and Designs

Channel of selling variable, RETAIL, was significant, while the other channel of selling variables WHLSL and INET were not significant. Selling through the retail marketing channel had a negative influence on the probability of not needing assistance with DISPLAY and a positive influence on the probability of extreme need for assistance with DISPLAY. Market potential variables, GREGION and GNATL, were significant, while the other market potential variable, GINTL, was not significant. Anticipated growth regionally and nationally had a negative impact on the probability of negligible need of assistance with DISPLAY and a positive impact on the probability of extreme need for assistance with DISPLAY. Compared with firms expecting local growth, these firms were more likely to have an extreme need for DISPLAY.

TSALES2 was the only firm characteristic variable significant. Total sales ranging from \$250,000 to \$499,999 had a positive influence on the probability of extreme need of assistance with DISPLAY. Therefore, indicating that moderately sized businesses need assistance with DISPLAY more than small and large size businesses. Product categories, scope of market, and sales growth expectations variables were not significant in the

DISPLAY model.

Locating or Forming Local Industry Associations

The product category variable that was significant was SIC24. Lumber and wood products had a positive influence on the probability of negligible need for assistance with ASSOC and a negative influence on the probability of extreme need for assistance with ASSOC. The channel of selling variable, WHLSL, was significant, while the other channel of selling variables RETAIL and INET were not significant. Selling through the wholesale marketing channel had a negative impact on the probability of not needing assistance with ASSOC and a positive impact on the probability of extreme need for assistance with ASSOC.

The market potential variable, GINTL, was significant, while the other market potential variables GREGION and GNATL were not significant. The anticipated growth internationally had a negative influence on the probability of negligible need for assistance with ASSOC and a positive influence on the probability of extreme need for assistance with ASSOC. The firm characteristic variables that were significant were TSALES3, TSALES4 and TSALES6. The total sales ranging between \$499,999 to \$2.49 million and \$4.99 million to \$9.99 million had a positive impact on the probability of extreme need of assistance with ASSOC. Therefore, medium to large size businesses are more likely to need assistance with ASSOC compared to smaller businesses. Scope of market and sales expected growth variables were not significant in the DISPLAY model.

Marketing across the Internet

The channel of selling variables that were significant were RETAIL and INET. Selling through the retail and Internet marketing channel had a negative influence on the probability of not needing assistance with INTERNET and a positive influence on the probability of extreme need for assistance with INTERNET. The market potential variable, GNATL, was significant, while the other market potential variables GREGION and GINTL were not significant. The anticipated growth nationally had a negative influence on the probability of negligible need of assistance with INTERNET and had a positive influence on the probability of extreme need for assistance with INTERNET.

The firm characteristic variables that were significant were TSALES2, TSALES3, TSALES4, TSALES6, TSALES7, and TSALES8 leaving the variables YRBUS, EMP, and TSALES5 not significant. The total sales ranging from \$250,000 to \$2.49 million and sales from \$4.99 million to greater than \$20 million had a positive influence on the probability of extreme need for assistance with INTERNET. The significance of the total sales variables indicate that small to moderate and large size companies need assistance with INTERNET. Product categories, scope of market, sales growth expectation variables were not significant in the INTERNET model.

Compliance with product and/or shipping regulations and restrictions

The market potential variables that were significant were GNATL and GINTL. The anticipated growth nationally and internationally had a positive influence on the probability of negligible need of assistance with REGUL and a negative influence on the

probability of extreme need of assistance with REGUL. The firm characteristic variables TSALES3, TSALES4, TSALES and TSALES8 were significant. The total sales ranging from \$499,999 to \$2.49 million, \$4.99 million to \$9.99 million and greater than \$20 million had a positive influence on the probability of extreme need of assistance with ASSOC. Therefore, moderately and large size businesses are more likely to need assistance with ASSOC. Product categories, channels of selling, scope of market, sales growth expectation variables were not significant in the model for REGUL.

CHAPTER V

CONCLUSION

The results of this study indicated that among agribusiness and forest products firms the most needed types of assistance were locating and identifying potential buyers, promoting and advertising their products, and market research or finding market information. These types of assistance that were most needed were similar to a finding by Chrisman and Wichmann who concluded that marketing, advertising and promotion, location, and defining target markets were the most needed assistance by small businesses. The least needed forms of assistance were compliance with product and/or shipping regulations, access to pilot plants or test kitchen facilities, and forming local industry associations.

While information about which assistance needs are most important overall is helpful in prioritizing assistance programs, it is also helpful to know how assistance needs may be specialized for different firms and individual market situations. This information is useful in targeting delivery of assistance sources to firms that most need the services. The study concluded that agribusiness firms with relatively few years in business were more likely to need assistance with obtaining financing and marketing across the Internet. Therefore, assistance programs should target newer agribusinesses with assistance for obtaining financing and marketing across the Internet. Companies with a small number of

employees are more likely to need assistance with new product development and obtaining adequate supplies of local inputs. Therefore, assistance services such as the SBDC and SBA should match companies with smaller number of employees with services to help them develop new products and source input supplies.

The results of this study also concluded that moderately sized agribusinesses with total sales ranging from \$250,000 to \$2.49 million are more likely to need assistance than very small or large agribusinesses. One explanation may be that small firms sometimes focus on day-to-day production/processing decisions and large firms may have in-house facilities and personnel to deal with marketing and business problems. Business assistance agencies should specifically target their services toward the needs of these firms, based on the size of the firm. These moderately sized firms, in terms of sales, may need most help with promoting products/advertising, locating and identifying potential buyers, trade show/fair representation, new product development, obtaining financing, market research or finding market information, formulating a marketing plan, help with development of sales display types and designs, marketing across the Internet, help in preparing to call on marketing outlets, and compliance with product and/or shipping regulations. This information may be helpful in targeting which agribusinesses needs the most assistance.

The results relating to the market potential variables may suggest what assistance agribusinesses might need to enter regional, national, or international markets. The types of assistance that were needed by agribusinesses to enter regional markets were locating reliable transportation/distribution, trade show/fair representation, market research or finding market information, access to pilot plants or test kitchen facilities, formulating a

marketing plan, help in preparing to call on marketing outlets, help with development of sales display types and designs, marketing across the Internet, and compliance with product and/or shipping regulations. Thus, indicating the need by agribusinesses for these assistance to enter these markets. The types of assistance needed for agribusinesses to enter national markets were trade show/fair representation, new product development, market research or finding market information, marketing across the Internet, and compliance with products and/or shipping regulations. The agribusiness assistance needs, promoting products/advertising, locating and identifying potential buyers, trade show/fair representation, new product development, market research or finding market information, and compliance with product and/or shipping regulations, were needed for international growth by agribusinesses who plan to enter international markets..

