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The 1980s was a period of turmoil in the United States manufacturing sector generally, and in rural manufacturing in particular (Kale and Lonsdale 1987, Ahlbrandt 1988). Increased foreign competition, outmoded facilities, and lack of responsiveness to changing technologies are among the factors that have eroded the competitiveness of U.S. companies in many industries. As a result of these and related forces, substantial restructuring has occurred in many industries. This restructuring has led some large companies to close some plants and reduce the scale of operation in others. Restructuring has also included decentralization in some industries, with some firms increasing their reliance on out-sourcing for components as an alternative to in-house production while others sought to establish branch plants in locations where a favorable combination of production and distribution costs could be attained.

The restructuring of the manufacturing sector and the changes in rural manufacturing operations that have resulted have led to a reexamination of the role of manufacturing in rural economic development (Pulver 1989, Leistritz 1991). At the same time, many states have responded to these changes by attempting to take a more active role in assisting their manufacturing

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sectors through various programs of technical and/or financial assistance (Chapman et al. 1990; Eisinger 1988, 1991; Fosler 1988; Shapira 1990).

In North Dakota, as in many rural states, the last decade has been an economically difficult time. The state's economy is heavily dependent on agriculture and on the energy industry, both of which experienced economic problems during much of the past ten years. The state was one of only four to experience a population decline during the period 1980-1990, and it ranked 46th among the states in per capita income growth during the period 1980-1989. Understandably, economic development and diversification has become a high priority concern for state policy makers.

The manufacturing sector has been targeted to play a major role in the state's future economic development. A new economic development initiative titled **Growing North Dakota** (S.B. 2058), enacted by the 1991 North Dakota Legislature, identified expanding manufacturing employment as a major goal and contained a number of provisions that enable state entities to assist the manufacturing sector (e.g., by providing financing at favorable terms or by assisting in technology commercialization or transfer). For state assistance to be most effective, however, decision makers must understand the current composition of the manufacturing sector and the needs of its firms.

The *purpose* of this study was to develop a better understanding of the firms that make up the North Dakota manufacturing sector and their needs. Specific objectives were to (1) describe the firms that make up the manufacturing sector in terms of such characteristics as their products, location, employment, suppliers, and related attributes, and (2) identify their needs for financing and technical assistance.

Procedures

Information needed to fulfill the project objectives was obtained through a survey of North Dakota manufacturers. The initial survey list was developed by cross-referencing a list of manufacturers compiled by the North Dakota Department of Economic Development and Finance with a similar list developed by the North Dakota State College of Science. The amalgamated list contained about 800 firms. A 16-page questionnaire was mailed to these firms on May 7, 1991. A reminder letter was mailed on June 4 to firms that had not returned their surveys, and in July telephone calls were made to the firms that had not yet responded. As a result of these contacts, we learned that about 130 of the 800 firms had closed or moved out of state while another 300 were engaged in activities that served local markets only (e.g., copy centers, custom meat packing). When these firms were eliminated, the effective population size became 370 firms. From this group, we obtained a total of 214 useable responses, for a response rate of 58 percent.

Comparison of the location and employment levels of survey respondents with the population of manufacturing sector employers reported by Job Service North Dakota indicated that the geographic distribution was similar but that the survey respondents had a somewhat higher employment level -- about 44 percent more employees per firm compared to the population. This is consistent with the decision to exclude locally oriented enterprises (most of which were very small) from the survey.

Results

The results of the survey are summarized in the sections that follow. These sections deal with (1) general characteristics, (2) sales and marketing, (3) expenditures and suppliers, (4) employment, (5) financing, and (6) future plans and needs for technical assistance.

General Characteristics

Most of the respondents (79 percent) reported that their establishment was the only location of their firm, while 13 percent indicated that it was the headquarters and 8 percent said it was a branch or regional office (Table 1). The firms varied greatly with regard to the length of time they had been operating in the community. About 44 percent had started in 1980 or after, and 25 percent had begun operations during the 1970s.

TABLE 1. SELECTED CHARACTERISTICS OF RESPONDENT MANUFACTURING FACILITIES, 1991

Characteristic	All Firms	Metro Firms*	Nonmetro Firms*
Type of establishment			
Only location of firm	79.0	76.2	81.9
Headquarters of firm	13.1	13.3	12.4
Branch or regional office	7.9	10.5	5.7
Year firm started in this community			
1980 and after	43.8	41.6	46.9
1970-1979	25.4	30.7	18.4
1950-1969	18.4	11.9	25.5
1920-1949	6.9	8.9	5.1
Before 1920	5.5	6.9	4.1
Type of product			
Durable goods	66.0	66.3	66.3
Nondurable goods	34.0	33.7	33.7
High-tech firms	10.9	11.3	10.6
Agribusiness firms	24.2	17.0	30.8
New firms since 1987	18.5	12.9	16.3
Firms established prior to 1987			
Less than 20 employees in 1987	59.5	60.4	67.3
20 employees or more in 1987	22.0	26.7	16.3

*A few firms with multiple locations could not be categorized by metro or nonmetro location, and hence are not included in these figures.

Of the responding firms, 66 percent were engaged in durable goods manufacturing (Table 1). Firms in the SIC categories that have been designated as high-tech (Smith and Barkley 1988) accounted for about 11 percent of the respondents. Agribusiness firms made up about 24 percent of the sample; these firms were about equally divided between nondurable goods manufacturers (primarily food processors) and durable goods manufacturers (primarily farm equipment producers). Firms that had been established since 1987 accounted for about 18.5 percent of the responding firms, established firms with fewer than 20 employees for 59.5 percent, and established firms with more than 20 employees for 22 percent.

About 50 percent of the responding firms were located in the state's three Metropolitan Statistical Areas (MSAs) while the remaining 50 percent were located in the state's nonmetropolitan counties. In general, the nonmetropolitan firms differed only slightly from those located in the MSAs as regards the nature of their products (Table 1). Agribusiness firms, new firms (started in the last five years), and small firms (less than 20 employees) were more commonly found in the nonmetropolitan counties, but these differences were not statistically significant.

Sales and Marketing

The respondent firms reported gross sales for 1990 that averaged $9.2 million (Table 2), but their sales volumes covered a wide range: almost 16 percent had annual sales of less than $100,000 while about 4 percent had gross sales of $50 million or more. Firms located in the metropolitan counties had a substantially higher level of gross sales in 1990 than their nonmetropolitan counterparts (Table 2). As a group, the agribusiness firms had the highest level of gross sales in 1990, an average of $32.6 million per firm. The median sales volume for agribusiness firms ($1.5 million) also was much higher than that for all firms ($642,500) (see Appendix Table 1). Nondurable goods manufacturers had a much higher average sales level than durable goods manufacturers, although median values differed substantially less.

TABLE 2. GROSS SALES OF RESPONDENT MANUFACTURING FACILITIES

Gross Sales	All Firms	Metro Firms[a]	Nonmetro Firms[a]
Gross sales in 1990			
Mean	$9,160,922	10,910,496	2,456,533
Median	642,500	1,100,000	355,000
Distribution:			
Less than $100,000	15.6%	12.9%	19.0%
$100,000 to 249,999	16.6	7.5	23.8
$250,000 to 499,999	12.2	16.1	10.7
$500,000 to 999,999	12.3	10.8	13.1
$1,000,000 to 4,999,999	26.6	29.0	25.0
$5,000,000 to 9,999,999	7.3	10.8	3.6
$10,000,000 to 49,999,999	5.5	7.5	3.6
$50,000,000 or more	3.9	5.4	1.2
Change in gross sales, 1990 compared to 1989			
Mean	18.3	19.4	17.5
Median	10.0	10.0	7.5
Projected change in gross sales, 1991 compared to 1990			
Mean	17.9	6.7*	30.5*
Median	6.4	6.9	6.1
Projected change in gross sales, 1992 compared to 1990			
Mean	61.3	26.6*	102.1*
Median	21.4	19.3	25.0

[a]A few firms with multiple locations could not be categorized by metro or nonmetro location and hence are not included in these figures.

*Significantly different based on the Tukey test using $\alpha = .05$.

When the firms compared their 1990 gross sales with those for 1989, the typical (median) firm reported an increase of 10 percent. About 15 percent of the respondents reported a negative change in sales while 22 percent indicated that their sales had not changed. Nondurable manufacturers recorded substantially less growth in gross sales from 1989 to 1990 than the other firm types compared (Appendix Table 1).

When asked to project their gross sales for 1991 and 1992, the firms recorded mixed responses (Table 2). On average, the firms expected their 1991 gross sales to exceed the 1990 level by nearly 18 percent; the median value was 6.4 percent. One-third of the firms expected either no growth in sales or a decrease from 1990 to 1991. Nonmetropolitan firms projected a much higher change in sales, on average, than their metropolitan counterparts, but the median value for the metropolitan firms was higher. Among the firm types, the nondurable goods manufacturers projected a substantially lower sales growth, on average, from 1990 to 1991 than firms of other types (Appendix Table 1). There was little difference in the median values, however.

Looking forward to 1992, some firms were much more optimistic than their recent experience might lead them to be, as the average expected increase in sales from 1990 to 1992 was 61 percent. The median value of 21 percent, however, probably better reflects the outlook of the typical firm. About 17 percent of the firms expected sales to either decline or remain the same (Table 2). The nonmetropolitan firms projected a substantially larger increase in sales, on average, than their metropolitan counterparts. Again, the nondurable goods manufacturers projected substantially less growth in sales from 1990 to 1992 than firms of the other types (Appendix Table 1).

The respondents were asked where they sell their major products. On average, about 37 percent of the products are marketed within the local area, 21 percent within the rest of

North Dakota, 37 percent elsewhere in the United States, and about 5 percent outside the United States (Table 3). About 10 percent of the firms reported that essentially all of their products are marketed locally; some of these may be supplying other firms that serve a wider market. At the other extreme, 26 percent reported that none of their products are marketed locally. Only about one-fourth of the firms reported selling products outside the United States, but about half plan to serve international markets in the next 5 years.

TABLE 3. MARKETS AND MARKETING STRATEGIES OF RESPONDENT FIRMS, 1991

Markets and Marketing Strategies	All Firms	Metro Firms*	Nonmetro Firms*
Where major products are marketed			
Within local market	36.7	40.7	32.5
Within rest of North Dakota	21.4	21.5	21.9
Within rest of United States	37.4	32.9	40.7
International	4.9	4.9	4.9
Percent of products sold out-of-state			
Mean	42.2	37.8	45.5
Median	30.0	20.0	40.0

*A few firms with multiple locations could not be categorized by metro or nonmetro location, and hence are not included in these figures.

The average firm sold about 42 percent of its products outside the state; the median value was 30 percent (Table 3). About 23 percent of the firms sold none of their products outside the state, while about 43 percent sold more than half of their products outside the state. Agribusiness firms and high-tech establishments had relatively high percentages of out-of-state sales (Appendix Table 2). Nonmetropolitan firms had a somewhat higher level of out-of-state sales than their metropolitan counterparts (Table 3).

Expenditures and Suppliers

The manufacturers also were asked about their expenditures by category and by the location of the supplier. Mean values for each category of expenditure are shown in Table 4. The geographic distribution of the various categories of expenditures is also shown in Table 4. The firms generally reported that their labor expenditures were concentrated in the county where the firm is located. Expenditures for processed materials and raw materials, on the other hand, were more likely to go to out-of-state suppliers. Overall, the respondent firms reported that about 58 percent of their total expenditures were to in-state entities.

TABLE 4. DISTRIBUTION OF EXPENDITURES BY RESPONDENT FIRMS, 1990

Expenditure Category	Percent of Total Expenditures	Location of Supplier			
		Within County	Rest of State	Rest of U.S.	Outside U.S.
		percent			
Raw materials	30.3	20.8	22.5	52.8	3.9
Processed materials	21.9	16.5	17.7	62.6	3.2
Labor	27.4	88.3	9.5	2.2	0.0
Subcontracting	4.7	51.5	23.1	24.3	1.1
Other	15.7	62.5	16.8	20.2	0.5

The percentage of the firms' total expenditures made within the state was higher than average for nondurable goods manufacturers and for agribusiness firms (Appendix Table 3). The high-tech firms had the lowest percentage of in-state expenditures. New firms (started within the last five years) had the highest percentage of their expenditures within the state. Branch plants had a lower percentage of in-state expenditures (48.9 percent) than firms with only one location (54.8 percent) or headquarters facilities (61.9 percent), but the differences were not statistically significant. Nonmetropolitan firms purchased a somewhat higher percentage of their raw materials, but a smaller percentage of their processed materials, within the state, compared to metropolitan firms (data not shown).

A regression analysis was undertaken to estimate the influence of selected facility characteristics on the percentage of purchases made within the state. The only characteristics that were significant at the 10 percent level were scale of operation (measured by number of employees) and durable goods production. Increasing the facility's employment level by 100 jobs decreased the percentage of in-state purchases by about 4 percent while durable goods manufacturers purchased about 8.1 percent less within the state than their nondurable goods counterparts, other things equal. Overall, the regression equation explained only about 9.4 percent of the total variation in in-state expenditures.