The forest products firms, unlike agribusiness firms, have assistance needs for all sizes of firms determined by total sales. The forest products firms assistance needs are evenly distributed among the different sizes of firms without any emphasis on small, moderately or large firms. The forest products industry firms with relatively low number of years in business are more likely to need assistance with obtaining financing. Therefore, business assistance agencies should target the need of obtaining financing to young forest product firms. Business assistance agencies should also match the assistance needs of formulating a marketing plan and locating local suppliers and contracts with forest products firms that expect their sales growth to be small.

The results of this study also concluded that moderate and large size forest products firms need different types of assistance than small firms. Moderate and large size

firms need assistance with new product development, help with development of sales display types and designs, locating reliable transportation/ distribution, marketing across the Internet, market research or finding market information, locating or forming local industry associations, and compliance with product and/or shipping regulations. Therefore, business services need to focus on different types of assistance for the different sizes of companies.

The market potential variables can target what assistance forest products firms might need to enter regional, national, or international markets. The types of assistance that were needed by forest products firms to enter regional markets were trade show/fair representation, market research or finding market information, and help with development of sales display types and designs. The results of the study also concluded that forest product firms needed assistance with trade show/fair representation, market research or finding market information, access to pilot plants or test kitchen facilities, locating local suppliers and contracts, help with development of sales display types, and compliance with product and/or shipping regulations to enter national markets. The types of assistance needed by forest products firms that predicted their growth will be internationally were promoting products/advertising, market research or finding market information, access to new pilot plants or test kitchen facilities, locating or forming local industry associations, and compliance with product and/or shipping regulations. Therefore, these are the types of assistance that forest products firms need to enter international markets.

For all agribusinesses, including the forest products industry, the most important need is locating and identifying potential buyers and promoting/advertising their products.

Therefore, service providers such as SBA and SBDC should tailor their assistance services to firms according to firm size, firm types, total sales, and gross sales.

The results from this study suggest that while certain priorities may be assigned in delivering assistance services, firms may have specialized needs. The information from this study should prove useful in the targeting of assistance services to the types of firms that are in most need.

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APPENDIX

Appendix Table 1. Estimated Logit Models of Assistance Needs By Agribusiness Firms':
PROMO, TRANS, BUYER. ^{a, b}

Variables	PROMO	TRANS	BUYER
α_1	1.3208 (0.9356)	1.0376 (0.9395)	0.7667 (0.9307)
α_2	2.6327 *** (0.9484)	2.4751 *** (0.9551)	1.9646 ** (0.9387)
α_3	4.1132 *** (0.9780)	3.4238 *** (0.9730)	3.0161 *** (0.9532)
α_4	5.4322 *** (1.0174)	4.8576 *** (1.0268)	4.8913 *** (0.9958)
SIC18	-0.9757 (0.9459)	0.3224 (0.9683)	-1.0422 (0.9417)
SIC20	-0.8818 (0.8175)	-0.4829 (0.8183)	-0.8490 (0.8155)
SIC22	0.1365 (0.9261)	0.0986 (0.9265)	-0.0906 (0.9215)
SIC23	-0.4666 (0.9414)	1.4064 (1.0360)	-0.4800 (0.9380)
SIC24	-0.3919 (0.7760)	-0.1802 (0.7792)	-0.7727 (0.7771)
SIC 25	-1.0399 (0.8780)	-0.6594 (0.8790)	-2.0123 ** (0.8861)
RETAIL	-0.4643 (0.3134)	-0.1394 (0.3219)	-0.2303 (0.3097)
WHLSL	0.7000 (0.6686)	0.3799 (0.6819)	-0.6015 (0.6650)
INET	-1.3920 ** (0.5843)	0.2527 (0.5928)	0.3983 (0.5768)
LOCAL	-0.3729 (0.3770)	-0.3168 (0.3843)	-0.0788 (0.3737)
REG	-0.596* (0.3588)	0.0212 (0.3652)	-0.6026 * (0.3563)
NATL	-0.5466 (0.4175)	-0.1861 (0.4285)	-0.4590 (0.4155)
INTL	0.3559 (0.4098)	-0.0789 (0.4177)	0.5880 (0.4090)
GREGION	-0.6923 (0.5295)	-0.8794 * (0.5433)	-0.5422 (0.5246)
GNATL	-0.6209 (0.6017)	-0.6579 (0.6195)	-0.4824 (0.5972)
GINTL	-1.3675 * (0.7399)	-1.1011 (0.7481)	-1.1948 * (0.7348)

Appendix Table 1. Continued

Variables	PROMO	TRANS	BUYER
YRBUS	0.00381 (0.00628)	-0.00924 (0.00635)	0.000733 (0.00620)
EMP	0.000076 (0.00024)	0.000407 (0.000311)	-0.00012 (0.000237)
TSALES2	-1.6075 *** (0.5548)	-0.5255 (0.5582)	-0.8869 * (0.5428)
TSALES3	-1.0089 * (0.5439)	0.0148 (0.5643)	-0.9901 * (0.5395)
TSALES4	-1.0078 ** (0.4945)	-0.4827 (0.5002)	-0.7573 (0.4884)
TSALES5	-0.4067 (0.5184)	-0.0829 (0.5306)	-0.1457 (0.5129)
TSALES6	-0.5975 (0.5966)	0.5132 (0.6238)	-0.2678 (0.5914)
TSALES7	-0.2361 (0.7017)	-0.9107 (0.7004)	0.4450 (0.6968)
TSALES8	-0.2115 (0.7811)	-0.7858 (0.7755)	-0.2920 (0.7679)
GSALES	-0.00108 (0.00132)	-0.00209 (0.00135)	-0.00185 (0.00132)

LLR	44.759 **	29.273	32.694
% CORRECT	69.3	67.6	66.3

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 2. Estimated Logit Models of Assistance Needs By Agribusiness Firms':
 SHOW, NEWPROD, FINAN. ^{a, b}

Variables	SHOW	NEW PROD	FINAN
α_1	1.7092 * (0.9633)	0.3717 (0.9311)	-0.1364 (0.9310)
α_2	3.4578 *** (0.9912)	1.8262 ** (0.9398)	1.4117 (0.9371)
α_3	4.8448 *** (1.0238)	2.8075 *** (0.9532)	2.4948 *** (0.9529)
α_4	6.1785 *** (1.0873)	4.3501 *** (0.9979)	3.7125 *** (0.9953)
SIC18	-0.1389 (0.9769)	-0.6266 (0.9360)	-0.0925 (0.9397)
SIC20	-0.7830 (0.8320)	0.3325 (0.8061)	0.3287 (0.8116)
SIC22	0.3923 (0.9478)	0.6661 (0.9110)	-0.1596 (0.9110)
SIC23	0.4688 (0.9619)	1.8808 ** (0.9586)	0.4887 (0.9501)
SIC24	0.3681 (0.7928)	1.3663 * (0.7723)	0.6212 (0.7708)
SIC25	-0.7419 (0.8911)	0.4797 (0.8664)	-0.1657 (0.8716)
RETAIL	-0.6130 * (0.3267)	-0.3227 (0.3157)	-0.1965 (0.3206)
WHLSL	0.1641 (0.6805)	-0.1523 (0.6703)	-0.4622 (0.6798)
INET	0.4567 (0.5961)	0.3876 (0.5867)	0.1470 (0.5915)
LOCAL	-0.4669 (0.3906)	-0.3312 (0.3812)	-0.3017 (0.3869)
REG	0.0410 (0.3703)	0.2401 (0.3654)	-0.1758 (0.3616)
NATL	0.00276 (0.4318)	-0.3207 (0.4232)	0.1552 (0.4264)
INTL	0.2823 (0.4216)	0.1429 (0.4137)	-0.1623 (0.4310)
GREGION	-1.5325 *** (0.5663)	-1.1138 ** (0.5533)	-0.1382 (0.5386)
GNATL	-1.7344 *** (0.6457)	-1.3638 ** (0.6242)	-0.5900 (0.6198)
GINTL	-1.9164 ** (0.7706)	-0.9442 (0.7516)	-0.9937 (0.7474)

Appendix Table 2. Continued

Variables	SHOW	NEW PROD	FINAN
YRBUS	0.00322 (0.00652)	-0.00228 (0.00633)	0.0112 * (0.00674)
EMP	-0.0002 (0.000244)	-0.0004 * (0.00025)	0.000964 (0.000751)
TSALES2	-1.1463 ** (0.5713)	-1.4417 *** (0.5580)	-1.0884 ** (0.5556)
TSALES3	-1.4290 ** (0.5667)	-1.1070 ** (0.5578)	-0.5265 (0.5591)
TSALES4	-1.1058 ** (0.5103)	-0.7885 (0.5008)	-0.4520 (0.5057)
TSALES5	-0.3971 (0.5374)	-0.7485 (0.5271)	-0.6981 (0.5352)
TSALES6	-0.8811 (0.6161)	-0.3991 (0.6085)	-0.9826 * (0.6116)
TSALES7	0.0110 (0.7462)	-0.2441 (0.7109)	-1.0575 (0.7133)
TSALES8	-0.6681 (0.8030)	-0.2876 (0.7946)	-0.4792 (0.8152)
GSALES	-0.00093 (0.00134)	-0.00155 (0.00132)	-0.00148 (0.00133)
.			
LLR	40.926 **	40.286 **	26.724
% CORRECT	69.7	69.0	65.1

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 3. Estimated Logit Models of Assistance Needs By Agribusiness Firms':
RESEARCH, PILOT, PLAN. ^{a, b}

Variables	RESEARCH	PILOT	PLAN
α_1	0.8783 (0.9259)	1.6283 * (1.0170)	2.0073 ** (1.0243)
α_2	2.1969 ** (0.9368)	3.04086 *** (1.0380)	3.3608 *** (1.0430)
α_3	3.7138 *** (0.9637)	4.3453 *** (1.0714)	5.0636 *** (1.0787)
α_4	5.1374 *** (1.0059)	5.9557 *** (1.1862)	6.9751 *** (1.1842)
SIC18	-0.3940 (0.9340)	-1.1799 (1.0048)	-0.9806 (1.0190)
SIC20	0.0905 (0.8051)	-0.6693 (0.8663)	-0.9459 (0.8944)
SIC22	-0.3252 (0.9057)	-0.0868 (0.9770)	-0.7712 (1.0071)
SIC23	1.1433 (0.9411)	1.3465 (1.0955)	-0.3778 (1.0141)
SIC24	0.5149 (0.7667)	0.3682 (0.8355)	-0.2459 (0.8585)
SIC 25	0.0994 (0.8663)	0.4861 (0.9579)	-0.5711 (0.9592)
RETAIL	-0.4023 (0.3133)	-0.5396 (0.3463)	-0.6166 * (0.3225)
WHLSL	-0.1304 (0.6659)	-0.6400 (0.7161)	0.6314 (0.6781)
INET	0.7710 (0.5818)	1.3592 ** (0.6752)	0.0518 (0.5883)
LOCAL	-0.5924 (0.3803)	-0.2291 (0.4277)	-0.4992 (0.3856)
REG	-0.0504 (0.3593)	0.1652 (0.4062)	0.0558 (0.3670)
NATL	-0.1225 (0.4186)	-0.7410 (0.4712)	-0.6462 (0.4347)
INTL	0.2314 (0.4098)	-0.6076 (0.4530)	0.0981 (0.4203)
GREGION	-1.5555 *** (0.5451)	-1.0247 * (0.6353)	-1.5355 ** (0.5566)
GNATL	-1.5021 ** (0.6163)	-0.9686 (0.7051)	-1.1209 * (0.6271)
GINTL	-2.1784 *** (0.7474)	-0.8422 (0.8257)	-0.2260 (0.7641)

Appendix Table 3. Continued

Variables	RESEARCH	PILOT	PLAN
YRBUS	-0.00500 (0.00622)	0.00464 (0.00687)	-0.00381 (0.00646)
EMP	-0.00029 (0.00024)	0.000268 (0.000405)	0.000149 (0.000248)
TSALES2	-0.9867 * (0.5520)	0.0987 (0.6206)	-1.2929 ** (0.5612)
TSALES3	-9.008 * (0.5465)	-0.1150 (0.6122)	-1.1959 ** (0.5571)
TSALES4	-0.8233 * (0.4947)	-0.5203 (0.5328)	-0.7186 (0.4999)
TSALES5	-0.6406 (0.5198)	-0.661 (0.5637)	-0.3853 (0.5307)
TSALES6	-0.4608 (0.5961)	-0.4754 (0.6535)	-0.3632 (0.6133)
TSALES7	-0.3184 (0.6968)	0.3228 (0.7811)	1.1132 (0.7661)
TSALES8	0.00489 (0.7776)	-0.6165 (0.8262)	0.4166 (0.8201)
GSALES	0.00076 (0.00139)	0.000662 (0.00154)	-0.00052 (0.00133)

LLR	30.684	36.583 *	42.229 **
% CORRECT	66.3	71.7	69.4

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 4. Estimated Logit Models of Assistance Needs By Agribusiness Firms':¹
CALL, INPUTS, SUPPLIES.^{a, b}