The manufacturers were asked whether they would purchase items that they presently obtain from outside the state from a North Dakota supplier if prices were comparable, and 98.5 percent replied that they would make an effort to buy from in-state suppliers. When asked to rate selected attributes of the North Dakota suppliers with which they have dealt, the manufacturers were most satisfied with on-time delivery and the quality of the products delivered. They were least favorably impressed with regard to availability of items and material cost.

Employment

The manufacturers responding to the survey employed an average of 54 workers at the time of the survey. A few large firms influenced the average substantially, however; the median value was 15 workers (Table 5). The firms had increased their employment substantially over the last 5 years; the average number of workers employed by the firms 5 years previously was 37. The firms also anticipated substantial employment growth over the next 5 years. The average firm expected to have about 78 employees in 5 years; the median value was 26.

Nonmetropolitan firms had somewhat fewer workers, on average, at the time of the survey compared to their metropolitan counterparts. The two groups of firms were similar in terms of their employment five years ago and their projected employment five years in the future (Table 5).

Operators and fabricators were the largest occupational category among the current employees of the North Dakota manufacturers, accounting for 34 percent of total employment (Table 6). The next largest groups were laborers (20.2 percent)

TABLE 5. CURRENT, PAST, AND PROJECTED EMPLOYMENT OF NORTH DAKOTA MANUFACTURING FIRMS, 1991

Employment	Unit	All Firms	Metro Firms*	Nonmetro Firms*
Total employment, current				
Mean	number	53.8	51.4	39.9
Median	number	15.0	16.0	13.0
Distribution:				
1- 5	percent	20.5	20.0	25.6
6-14	percent	27.3	26.3	25.6
15-24	percent	17.0	17.9	15.9
25-49	percent	13.6	10.5	17.0
50-99	percent	13.1	16.9	8.6
100 and over	percent	8.5	8.4	7.3
Total employment, five years ago				
Mean	number	37.3	29.9	29.0
Median	number	8.0	8.0	6.0
Total employment, five years from now				
Mean	number	77.7	68.9	70.3
Median	number	26.0	30.0	26.0

*A few firms with multiple locations could not be categorized by metro or nonmetro location, and hence are not included in these figures.

and precision production, craft and repair workers (17.2 percent). Among the occupational groups, laborers had experienced the most rapid growth over the past 5 years (84.7 percent) followed by sales representatives and precision production craft and repair workers (Table 6). Over the next 5 years, the most rapid growth was anticipated for sales representatives (95.8 percent) followed by operators and fabricators (59.5 percent). Overall, the average firm employed 37 people 5 years ago, employs 54 today, and expects to employ 78 in 5 years.

TABLE 6. QUALIFICATIONS AND RECRUITMENT AND RETENTION CHARACTERISTICS OF EMPLOYEES IN THE MANUFACTURING INDUSTRY, NORTH DAKOTA, 1991

Employees by Type	Minimum Requirement for New Employees						Difficulty Finding Employees Locally		Difficulty Retaining Employees Locally	
	Prior Work Experience	Some High School	High School Diploma	Technical College	B.S. Degree	Master's or Higher	Mean[a]	Difficult[b]	Mean[a]	Difficult[b]
	percent yes									
Executive, Administrative, or Managerial	65.1	2.7	26.7	16.0	44.7	6.0	3.36	41.1	2.30	26.9
Professional Specialty (e.g., engineers, scientists, computer programmers, accountants, etc.)	48.1	---	8.7	30.1	50.5	9.1	3.42	49.1	3.01	28.4
Sales Representatives	70.6	4.6	41.7	14.8	30.6	2.8	3.55	51.8	3.18	36.4
Clerical Workers (e.g., secretaries, typists, stenographers, word processor specialists)	59.9	5.0	41.8	41.8	5.7	4.3	2.49	13.4	2.49	11.3
Precision Production, Craft, and Repair (e.g., mechanics, repairers, machinists and metal craftsmen, construction craftsmen, etc.)	64.2	6.6	31.1	45.1	1.6	0.8	3.27	41.4	2.85	23.6
Operators, Fabricators (e.g., machine operators, assemblers, inspectors, truck drivers, material handlers)	63.4	14.0	48.8	19.4	---	---	2.43	25.2	2.54	23.3
Laborers	49.0	32.0	38.1	6.2	2.1	12.4	2.43	11.9	2.54	15.2

[a]Based on a scale from 1 (very easy) to 5 (very difficult).

[b]Percent responding difficult and very difficult.

Survey respondents were also asked about their minimum requirements for employees in various occupational classes (Table 6). A college degree or post-graduate education was required by more than half of the respondents for executive, administrative, or managerial positions and by nearly 60 percent for professional specialty jobs. Technical college preparation was required by 45 percent of respondents for precision production, craft, and repair jobs and by 42 percent for clerical jobs.

The respondents reported the greatest degree of difficulty in locally recruiting employees in the categories of sales representatives and professional specialties. The greatest difficulty in retaining employees was reported for sales representatives. Nonmetropolitan firms reported relatively greater difficulty in recruiting and retaining employees in the categories of *executive, administrative, or managerial* and *professional specialty*, compared to their metropolitan counterparts (Appendix Table 4).

The survey data also provide insight regarding an important policy issue -- the potential of different types of firms for creating jobs. The net changes in numbers of workers employed by firms of different types are summarized in Table 7. Overall, the firms in the survey had an average net employment change of about 17 jobs compared to the situation 5 years previously; the median value was 4. About 13 percent of the firms had a negative employment change over the 5-year period while 11 percent reported no change in the total number of workers employed. When

TABLE 7. JOBS CREATED IN THE LAST FIVE YEARS BY FIRMS OF DIFFERENT TYPES, 1991

Jobs Created in Last 5 Years	All Firms	Firm Type			Firm Type		Firm Type		Firm Type	
		New Firms	Established Firms							
			Less than 20 Employees	20 or More Employees	NonDurable Mfgrs	Durable Mfgrs	Agribusiness	Other	High-Tech	Other
Mean (Number)	17.1	35.4	5.6*	37.8*	22.5	14.9	38.5*	11.4*	23.8	17.0
Median (Number)	4.0	14.0	2.0	13.0	3.0	5.0	5.0	4.5	13.0	4.0
Distribution of jobs:	--------	--------	--------	--------	--------percent--------	--------	--------	--------	--------	--------
Fewer jobs	13.1	0.0	14.9	15.9	19.3	10.4	15.4	12.7	5.0	14.5
No change	11.4	5.0	16.8	2.3	12.3	11.3	12.8	11.1	0.0	13.1
1-10	44.0	40.0	51.5	27.3	36.8	46.3	28.2	48.4	40.0	44.1
11-25	20.0	35.0	13.9	27.3	21.1	20.0	28.2	17.5	25.0	19.3
26-50	4.6	5.1	1.0	11.4	3.5	5.2	5.1	4.0	15.0	2.8
51-100	3.4	10.0	2.0	4.5	0.0	5.2	2.6	4.0	10.0	2.8
Over 100	3.4	5.0	0.0	11.4	7.0	1.7	7.7	2.4	5.0	3.4

*Significant difference at .05 using Tukey Test.

nondurable and durable manufacturers are compared, the nondurable firms created about 7.6 more jobs, on average, than their durable counterparts.