Variables	CALL	INPUTS	SUPPLIES
α_1	1.3215 (0.9918)	-0.2549 (0.9585)	-1.0540 (0.9369)
α_2	2.8138 *** (1.0099)	1.5492 * (0.9667)	0.5359 (0.9347)
α_3	4.1495 *** (1.0370)	4.0685 *** (1.0566)	2.0086 ** (0.9517)
α_4	5.6963 *** (1.1153)		3.9606 *** (1.0871)
SIC18	-0.4091 (0.9956)	0.8913 (0.9787)	0.6317 (0.9451)
SIC20	-0.5864 (0.8686)	-0.1558 (0.8393)	0.5112 (0.8194)
SIC22	-0.1106 (0.9832)	0.4075 (0.9546)	0.6730 (0.9272)
SIC23	0.5720 (1.0162)	0.7534 (0.9912)	0.7903 (0.9562)
SIC24	0.0861 (0.8347)	0.5441 (0.8011)	0.6535 (0.7813)
SIC 25	-0.5554 (0.9298)	0.1024 (0.9063)	-0.1238 (0.8782)
RETAIL	-0.3946 (0.3215)	-0.6236 * (0.3327)	-0.5292 * (0.3188)
WHLST	0.2712 (0.6856)	0.3053 (0.7092)	-0.6027 (0.6807)
INET	0.8725 (0.6217)	0.7787 (0.6358)	0.7402 (0.6216)
LOCAL	-0.5637 (0.3870)	0.0334 (0.3939)	0.0212 (0.3829)
REG	0.2017 (0.3689)	-0.00495 (0.3713)	-0.3185 (0.3634)
NATL	-0.7257 * (0.4401)	-0.3001 (0.4427)	-0.2362 (0.4294)
INTL	0.4082 (0.4286)	0.2358 (0.4440)	0.7594 * (0.4309)
GREGION	-1.1430 ** (0.5519)	-0.3626 (0.5467)	0.2225 (0.5326)
GNATL	-0.8137 (0.6263)	0.3345 (0.6361)	0.7753 (0.6151)
GINTL	-0.3605 (0.7717)	-0.1847 (0.7692)	0.0210 (0.7458)

Appendix Table 4. Continued

Variables	CALL	INPUTS	SUPPLIES
YRBUS	-0.00048 (0.00657)	-0.00613 (0.00679)	-0.00171 (0.00635)
EMP	0.000061 (0.000258)	0.00135 * (0.000806)	0.000091 (0.000276)
TSALES2	-0.8846 (0.5598)	-0.5283 (0.5686)	-0.2680 (0.5522)
TSALES3	-0.9112 * (0.5570)	-0.7076 (0.5689)	-0.5515 (0.5464)
TSALES4	-0.7190 (0.5034)	-0.5296 (0.5173)	-0.3863 (0.4986)
TSALES5	-0.4563 (0.5326)	0.1287 (0.5505)	0.2576 (0.5314)
TSALES6	-0.4759 (0.6169)	-0.2448 (0.6296)	-0.3041 (0.6048)
TSALES7	0.4872 (0.7343)	0.5048 (0.7489)	-0.2845 (0.7099)
TSALES8	0.4295 (0.8453)	-0.7771 (0.8018)	0.0451 (0.7964)
GSALES	-0.0007 (0.00138)	-0.00115 (0.00139)	-0.00112 (0.00136)

LLR	31.052	28.580	21.586
% CORRECT	66.6	67.6	63.7

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 5. Estimated Logit Models of Assistance Needs By Agribusiness Firms':
DISPLAY, ASSOC, INTERNET, REGUL. ^{a, b}

Variables	DISPLAY	ASSOC	INTERNET	REGUL
α_1	1.8204 * (0.9968)	0.0520 (0.9591)	1.7547 * (0.9860)	1.5709 * (0.9658)
α_2	3.6338 *** (1.0289)	1.6583 * (0.9487)	3.0226 *** (1.0032)	3.1867 *** (0.9889)
α_3	4.7173 *** (1.0546)	3.8281 *** (1.0496)	4.1680 *** (1.0243)	5.1156 *** (1.0386)
α_4	7.3952 *** (1.2627)	4.7651 *** (1.1811)	5.2152 *** (1.0501)	5.9664 *** (1.0834)
SIC18	-0.9609 (0.9892)	0.4552 (0.9662)	-0.0495 (0.9971)	-1.1711 (0.9787)
SIC20	0.1884 (0.8550)	0.9228 (0.8361)	0.3941 (0.8356)	-1.2130 (0.8406)
SIC22	0.3684 (0.9691)	1.2612 (0.9531)	1.3222 (0.9901)	-0.5408 (0.9388)
SIC23	0.5532 (0.9907)	1.3694 (0.9779)	0.6399 (0.9563)	0.7040 (0.9870)
SIC24	1.1027 (0.8197)	1.4433 * (0.8002)	0.8245 (0.7949)	-0.6622 (0.7980)
SIC 25	-0.0459 (0.9177)	1.2066 (0.9120)	0.2022 (0.8982)	-0.1723 (0.9014)
RETAIL	-1.2166 *** (0.3481)	-0.7157 ** (0.3360)	-0.5477 * (0.3323)	-0.0367 (0.3273)
WHLSL	0.2470 (0.7037)	0.1849 (0.7076)	-0.5928 (0.6838)	-0.2160 (0.6835)
INET	0.1089 (0.6156)	0.3616 (0.6271)	-0.8045 (0.5876)	-0.1026 (0.5927)
LOCAL	-0.6277 (0.4080)	-0.1144 (0.4022)	-0.7376 * (0.3961)	-0.0633 (0.3911)
REG	-0.2859 (0.3845)	-0.3555 (0.3828)	-0.5075 (0.3745)	0.0689 (0.3695)
NATL	-0.6559 (0.4495)	-0.0497 (0.4470)	-0.0658 (0.4338)	0.2394 (0.4269)
INTL	-0.2688 (0.4485)	0.6177 (0.4567)	-0.3998 (0.4202)	-0.9257 ** (0.4280)
GREGION	-1.6373 *** (0.5891)	-0.4919 (0.5663)	-1.3316 ** (0.5656)	-0.9093 * (0.5549)
GNATL	-1.0196 (0.6591)	-0.7824 (0.6504)	-2.1489 *** (0.6494)	-1.5515 ** (0.6313)
GINTL	-0.7996 (0.7957)	-1.1124 (0.7822)	-0.7001 (0.7903)	-1.8907 ** (0.7631)