The role of new and small firms in job creation is also addressed in Table 7. Firms that had begun operations within the last 5 years created an average of about 35 jobs per firm and accounted for 24 percent of the total jobs created by the survey respondents. Firms that were established 5 years previous to the survey, but which had fewer than 20 employees at that time, created an average of 5.6 jobs per firm and accounted for about 19 percent of the total jobs created by all firms. Established firms with more than 20 employees 5 years previously created almost 38 jobs per firm and accounted for almost 57 percent of the total jobs created.

Agribusiness firms, on average, created almost 4 times as many jobs per firm as the other firms in the survey (Table 7). A few firms that recorded very large employment gains influenced the average substantially, however, as the median values for agribusiness firms and the other firms were 5.0 and 4.5, respectively.

High tech firms created about 7 more jobs per firm (or 39 percent more jobs) than the other firms in the study.

Firms located in metropolitan counties created somewhat more jobs on average than their nonmetropolitan counterparts.

The survey also provides insights concerning the types of jobs that may be provided by the manufacturing sector in the future. The firms that responded to the survey currently employ an average of 54 workers, and they anticipate employing 78 workers 5 years from now. Operators and fabricators are expected to make up 44 percent of the new jobs created in the manufacturing sector; precision production, craft and repair workers would constitute about 15 percent; and laborers almost 14 percent (Table 8).

TABLE 8. CURRENT, PAST, AND PROJECTED EMPLOYMENT BY OCCUPATIONAL CATEGORY FOR NORTH DAKOTA MANUFACTURERS, 1991

Occupational Category	Average Number of Employees Per Firm: Current	Average Number of Employees Per Firm: Five Years Ago	Average Number of Employees Per Firm: Five Years From Now	Projected Employment Growth in Five Years: Number	Projected Employment Growth in Five Years: Percent
Executive, administrative, and managerial	4.8	3.6	6.3	1.5	6.0
Professional specialty	3.6	2.5	5.2	1.6	6.4
Sales representatives	2.4	1.4	4.7	2.3	9.2
Clerical workers	4.3	3.1	5.6	1.3	5.2
Precision production, craft, and repair	9.3	5.6	13.1	3.8	15.2
Operators and fabricators	18.5	13.7	29.5	11.0	44.0
Laborers	10.9	5.9	14.3	3.4	13.6
Other	0.3	0.2	0.4	0.1	0.4
Total Average Per Firm	54.1	36.0	79.1	25.0	100.0

Financing

The manufacturers were asked about activities they had undertaken in the last 12 months to obtain financing. Almost half (47.8 percent) of the respondents had tried to secure a loan for working capital, and 40 percent had sought financing for new equipment (Table 9). Loans for 3 other purposes were the objective of 14 to 30 percent of the respondents.

TABLE 9. NORTH DAKOTA MANUFACTURERS' EFFORT TO SECURE FINANCING IN THE LAST 12 MONTHS, 1991

Efforts to Secure Financing	Percent
Total number of loans sought:	
None	35.4
One	23.9
Two	21.5
Three	12.0
Four or more	7.2
Tried to secure a loan for:	
New equipment	40.4
New building	15.9
Working capital	47.8
Overall business operation	30.4
Refinancing old debts	14.4
Number of financial institutions contacted:	
Distribution (mean = 1.5)	
One	68.2
Two	20.9
Three	8.5
Four	2.3
Encountered difficulty in obtaining financing:	
All firms	32.2
Nondurable	24.0
Durable	36.6
New	52.6
Established (<20 employees)	27.1
Established (20/+ employees)	32.3
Agribusiness	48.4
High-tech	31.1
Metropolitan location	33.8
Nonmetropolitan location	30.6

Overall, about 35 percent of the respondents had not needed to seek financing in the last 12 months. The remainder had attempted to obtain one or more loans. Of those who had sought financing, about 32 percent reported that they had encountered difficulty in obtaining financing (Table 9). Durable goods manufacturers reported such difficulties more frequently (37 percent) than their counterparts (24 percent). New firms (established within the last 5 years) reported financing difficulties more frequently (53 percent) than their established counterparts, and agribusiness firms reported problems more often (48 percent) than others.

The companies that had sought financing had contacted an average of 1.5 financial institutions. About 68 percent had contacted only 1 institution, 21 percent had contacted 2, about 8.5 percent had contacted 3, and only 2.3 percent had contacted 4 (Table 9). New firms contacted more financial institutions (an average of 1.6) than did established firms, and among the established firms, those with fewer than 20 employees 5 years ago contacted more institutions (1.4) than the larger firms (which contacted an average of 1.3 institutions). High-tech firms were almost identical to other firms with respect to the number of institutions contacted while agribusiness firms had a slightly higher average number of contacts (1.47) than their counterparts (1.40).

Those who had encountered some problems in obtaining financing were asked to rate a number of factors in terms of their importance as a barrier to obtaining financing. The judgment of the financial institution was the factor that received the highest rating, followed by operation of the financial institution and the profit margin of the respondent's firm.

The manufacturers also were asked what financing sources they had contacted. Commercial banks were by far the most frequently utilized source of financing. Of 135 firms that had sought financing, 113 had contacted a commercial bank, 86 had submitted a loan application, and 82 had received a loan. The Small Business Administration and the Bank of North Dakota were other sources utilized by a number of respondents.

Future Plans and Needs for Technical Assistance

The manufacturers were asked about their plans for business changes within the next 2 years. Almost 80 percent planned to increase their market share, 76 percent would market existing products to different customers, and 75 percent want to increase their production capacity (Figure 1). About two-thirds of the respondents want to add new products within the next 2 years; 41 percent would redesign their product line and market it to different customers, and 38 percent would market a redesigned product line to the same customers. About 26 percent of the group wanted to diversify, and a similar number planned to add a new building. On the other hand, only 7 percent planned to add a new branch or to relocate.

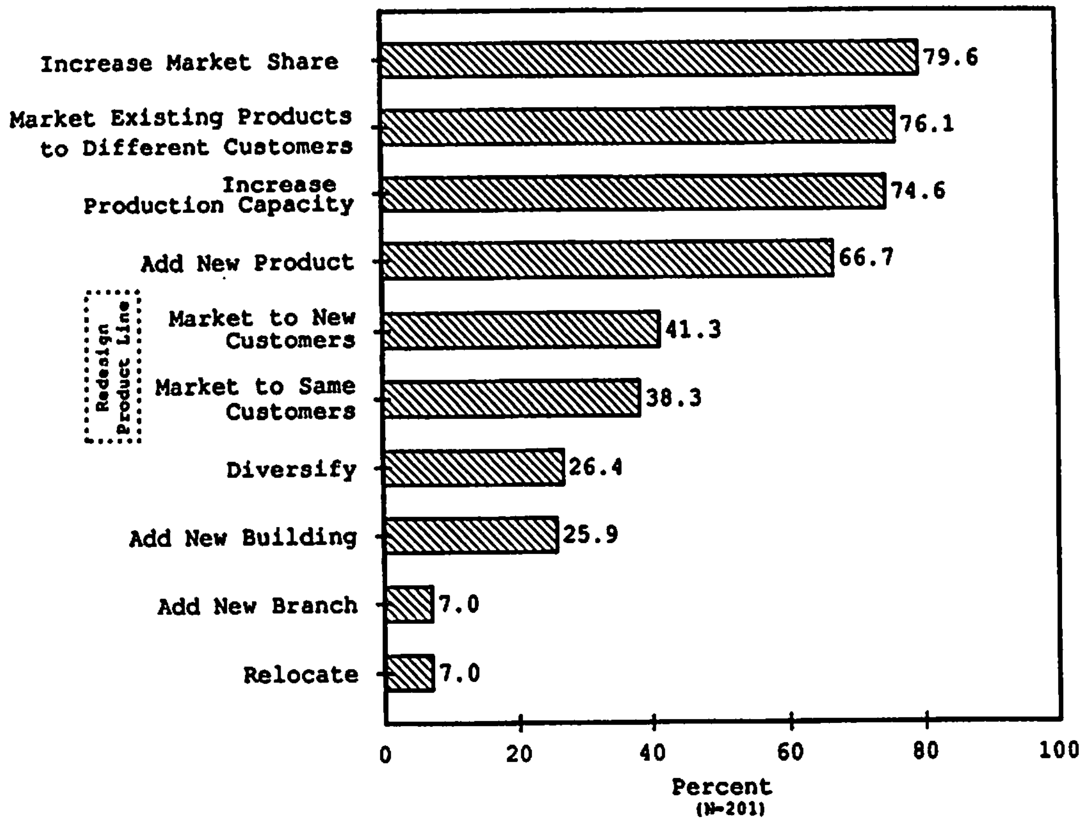

Figure 1. Respondents' Plans for Business Changes in the Next Two Years, 1991

The manufacturers were asked about areas in which they might need worker training and educational assistance. Of the subject areas specified, marketing and sales was the area that was rated as most important by the respondents (Table 10), followed by quality assurance and quality control. Other areas that received relatively high ratings were management training and finance. When ratings of the different areas for training and education were compared among the various types of firms, marketing and sales received the highest rating by all firm types except new

TABLE 10. TRAINING AND EDUCATIONAL ASSISTANCE NEEDS OF NORTH DAKOTA MANUFACTURERS, 1991

Area of Need	Mean Score*	Percent Rating Area as Critically or Very Important	N
Operator training	3.36	32.9	146
Computer-aided design	3.65	24.6	142
Basic computer skills	3.39	25.7	148
Computer-aided manufacturing	3.78	23.7	135
Quality control	3.08	40.0	145
Management training	3.11	39.4	145
Marketing and sales	2.66	53.7	149
Exporting	3.60	28.4	141
Quality assurance	3.07	40.4	141
Financing	3.23	37.2	145
Labor relations	3.41	25.7	140

*Based on a scale of 1 (critically important) to 5 (not important).

firms (Appendix Table 5). For this group, financing was the most important topic, with sales and marketing a close second.

When the needs for training and educational assistance were compared for metropolitan and nonmetropolitan firms, marketing and sales was the top ranked subject area for both groups (Appendix Table 6). The ratings by the two groups of firms were generally similar, although nonmetropolitan firms placed somewhat greater emphasis on management training and financing whereas metropolitan firms were more concerned about quality control, labor relations, and basic computer skills.

The respondents were also asked about their previous use of certain types or sources of training and continuing education. On-the-job training was the type of training most often used, followed by seminars and in-house class instruction. Respondents expressed the highest level of satisfaction with on-the-job training.

The manufacturers were also asked in which areas they perceived the greatest need for technical assistance (consulting). The area that received the highest rating was marketing studies (Table 11), followed by quality assurance and process improvement. Marketing studies were also the most highly rated subject area for durable manufacturers, for nondurable goods manufacturers, and for agribusiness firms (Appendix Table 7). New firms were most interested in assistance in developing international markets, followed by process improvement. Large established firms (that had 20 or more employees 5 years previously) placed the highest priority on process improvement, with quality assurance a close second and marketing studies ranking third. High-tech firms gave the highest rating to process improvement and inventory control.

The metropolitan and nonmetropolitan firms were very similar in their relative ratings of the different subject areas (Appendix Table 8). Nonmetropolitan firms did give a substantially higher rating to the topic of developing international markets than metropolitan firms did.

TABLE 11. MANUFACTURERS' NEEDS FOR TECHNICAL ASSISTANCE (CONSULTING) BY SUBJECT AREA, 1991

Subject Area	Rating of Importance: Critically Important	Very Important	Moderately Important	Slightly Important	Not Important	Mean Score*	N
	percent						
Accounting and records	5.4	15.1	22.0	18.3	39.2	3.71	186
Human resource management	3.9	11.1	31.7	18.9	34.4	3.69	180
Financial analysis/ cost control	7.0	23.2	23.2	16.2	30.3	3.39	185
Computer system	6.5	21.5	29.0	19.9	23.1	3.32	186
Inventory control	5.3	26.7	24.6	17.1	26.2	3.32	187
Plant layout and design	3.8	16.8	21.6	24.9	33.0	3.66	185
Production control	5.9	23.7	24.2	20.4	25.8	3.37	186
Research and development	9.3	19.8	23.1	19.2	28.6	3.38	182
Marketing studies	16.1	29.2	19.8	16.1	18.7	2.92	192
Strategic planning design	8.2	20.7	21.2	20.1	29.9	3.43	184
Process improvement	7.1	24.0	30.6	18.0	20.2	3.20	183
Material handling	8.2	14.8	23.0	25.7	28.4	3.51	183
Industrial waste management	4.3	14.1	22.7	20.0	38.9	3.75	185
Prototype testing	5.9	8.6	15.7	22.2	47.6	3.97	185
Product-process development	6.6	12.2	26.0	22.1	33.1	3.63	181
Product and process commercialization	3.9	11.2	23.6	25.3	36.0	3.78	178
Developing international markets	12.0	17.4	20.7	12.0	38.0	3.47	184
Government/manufacturing specification	7.7	15.3	18.6	18.6	39.9	3.68	183
Quality assurance	15.1	22.9	28.5	14.0	19.6	3.00	179

*Based on a scale from 1 (critical) to 5 (not important).