Appendix Table 5. Continued

Variables	DISPLAY	ASSOC	INTERNET	REGUL
YRBUS	0.0108 (0.00690)	-0.00101 (0.00673)	0.0114 * (0.00683)	-0.0002 (0.00637)
EMP	0.000257 (0.00042)	0.000101 (0.000286)	0.000017 (0.000276)	0.000479 (0.000385)
TSALES2	-1.5925 *** (0.5894)	-0.6861 (0.5739)	-1.3037 ** (0.5867)	-0.3720 (0.5750)
TSALES3	-1.1000 * (0.5868)	-0.6850 (0.5695)	-1.8138 *** (0.5784)	-1.2380 ** (0.5665)
TSALES4	-0.9684 * (0.5266)	-0.3098 (0.5193)	-1.7352 *** (0.5286)	-0.7837 (0.5126)
TSALES5	-0.1538 (0.5660)	0.1467 (0.5568)	-0.8637 (0.5449)	-0.0879 (0.5437)
TSALES6	-0.7000 (0.6491)	-0.0663 (0.6425)	-0.9628 (0.6313)	-0.9971 * (0.6162)
TSALES7	-0.5678 (0.7670)	0.1085 (0.7625)	-0.4252 (0.7541)	-0.7372 (0.7160)
TSALES8	-0.1848 (0.8603)	0.0412 (0.8398)	-1.2601 (0.8041)	-1.2005 (0.7953)
GSALES	-0.00067 (0.00136)	-0.0008 (0.00140)	0.00123 (0.00136)	0.00153 (0.00144)

LLR	56.383 ***	19.736	72.467 ***	38.303 **
% CORRECT	73.1	66.4	75.0	70.3

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 6. Estimated Logit Models of Assistance Need by Forest Products Firms: ' PROMO, TRANS, BUYER. ^{a, b}

Variables	PROMO	TRANS	BUYER
α_1	0.9083 (1.1944)	1.6546 (1.2234)	0.5671 (1.2021)
α_2	2.3262 ** (1.2082)	3.2355 *** (1.2555)	1.7993 (1.2103)
α_3	3.8277 *** (1.2484)	4.4105 *** (1.2922)	2.7475 ** (1.2273)
α_4	5.2871 *** (1.3198)	5.8005 *** (1.3771)	5.2394 ** (1.3194)
SIC24	-0.9146 (0.8727)	-0.4551 (0.8627)	-0.8871 (0.8825)
SIC 25	-1.4746 (0.9579)	-1.1800 (0.9442)	-2.3630 ** (.9799)
RETAIL	-0.3528 (0.4974)	-0.0777 (0.5032)	0.1480 (0.4961)
WHLSL	0.3150 (1.2644)	-0.5163 (1.2330)	-1.3318 (1.2874)
INET	-3.2723 * (0.9357)	-0.5373 (0.8522)	-0.1308 (0.8464)
LOCAL	-0.4165 (0.5509)	-0.2147 (0.5579)	-0.1306 (0.5511)
REG	-0.6236 (0.5458)	0.1268 (0.5534)	-1.0946 * (0.5504)
NATL	-0.8006 (0.5698)	-0.5025 (0.5724)	-0.7799 (0.5686)
INTL	0.7331 (0.5752)	0.6692 (0.5790)	0.4563 (0.5679)
GREGION	-1.1239 (0.7626)	-1.1017 (0.7704)	-0.7753 (0.7557)
GNATL	-0.8153 (0.8207)	0.1235 (0.8265)	-0.2360 (0.8115)
GINTL	-1.7623 * (0.9546)	-1.0656 (0.9582)	-1.1791 (0.9609)
YRBUS	0.00130 (0.0104)	-0.00614 (0.0104)	0.00129 (0.0104)
EMP	0.000512 (0.000542)	-0.00035 (0.000531)	0.000348 (0.000525)
TSALES2	-0.3343 (0.9331)	-0.7347 (0.9879)	-0.6557 (0.9420)
TSALES3	0.4343 (0.8865)	-0.7604 (0.9444)	-0.6224 (0.8871)

Appendix Table 6. Continued

Variables	PROMO	TRANS	BUYER
TSALES4	0.3907 (0.8986)	-1.1514 (0.9561)	-0.1009 (0.9013)
TSALES5	0.6081 (0.8760)	-0.6876 (0.9337)	0.5753 (0.8806)
TSALES6	0.4525 (0.9387)	-0.4339 (0.9850)	0.3155 (0.9373)
TSALES7	0.8504 (1.0599)	-1.8970 * (1.1067)	1.2364 (1.0661)
TSALES8	1.4380 (1.2554)	-1.661 (1.2321)	1.6768 (1.2339)
GSALES	0.00137 (0.00480)	-0.00389 (0.00483)	-0.00101 (0.00486)

LLR	30.443	14.184	28.753
% CORRECT	70.7	64.7	71.5

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 7. Estimated Logit Models of Assistance Need by Forest Products Firms: ' SHOW, NEWPROD, FINAN. ^{a,b}

Variables	SHOW	NEWPROD	FINAN
α_1	0.2460 (1.2142)	-0.0720 (1.2586)	-0.5777 (1.2306)
α_2	2.2278 * (1.2390)	1.7893 (1.2727)	1.0810 (1.2334)
α_3	3.7213 *** (1.2867)	3.4401 *** (1.3038)	2.1728 * (1.2577)
α_4	5.2340 *** (1.4247)	4.7063 *** (1.3732)	3.6224 *** (1.3379)
SIC24	0.5804 (0.8836)	1.7560 ** (0.8842)	0.6747 (0.8746)
SIC 25	-0.6071 (0.9557)	0.8177 (0.9473)	-0.7534 (0.9594)
RETAIL	-0.3836 (0.5161)	0.4210 (0.5138)	-0.1661 (0.5060)
WHLSL	-0.2897 (1.2430)	-1.7272 (1.2552)	-2.1811 * (1.2545)
INET	-0.1149 (0.8511)	0.4466 (0.8634)	-0.0698 (0.8465)
LOCAL	-0.9820 * (0.5862)	-0.1569 (0.5661)	-0.1578 (0.5660)
REG	0.00305 (0.5703)	0.00742 (0.5731)	-0.7422 (0.5613)
NATL	-0.2132 (0.5960)	-0.3786 (0.5939)	-0.0515 (0.5838)
INTL	-0.1214 (0.5821)	-0.8037 (0.5775)	-0.1525 (0.5932)
GREGION	-1.7352 ** (0.8236)	-0.8809 (0.8201)	0.7514 (0.7801)
GNATL	-1.9066 ** (0.8895)	-1.4024 (0.8837)	0.3663 (0.8368)
GINTL	-1.2155 (1.0003)	-1.2858 (0.9888)	-1.2510 (0.9928)
YRBUS	0.000684 (0.0111)	-0.00774 (0.0114)	0.0303 *** (0.0116)
EMP	0.000383 (0.000549)	0.000081 (0.000558)	0.00311 (0.00255)
TSALES2	0.7948 (0.9691)	-1.9092 * (1.0286)	-0.9375 (1.0081)
TSALES3	0.7456 (0.9186)	-1.6507 * (0.9984)	-0.4919 (0.9393)