Conclusions and Implications

The manufacturing sector is viewed as being central to many states' efforts to achieve economic development and diversification. This paper summarizes results of a study aimed at achieving a better understanding of the firms that make up the manufacturing sector in the primarily rural state of North Dakota and their needs for support in such areas as financing, worker training, and technical assistance. The data base consists of information from 214 firms, or roughly 58 percent of the manufacturing firms that serve markets outside their local area.

The results reveal that many North Dakota manufacturing firms are relatively new (almost 44 percent began operations at their present location after 1979) and relatively small (about 57 percent had gross sales of less than $1 million in 1990). Most of them (77 percent) market some of their product outside the state, and they see marketing skills as critical to their future success.

The firms represented in the survey purchased about 58 percent of their inputs (including labor) from suppliers within the state. Almost all of the respondents (98.5 percent) indicated that they would make an effort to purchase more inputs from in-state suppliers if the items were available and prices were comparable. These findings provide support to those of Leistritz (1991) and indicate that establishing a brokerage network to connect manufacturers with in-state suppliers could enhance economic growth and development in the state.

The manufacturers employed an average of 54 workers in 1991, but the typical (median) firm had only 15 employees. The average firm had increased its work force by 44 percent over the last five years, and the firms projected an average growth of 44 percent over the next five years. The manufacturers reported the greatest degree of difficulty in *recruiting* sales representatives and persons in professional specialty occupations; they had the most problems in *retaining* sales representatives.

The survey provides insights about the role of various types of firms in job creation. While new firms (created within the last 5 years) and small firms (that had fewer than 20 employees 5 years prior to the survey) did create substantial numbers of jobs, the larger established firms (that had more than 20 employees 5 years prior to the survey) accounted for almost 57 percent of the total jobs created during the past five years. This finding suggests that state assistance efforts, which are often targeted toward new or relocating firms, should not overlook the state's established companies.

Financing is often mentioned as an area of concern by the state's manufacturers, as well as by representatives of other business sectors. The survey results show that about 65 percent of the respondents had sought financing during the last year and 32 percent of these (or 21 percent of all survey firms) reported that they had difficulty in obtaining financing. Financing problems were reported most frequently by new firms and by agribusiness firms.

When the firms were asked about areas in which they need training and educational assistance, marketing and sales received the highest rating. A similar question assessed areas in which firms saw a need for technical assistance (consulting); marketing studies received the highest rating, followed by quality assurance and process improvement. Clearly, marketing is one of the areas on which future technical assistance efforts should focus.

References

Ahlbrandt, Roger S., Jr. 1988. "Adjusting to Changes in Traditional Markets: The Problems of Small Manufacturers in Older Industrial Regions. *Economic Development Quarterly* 2(3): 252-264.

Chapman, Robert E., Marianne K. Clark, and Eric Dobson. 1990. *Technology-Based Economic Development: A Study of State and Federal Technical Extension Services.* NIST Special Publication 786. Washington, D.C.: U.S. Dept. of Commerce.

Eisinger, Peter K. 1988. *The Rise of the Entrepreneurial State.* Madison: The University of Wisconsin Press.

Eisinger, Peter. 1991. "The Rise of State Venture Capitalism." *Economic Development Quarterly* 5(1): 64-76.

Fosler, R. Scott, ed. 1988. *The New Economic Role of American States: Strategies in a Competitive World Economy.* New York: Oxford University Press.

Job Service North Dakota. 1991. *North Dakota Employment and Wages,* 1990. Bismarck: Job Service North Dakota.

Kale, Steven R., and Richard E. Lonsdale. 1987. "Recent Trends in U.S. and Canadian Nonmetropolitan Manufacturing." *Journal of Rural Studies* 3(1): 1-13.

Leistritz, F. Larry. 1991. "New or Expanding Basic Sector Firms in the Upper Great Plains: Implications for Community Development Practitioners," *Journal of the Community Development Society* 22(1): 56-82.

Pulver, Glen C. 1989. "Developing a Community Perspective on Rural Economic Development." *Journal of the Community Development Society* 20(2): 1-14.

Shapira, Philip. 1990. "Modern Times: Learning from State Initiatives in Industrial Extension and Technology Transfer." *Economic Development Quarterly* 4(3): 186-202.

Smith, Stephen M., and David L. Barkley. 1988. "Labor Force Characteristics of 'High Tech' Manufacturing in Nonmetropolitan Counties in the West." *Journal of the Community Development Society* 19(1): 21-36.

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APPENDIX

APPENDIX TABLE 1. GROSS SALES OF RESPONDENT MANUFACTURING FACILITIES, BY FIRM TYPE

Gross Sales	All Firms	Durable Goods Manufacturers	Nondurable Goods Manufacturers	Agribusiness Firms	High-Tech Firms
<u>Gross sales in 1990</u>					
Mean (N=180)	$9,160,922	6,438,514	15,631,356	32,636,350[a]	3,189,845
Median	642,500	588,500	875,000	1,500,000	1,500,000
Change in gross sales, <u>1990 compared to 1989</u>	------------	------------	percent	------------	------------
Mean (N=158)	18.3	21.7	11.8	22.5	20.6
Median	10.0	10.0	5.0	10.0	12.5
Projected change in gross sales, 1991 <u>compared to 1990</u>					
Mean (N=166)	17.9	23.5	5.3	28.2	10.5
Median	6.4	6.1	6.9	6.1	8.8
Projected change in gross sales, 1992 <u>compared to 1990</u>					
Mean (N=152)	61.3	79.9	22.9	85.3	48.3
Median	21.4	25.0	13.3	21.4	25.0

[a]Agribusiness firms significantly different than other firms based on the Tukey test using $\alpha = .05$.