Appendix Table 7. Continued

Variables	SHOW	NEWPROD	FINAN
TSALES4	0.3471 (0.9227)	-0.8948 (1.0129)	-0.9511 (0.9726)
TSALES5	1.6276 * (0.9248)	-1.0209 (0.9759)	-1.0898 (0.9508)
TSALES6	0.9684 (0.9631)	-0.4874 (1.0194)	-1.6969 * (1.0082)
TSALES7	1.7427 (1.1289)	1.1632 (1.1987)	-1.8853 * (1.1410)
TSALES8	1.5277 (1.2917)	0.7876 (1.3677)	0.1250 (1.4790)
GSALES	-0.00370 (0.00494)	-0.00499 (0.00498)	-0.00628 (0.00488)

LLR	27.830	35.874 **	31.892
% CORRECT	73.4	73.6	73.2

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 8. Estimated Logit Models of Assistance Need by Forest Products Firms': ' RESEARCH, PILOT, PLAN. ^{a, b}

Variables	RESEARCH	PILOT	PLAN
α_1	1.2054 (1.2139)	2.2874 (1.4492)	1.9360 (1.3150)
α_2	2.7433 ** (1.2371)	3.7055 *** (1.4806)	3.6220 *** (1.3525)
α_3	4.5555 *** (1.2875)	5.1641 *** (1.5428)	5.7785 *** (1.4385)
α_4	5.9773 *** (1.3659)		7.9275 *** (1.7206)
SIC24	0.3062 (0.8577)	-0.1572 (0.9910)	-0.4211 (0.9559)
SIC 25	0.0188 (0.9356)	-0.0919 (1.0862)	-0.6755 (1.0402)
RETAIL	0.2825 (0.4995)	-0.2331 (0.5714)	-0.6334 (0.5160)
WHLSL	-0.8504 (1.2348)	-2.9168 ** (1.3271)	0.2473 (1.2477)
INET	0.4817 (0.8430)	1.4672 (1.0721)	-0.5946 (0.8684)
LOCAL	-0.5261 (0.5557)	-0.1565 (0.6318)	-0.1264 (0.5678)
REG	-0.5707 (0.5503)	0.4221 (0.6351)	-0.6856 (0.5646)
NATL	-0.1669 (0.5678)	-0.9675 (0.6818)	-1.1170 * (0.6026)
INTL	0.3870 (0.5685)	-0.6690 (0.6223)	-0.2792 (0.5929)
GREGION	-1.3452 * (0.7723)	-1.6707 (1.0105)	-0.5543 (0.7837)
GNATL	-1.9685 ** (0.8408)	-0.8546 * (1.0628)	-0.5736 (0.8457)
GINTL	-2.8750 *** (0.9845)	-1.9557 * (1.1409)	0.8048 (1.0041)
YRBUS	-0.00708 (0.0105)	-0.00055 (0.0134)	-0.00131 (0.0112)
EMP	-0.00043 (0.000534)	0.000612 (0.000684)	0.000357 (0.000547)
TSALES2	-0.7775 (0.9768)	0.8173 (1.2115)	-0.9933 (0.9870)
TSALES3	-1.5214 * (0.9326)	-0.6466 (1.0914)	-0.8529 (0.9371)

Appendix Table 8. Continued

Variables	RESEARCH	PILOT	PLAN
TSALES4	-0.6955 (0.9394)	-0.3607 (1.0932)	-0.5318 (0.9439)
TSALES5	-1.3060 (0.9194)	-0.3058 (1.0638)	-0.7024 (0.9343)
TSALES6	-0.5437 (0.9645)	0.1547 (1.1317)	-0.4347 (0.9940)
TSALES7	0.00518 (1.0806)	0.9893 (1.3570)	1.4094 (1.1939)
TSALES8	0.9451 (1.2891)	0.3764 (1.5457)	1.2811 (1.4546)
GSALES	-0.00213 (0.00487)	-0.00066 (0.00572)	-0.0106 ** (0.00509)
- - - - -			
LLR	26.079	22.940	31.336
% CORRECT	70.4	71.8	75.7

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Appendix Table 9. Estimated Logit Models of Assistance Need by Forest Products Firms': ' CALL, INPUTS, SUPPLIES. ^{a, b}

Variables	CALL	INPUTS	SUPPLIES
α_1	1.3189 (1.2751)	-0.7498 (1.2370)	-0.3647 (1.1937)
α_2	3.0770 *** (1.3117)	1.4084 (1.2465)	1.2588 (1.1998)
α_3	4.3593 *** (1.3501)	4.1071 *** (1.4212)	2.9216 * (1.2413)
α_4	6.9321 *** (1.6666)		4.4455 *** (1.3516)
SIC24	-0.1448 (0.9111)	-0.0807 (0.8989)	-0.1778 (0.8752)
SIC 25	-0.8923 (0.9984)	-0.7000 (0.9943)	-0.8286 (0.9467)
RETAIL	0.0315 (0.5083)	-0.4634 (0.5213)	-0.2580 (0.5070)
WHLSL	-1.5091 (1.2409)	-0.7314 (1.2790)	-0.8433 (1.2685)
INET	0.4088 (0.8638)	0.2967 (0.9384)	0.7542 (0.9810)
LOCAL	-0.4400 (0.5649)	-0.0626 (0.5789)	0.4184 (0.5692)
REG	0.0313 (0.5596)	0.7348 (0.5837)	-0.2260 (0.5608)
NATL	-1.3912 * (0.6060)	-0.7256 (0.6149)	-1.0347 * (0.6095)
INTL	-0.0168 (0.5934)	0.8076 (0.6319)	0.9629 (0.6100)
GREGION	-0.6784 (0.7828)	-1.1271 (0.7961)	0.1882 (0.7665)
GNATL	0.0126 (0.8388)	0.9357 (0.8769)	2.0842 ** (0.8885)
GINTL	-0.2431 (1.0063)	-1.2098 (1.0249)	-0.2378 (0.9579)
YRBUS	0.00556 (0.0109)	0.00361 (0.0109)	0.00632 (0.0106)
EMP	0.00202 (0.00329)	0.00257 (0.00208)	-0.00021 (0.000532)
TSALES2	-0.6607 (1.0101)	0.4056 (0.9920)	-0.00677 (0.9739)
TSALES3	-0.9945 (0.9611)	-0.5379 (0.9293)	-1.1708 (0.9087)

Appendix Table 9. Continued

Variables	CALL	INPUTS	SUPPLIES
TSALES4	-1.1016 (0.9760)	-0.0793 (0.9479)	-0.4819 (0.9397)
TSALES5	-0.9698 (0.9568)	0.9314 (0.9402)	0.0733 (0.9160)
TSALES6	-1.2586 (1.0042)	-0.0499 (0.9845)	-0.9653 (0.9711)
TSALES7	0.2141 (1.1470)	0.2934 (1.1152)	-1.5036 (1.0930)
TSALES8	0.4767 (1.5183)	-0.2490 (1.2611)	-0.7437 (1.2193)
GSALES	-0.00244 (0.00491)	0.00273 (0.00503)	-0.00925 * (0.00498)
- - - - -			
LLR	23.911	20.667	24.226
% CORRECT	70.9	68.3	68.5

^a Values in the parenthesis are the standard errors for the coefficients.

*** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level,
* indicates significance at $\alpha = .10$ level.

Appendix Table 10. Estimated Logit Models of Assistance Need by Forest Products Firms: ' DISPLAY, ASSOC, INTERNET, REGUL. ^{a, b}

Variables	DISPLAY	ASSOC	INTERNET	REGUL
α_1	3.9360 *** (1.5059)	2.0138 (1.5011)	3.6952 ** (1.6637)	3.1002 ** (1.3973)
α_2	5.9654 *** (1.5834)	4.1998 *** (1.5532)	5.0613 *** (1.6962)	5.0284 *** (1.4508)
α_3	7.7329 *** (1.6665)	5.6067 *** (1.6170)	6.2234 *** (1.7293)	7.4352 *** (1.5682)
α_4		6.3328 *** (1.6903)	7.5512 *** (1.7784)	8.1432 *** (1.6505)
SIC24	0.9460 (0.9242)	1.4838 * (0.9282)	0.5322 (0.9115)	-0.8485 (0.9105)
SIC 25	-0.1217 (0.9970)	1.4844 (1.0062)	0.00672 (0.9994)	-0.2254 (0.9893)
RETAIL	-1.0428 * (0.5613)	-0.8556 (0.5715)	-1.3331 ** (0.5538)	0.2252 (0.5269)
WHLSL	-1.4720 (1.3112)	-2.2770 * (1.3394)	-0.4714 (1.3488)	-0.4418 (1.3034)
INET	-0.7853 (0.8741)	0.9636 (1.0304)	-2.1006 ** (0.9204)	-0.1459 (0.8711)
LOCAL	-1.1765 * (0.6249)	0.3590 (0.6189)	-0.3732 (0.5927)	-0.1541 (0.5757)
REG	-0.4029 (0.6088)	0.5203 (0.6182)	-0.4404 (0.5741)	0.4833 (0.5690)
NATL	-0.4605 (0.6251)	-0.4582 (0.6551)	-0.4079 (0.6022)	0.1897 (0.5873)
INTL	-0.9131 (0.6013)	0.9661 (0.6844)	-0.5593 (0.5896)	-0.4428 (0.5798)
GREGION	-2.1273 ** (0.9020)	-1.1796 (0.8777)	-1.2909 (0.8291)	-1.2617 (0.8059)
GNATL	-1.8822 ** (0.9632)	-0.5262 (0.9866)	-2.0163 ** (0.8920)	-1.3906 * (0.8693)
GINTL	-1.6754 (1.0566)	-1.9395 * (1.0559)	-0.0763 (1.0345)	-2.6233 *** (1.0187)
YRBUS	-0.00095 (0.0118)	-0.0124 (0.0122)	0.0147 (0.0114)	-0.0163 (0.0109)
EMP	-0.00011 (0.000586)	-0.00061 (0.000599)	-0.00059 (0.000589)	-0.00022 (0.000575)
TSALES2	-2.1868 * (1.2742)	-1.8304 (1.3056)	-2.7095 ** (1.3461)	-1.2154 (1.1587)
TSALES3	-1.7998 (1.2348)	-3.1825 ** (1.2864)	-2.8946 ** (1.3242)	-2.8487 *** (1.1413)

Appendix Table 10. Continued

Variables	DISPLAY	ASSOC	INTERNET	REGUL
TSALES4	-1.9034 (1.2447)	-2.6220 ** (1.3037)	-3.9082 ** (1.3026)	-2.0490 * (1.1419)
TSALES5	-1.3206 (1.2127)	-1.7216 (1.2634)	1.9990 (1.3050)	-1.5306 (1.1082)
TSALES6	(-1.2028) 1.2399	-2.1239 * (1.2886)	-2.5561 * (1.3552)	-2.2083 ** (1.1419)
TSALES7	(-0.8069) 1.4340	-0.9842 (1.4432)	-2.3872 * (1.4836)	-1.1795 (1.2471)
TSALES8	(-1.3070) 1.4841	-1.7731 (1.5522)	-2.6118 * (1.5599)	-2.6257 * (1.3742)
GSALES	(-0.00360) 0.00523	-0.00788 (0.00529)	-0.00632 (0.00500)	-0.00115 (0.00506)

LLR	41.048 **	27.204	50.229 **	22.311
% CORRECT	79.6	75.1	77.8	69.9

^a Values in the parenthesis are the standard errors for the coefficients.

^b *** indicates significance at $\alpha = .01$ level, ** indicates significance at $\alpha = .05$ level, * indicates significance at $\alpha = .10$ level.

Section I. Domestic marketing and assistance needs-*The first section contains questions about domestic marketing assistance your firm may need and your firm's marketing situation and plans.*

- I. Please indicate the level of need your firm has for assistance with the following domestic marketing and business activities (Circle the number corresponding to your response).

Assistance	My Firm's Level of Need is:				
	Negligible	Low	Moderate	High	Extreme
a) Promoting products/advertising	1	2	3	4	5
b) Locating reliable transportation/distribution	1	2	3	4	5
c) Locating and identifying potential buyers (including contacts in established marketing channels)	1	2	3	4	5
d) Trade show/fair representation	1	2	3	4	5
e) New product development	1	2	3	4	5
f) Obtaining financing	1	2	3	4	5
g) Market research or finding market information	1	2	3	4	5
h) Access to new pilot plants or test kitchen facilities	1	2	3	4	5
i) Formulating a marketing plan	1	2	3	4	5
j) Help in preparing to call on marketing outlets	1	2	3	4	5
k) Obtaining adequate supplies of local inputs	1	2	3	4	5
l) Locating local suppliers and contacts	1	2	3	4	5
m) Help with development of sales display types and designs	1	2	3	4	5
n) Locating or forming local industry associations (ex: grower or processor associations)	1	2	3	4	5
o) Marketing across the Internet	1	2	3	4	5
p) Compliance with product and/or shipping regulations and restrictions	1	2	3	4	5
q) Other (Please describe): _____					

2. What channels does your firm currently sell through (Circle all that apply)?

Retail Wholesale Direct Mail Internet

3. The current market for my firms' products is (Circle all that apply):

In-state & local Regional National International

4. In the next five years I expect **most** growth potential for my firm's products will be found in markets that are (Circle one):

In-state & local

Regional

National

International

5. My firm (Please circle the best answer):

- a) Currently exports and plans to export in the future. (Please continue on to **question 6**)
- b) Does not currently export, but plans to export in the future. (Please skip to **question 11**)
- c) Currently exports, but does not plan to export in the future. (Please skip to **question 13 in Section III**)
- d) Does not currently export and does not plan to export in the future. (Please skip to **question 13 in Section III**)

Section II. International marketing and assistance needs-This section contains questions about export marketing and the export marketing assistance your firm may need most.