APPENDIX TABLE 2. MARKETS AND MARKETING OF RESPONDENT FIRMS, BY FIRM TYPE, 1991

Subject Area	All Firms	Durable Goods Manufacturers	Nondurable Goods Manufacturers	New Firms	Established Firms: Less than 20 Employees	Established Firms: 20 Employees or More	Agribusiness Firms	High-Tech Firms
	percent							
Where major products are marketed								
Within local market	36.7	33.6	40.4	20.4	45.5[a]	21.1[a]	16.4[c]	15.0[d]
Within rest of North Dakota	21.4	23.7	17.9	22.3[b]	22.8[b]	17.3	24.5	26.6
Within rest of United States	37.4	37.6	36.7	51.4[b]	27.9[a,b]	54.7[a]	49.6[c]	52.8[d]
International	4.9	5.1	4.6	5.3	3.7	6.9	9.5[c]	4.7
Percent of products sold out-of-state								
Mean (N=206)	42.2	42.7	41.3	46.7	31.6[a]	61.6[a]	59.1[c]	57.5[d]
Median	30.0	35.0	30.0	57.5[b]	20.0[a,b]	68.0[a]	52.5	68.0

[a]Established firms with less than 20 employees significantly different than established firms with 20 or more employees based on the Tukey test using $\alpha = .05$.

[b]New firms significantly different than established firms with less than 20 employees based on the Tukey test using $\alpha = .05$.

[c]Agribusiness firms significantly different than other firms based on the Tukey test using $\alpha = .05$.

[d]High-tech firms significantly different than other firms based on the Tukey test using $\alpha = .05$.

APPENDIX TABLE 3. DISTRIBUTION OF EXPENDITURES BY RESPONDENT FIRMS, BY FIRM TYPE, 1990

Firm Type	Materials		Expenditure Category			Total
	Raw	Processed	Labor	Subcontracting	Other	
All firms						
Percent of total expenditures	30.3	21.9	27.4	4.7	15.7	100.0
Percent made within state	43.3	34.2	97.8	74.6	80.5	54.9
Nondurable manufacturers						
Percent of total expenditures	34.5[a]	19.6	22.5	6.7	16.7	100.0
Percent made within state	53.0[a]	36.9	98.0	65.1	73.7	60.6
Durable manufacturers						
Percent of total expenditures	28.2[a]	22.9	29.7[a]	3.9	15.3	100.0
Percent made within state	37.2[a]	32.5	97.7	78.7	84.0	52.2
New firms						
Percent of total expenditures	19.1	30.4	28.3	21.6[c,d]	0.6[c]	100.0[c]
Percent made within state	38.9	29.7	94.8	91.7	97.5	69.2[c]
Firms with less than 20 employees						
Percent of total expenditures	30.7[b]	22.5	28.4	3.1[d]	15.3	100.0
Percent made within state	48.6[b]	36.9	98.6	77.1	82.5	57.0
Firms with 20 employees or more						
Percent of total expenditures	33.8[b]	17.9	23.8	3.6[c]	20.9[c]	100.0[c]
Percent made within state	25.9[b]	23.8	97.3	69.2	69.9	47.0[c]
Agribusiness firms						
Percent of total expenditures	41.3[e]	23.0	17.0[d,e]	4.9	13.8	100.0
Percent made within state	55.0[e]	30.0	97.2	67.3	76.5	57.1
High-tech firms						
Percent of total expenditures	23.3[e,f]	28.8	22.8	8.6	16.5	100.0[f]
Percent made within state	13.8[e,f]	18.8	98.1	91.0	87.5	42.0[f]

[a]Nondurable manufacturers significantly different than durable manufacturers based on the Tukey test using $\alpha = .05$.

[b]Established firms with less than 20 employees significantly different than established firms with 20 or more employees based on the Tukey test using $\alpha = .05$.

[c]New firms significantly different than established firms with 20 or more employees based on the Tukey test using $\alpha = .05$.

[d]New firms significantly different than established firms with less than 20 employees based on the Tukey test using $\alpha = .05$.

[e]Agribusiness firms significantly different than other firms based on the Tukey test using $\alpha = .05$.

[f]High-tech firms significantly different than other firms based on the Tukey test using $\alpha = .05$.

APPENDIX TABLE 4. RECRUITMENT AND RETENTION CHARACTERISTICS OF EMPLOYEES IN METROPOLITAN AND NONMETROPOLITAN MANUFACTURING FIRMS, NORTH DAKOTA, 1991

Employees by Type	Metropolitan Firms: Difficulty Finding Employees Locally: Mean[a]	Metropolitan Firms: Difficulty Finding Employees Locally: Difficult[b]	Metropolitan Firms: Difficulty Retaining Employees Locally: Mean[a]	Metropolitan Firms: Difficulty Retaining Employees Locally: Difficult[b]	Nonmetropolitan Firms: Difficulty Finding Employees Locally: Mean[a]	Nonmetropolitan Firms: Difficulty Finding Employees Locally: Difficult[b]	Nonmetropolitan Firms: Difficulty Retaining Employees Locally: Mean[a]	Nonmetropolitan Firms: Difficulty Retaining Employees Locally: Difficult[b]
Executive, Administrative, or Managerial	3.1[c]	31.6	2.7[c]	17.1	3.6[c]	54.4	3.3[c]	35.8
Professional Specialty (e.g., engineers, scientists, computer programmers, accountants, etc.)	3.2[c]	40.8	2.7[c]	16.7	3.7[c]	55.5	3.4[c]	40.0
Sales Representatives	3.4	52.5	3.0	33.9	3.7	50.0	3.3	37.8
Clerical Workers (e.g., secretaries, typists, stenographers, word processor specialists)	2.4	13.3	2.5	13.7	2.6	13.8	2.5	9.1
Precision Production, Craft, and Repair (e.g., mechanics, repairers, machinists and metal craftsmen, construction craftsmen, etc.)	3.3	42.2	2.7	22.2	3.2	42.1	3.0	26.4
Operators, Fabricators (e.g., machine operators, assemblers, inspectors, truck drivers, material handlers)	2.8	24.6	2.8	26.1	2.8	25.8	2.8	20.4
Laborers	2.5	6.8	2.7	18.1	2.3	12.7	2.4	11.4

[a]Based on a scale from 1 (very easy) to 5 (very difficult).

[b]Percent responding difficult and very difficult.

[c]Metropolitan firms were significantly different from nonmetropolitan firms based on the Tukey test with $\alpha = .05$.

APPENDIX TABLE 5. TRAINING AND EDUCATIONAL ASSISTANCE NEEDS BY FIRM TYPE FOR NORTH DAKOTA MANUFACTURERS, 1991

Subject Area	All Firms	Durable Goods Manufacturers	Nondurable Goods Manufacturers	New Firms	Established Firms: Less than 20 Employees	Established Firms: 20 Employees or More	Agribusiness Firms	High-Tech Firms
	mean scores*							
Operator training	3.36	3.45	3.16	3.33	3.50	3.14	3.21	3.43
Computer-aided design	3.65	3.53	3.87	3.80	3.70	3.41	3.55	3.14
Basic computer skills	3.39	3.46	3.24	3.81[a]	3.41	2.95[a]	3.33	3.60
Computer-aided mfg.	3.78	3.70	3.93	4.00	3.93	3.36	3.65	3.29
Quality control	3.08	3.10	3.00	3.45	3.21	2.65	2.79	3.00
Management training	3.11	3.21	2.92	3.53[a]	3.29[b]	2.56[a,b]	3.03	3.00
Marketing and sales	2.66	2.66	2.67	2.70	2.71	2.53	2.58	2.94
Exporting	3.60	3.48	3.83	2.86[c]	3.79[c]	3.61	2.97[d]	3.77
Quality assurance	3.07	3.15	2.90	2.86	3.30	2.69	2.63[d]	3.42
Financing	3.23	3.27	3.13	2.68	3.33	3.26	2.71[d]	3.62
Labor relations	3.41	3.37	3.46	3.15	3.67	3.11	3.18	3.36

[a]New firms significantly different than established firms with 20 or more employees based on the Tukey test using $\alpha = .05$.

[b]Established firms with less than 20 employees significantly different than established firms with 20 or more employees based on the Tukey test using $\alpha = .05$.

[c]New firms significantly different than established firms with less than 20 employees based on the Tukey test using $\alpha = .05$.

[d]Agribusiness firms significantly different than other firms based on the Tukey test using $\alpha = .05$.

*Based on a scale of 1 (critically important) to 5 (not important).

APPENDIX TABLE 6. TRAINING AND EDUCATIONAL ASSISTANCE NEEDS BY FIRM TYPE FOR NORTH DAKOTA MANUFACTURERS, 1991

Subject Area	All Firms	Metropolitan Firms	Nonmetropolitan Firms
	----------	mean score*	----------
Operator training	3.36	3.38	3.34
Computer-aided design	3.65	3.52	3.77
Basic computer skills	3.39	3.25	3.51
Computer-aided mfg.	3.78	3.62	3.94
Quality control	3.08	3.01	3.12
Management training	3.11	3.18	3.00
Marketing and sales	2.66	2.61	2.71
Exporting	3.60	3.74	3.44
Quality assurance	3.07	3.27	2.84
Financing	3.23	3.29	3.14
Labor relations	3.41	3.24	3.55

*Based on a scale of 1 (critically important) to 5 (not important). None of the subject areas had significant differences based on the Tukey test with $\alpha = .05$.

APPENDIX TABLE 7. MANUFACTURERS' TECHNICAL ASSISTANCE (CONSULTING) NEEDS BY SUBJECT AREA AND FIRM TYPE, 1991

Subject Area	All Firms	Durable Goods Manufacturers	Nondurable Goods Manufacturers	New Firms	Established Firms: Less than 20 Employees	Established Firms: 20 Employees or More	Agribusiness Firms	High-Tech Firms
	mean scores*							
Accounting and records	3.71	3.75	3.61	3.52	3.66	4.05	4.00	3.83
Human resource management	3.69	3.67	3.69	3.96	3.69	3.38	3.67	3.47
Financial analysis/ cost control	3.39	3.45	3.27	3.38	3.43	3.44	3.62	3.44
Computer system	3.32	3.35	3.20	3.52	3.37	3.00	3.13	3.50
Inventory control	3.32	3.39	3.18	3.48	3.43	3.02	3.41	2.89
Plant layout and design	3.66	3.60	3.83	3.81	3.69	3.53	3.71	3.61
Production control	3.37	3.33	3.43	3.56	3.47	2.98	3.50	3.16
Research and development	3.38	3.33	3.54	3.04	3.54	3.15	3.08	3.61
Marketing studies	2.92	2.91	2.97	3.04	2.93	2.88	2.57[d]	3.05
Strategic planning design	3.43	3.48	3.32	3.58	3.46	3.18	3.21	3.56
Process improvement	3.20	3.19	3.22	2.89	3.43[a]	2.80[a]	2.95	2.89
Material handling	3.51	3.48	3.62	3.37	3.70	3.33	3.63	3.33
Industrial waste management	3.75	3.76	3.77	4.04[b]	3.94[a]	3.20[a,b]	3.75	4.06
Prototype testing	3.97	3.91	4.08	3.63	4.12	3.78	3.71	3.79
Product-process development	3.63	3.63	3.62	3.26	3.86	3.35	3.35	3.56
Product and process commercialization	3.78	3.74	3.84	3.56	3.90	3.65	3.64	4.00
Developing international markets	3.47	3.39	3.57	2.63[b,c]	3.63[c]	3.53[b]	2.83[d]	3.58
Government/manufacturing specification	3.68	3.63	3.86	3.33	3.72	3.95	3.48	3.89
Quality assurance	3.00	3.00	2.98	3.07	3.08	2.83	2.98	3.39

[a]Established firms with less than 20 employees significantly different than established firms with 20 or more employees based on the Tukey test using $\alpha = .05$.

[b]New firms significantly different than established firms with 20 or more employees based on the Tukey test using $\alpha = .05$.

[c]New firms significantly different than established firms with less than 20 employees based on the Tukey test using $\alpha = .05$.

[d]Agribusiness firms significantly different than other firms based on the Tukey test using $\alpha = .05$.

*Based on a scale from 1 (critical) to 5 (not important).

APPENDIX TABLE 8. MANUFACTURERS' TECHNICAL ASSISTANCE (CONSULTING) NEEDS BY SUBJECT AREA AND FIRM TYPE, 1991

Subject Area	All Firms	Metropolitan Firms	Nonmetropolitan Firms
	mean score*		
Accounting and records	3.71	3.87	3.54
Human resource management	3.69	3.79	3.57
Financial analysis/ cost control	3.39	3.58[a]	3.20[a]
Computer system	3.32	3.38	3.27
Inventory control	3.32	3.42	3.22
Plant layout and design	3.66	3.70	3.62
Production control	3.37	3.49	3.23
Research and development	3.38	3.50	3.31
Marketing studies	2.92	3.08	2.78
Strategic planning design	3.43	3.47	3.38
Process improvement	3.20	3.22	3.18
Material handling	3.51	3.34	3.68
Industrial waste management	3.75	3.74	3.79
Prototype testing	3.97	3.93	3.99
Product-process development	3.63	3.71	3.57
Product and process commercialization	3.78	3.77	3.80
Developing international markets	3.47	3.71[a]	3.19[a]
Government/manufacturing specification	3.68	3.69	3.68
Quality assurance	3.00	3.15	2.88

[a]Metropolitan firms are significantly different than nonmetropolitan firms based on the Tukey test using $\alpha = .05$.

*Based on a scale from 1 (critical) to 5 (not important).