6. How many years prior to 1999 has your firm exported? _____ Years
7. What percent of your firm's current annual sales are generated from exporting? _____ %
8. During the most recent 5 years, my firm's export sales have (Circle one):
- Decreased Stayed Level Increased
9. During the next five years, my firm's export sales will likely (Please circle the response and indicate your projections about the percent change in sales):
- a) increase in total by _____ %
 - b) stay the same
 - c) decrease in total by _____ %
10. Please list the top three export destinations and products of your firm (in descending order of sales). If a specific product, please list the individual product (e.g. dogwood trees), or if product lines, please indicate the category of product (e.g. woody ornamentals).
- | | Country | Product or Product Line |
|----|---------|-------------------------|
| a) | _____ | _____ |
| b) | _____ | _____ |
| c) | _____ | _____ |

11. List the top three countries and products your firm would be most interested in obtaining export market research information about.

	Country	Product or Product Line
a)	_____	_____
b)	_____	_____
c)	_____	_____

12. Please indicate the level of need your firm has for assistance with the following export marketing and business activities (Circle the numbers that most closely correspond with your response).

Assistance	My Firm's Level of Need is:				
	Negligible	Low	Moderate	High	Extreme
a) Export trade leads	1	2	3	4	5
b) Courses, seminars, or publications on exporting	1	2	3	4	5
c) Assistance locating lenders for export business	1	2	3	4	5
d) Completing Customs process	1	2	3	4	5
e) Assistance locating export distribution or transportation services (e.g. freight forwarders)	1	2	3	4	5
f) Export market research services (pricing, competitors, market conditions, etc.)	1	2	3	4	5
g) Language/cultural training or assistance	1	2	3	4	5
h) Understanding and facilitating payment methods	1	2	3	4	5
i) Assistance with exhibitions at trade shows or fairs	1	2	3	4	5
j) Financial support to attend or participate in trade shows or fairs	1	2	3	4	5
k) Assistance with export documentation (ex: insurance, licenses, certificates)	1	2	3	4	5
l) Formulating an export marketing plan	1	2	3	4	5
m) Adapting products/packaging to meet import requirements (e.g. product regulations) or market needs	1	2	3	4	5
n) Credit information on potential buyers	1	2	3	4	5
o) Trade mission representation	1	2	3	4	5
p) Export promotion/advertising assistance	1	2	3	4	5
q) Participation in state sponsored foreign trade promotions	1	2	3	4	5
r) Other (Please describe): _____					

Section III. Your Firm -The final section of this survey contains questions about your firm, knowledge/use of assistance services, and services you would like more information about. Please respond to questions 13-24 for your Tennessee operations only.

13. My firm's operations in Tennessee are best described as a (Circle the best answer):
- a) Sole proprietorship d) Cooperative
- b) Partnership e) Other (Please describe): _____
- c) Corporation
14. Number of Tennessee locations _____
15. Which of the following descriptions best represents your firm (Circle the appropriate answers):
- a) Producer/Grower d) Retailer
- b) Processor/Manufacturer e) Other (Please describe: _____)
- c) Wholesaler/Distributor
16. How many years prior to 1999 has your firm been in business? _____ Years
17. How many employees (including yourself) does your firm have? _____ Employees
18. What were your firm's total sales (domestic and export) in 1998? (Please circle the answer. Remember, all responses will be held strictly confidential)
- a) Less than \$250,000 f) \$5 million to \$9.99 million
- b) \$250,000 to \$499,999 g) \$10 million to \$19.99 million
- c) \$500,000 to \$999,999 h) \$20 million to \$49.99 million
- d) \$1 million to \$2.49 million i) \$50 million to \$99.99 million
- e) \$2.5 million to \$4.99 million j) \$100 million or greater
19. During the most recent 5 years, my firm's total sales (domestic and export) have (Circle one):
- Decreased Stayed Level Increased

20. During the next five years, my firm's total sales (domestic and export) will likely (Please circle the answer and indicate your projections about the percent change in sales next to the appropriate response):

- a) increase in total by _____ %
- b) stay the same
- c) decrease in total by _____ %
- d) cease (plan to leave business)

21. Please list the top three products or product lines currently sold by your firm (in descending order of sales).

- a) _____
- b) _____
- c) _____

22. In 1998, my company spent _____ % of its sales on advertising and promotion.

23. Please circle the importance of each factor in your firm's selection of its Tennessee production/processing locations(s):

Factor	Importance of Factor in Selecting Location				
	Negligible	Low	Moderate	High	Extreme
Proximity to Buyers/Customers	1	2	3	4	5
Established industrial zone/area	1	2	3	4	5
Labor Supply	1	2	3	4	5
Waste Disposal Facilities	1	2	3	4	5
Transportation	1	2	3	4	5
Adequate Supply and Proximity of Raw Materials	1	2	3	4	5
Community Incentive Programs	1	2	3	4	5
Availability of Adequate Utilities	1	2	3	4	5
Other (Please describe): _____					

24. Please indicate your knowledge and use of the marketing assistance services offered by each of the following sources: (Circle the number that most closely corresponds to your response and circle whether you intend to use those services next year)

Service Source		Do Not Know About	Know About, but Have not Used	Have Used	Do you plan to use in the next year?	
a)	Agricultural export market information and services offered by the USDA Foreign Agriculture Service	1	2	3	Y	N
b)	Export market information and services offered by the International Trade Administration, Department of Commerce	1	2	3	Y	N
c)	Export promotion assistance offered by the Southern United States Trade Association (SUSTA)	1	2	3	Y	N
d)	Agricultural market development and promotion assistance services offered by the Tennessee Department of Agriculture	1	2	3	Y	N
e)	Logistics and transportation assistance services offered by the USDA Agricultural Marketing Service	1	2	3	Y	N
f)	Marketing assistance and research services offered by the University of Tennessee Institute of Agriculture	1	2	3	Y	N
g)	Business assistance offered by the Small Business Administration and Department of Commerce	1	2	3	Y	N
h)	Business assistance offered by the Rural Development Agency of the USDA	1	2	3	Y	N
i)	Business development assistance offered by the Tennessee Department of Economic and Community Development	1	2	3	Y	N
j)	Business development assistance offered by the Tennessee Department of Agriculture	1	2	3	Y	N
k)	Export market and trade information services offered by the Tennessee Department of Agriculture	1	2	3	Y	N

Other study comments:

VITA

John C. Colvett was born in Covington, Tennessee, on December 12, 1973. He attended and graduated from Caruthersville High School in Caruthersville, Missouri. He attended and graduated from Harding University with a Bachelor of Science in Biology in 1996. In August of 1998 he started working towards a Master of Science degree in Agricultural Economics at the University of Tennessee, in which, he officially received his diploma in August of 2000.

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