Impact of Location

Rural manufacturers were more likely than metro manufacturers to go outside their local area to buy materials and make sales. Quality of local labor was the most frequently cited of 21 possible location-related problems among both nonmetro and metro manufacturers. Access to other firms, training, and transportation were other problems most often reported by rural manufacturers. Lack of knowledge and costs, rather than adequate infrastructure, were the biggest barriers to implementing telecommunications technologies by rural manufacturers.

Suppliers and Markets

The increasingly prevalent "lean" approach to manufacturing emphasizes close relationships with suppliers, short production runs, and just-in-time inventory management to reduce costs of holding inventory. A potential disadvantage for rural locations is their relative isolation from other firms. On average, nonmetro manufacturing plants bought only 31 percent of materials, parts, and inputs in their local area (within a 1-hour drive), while metro plants purchased 41 percent of their materials and inputs locally (table 12). The percentage of sales made within the establishment's local area was also slightly higher for metro establishments, again suggesting stronger local connections for metro plants, but the difference was rather small (8 percentage points). However, 48 percent of both nonmetro and metro plants used just-in-time inventory management, and 49 percent of nonmetro plants had a customer that used just-in-time, suggesting that isolation of rural locations may be less important than one might think. The share of shipments exported overseas was only slightly higher (2 percentage points) for metro than for nonmetro plants.

Nonmetro establishments were slightly more likely than metro plants to use outside marketing expertise (table 12). The most common sources of marketing expertise were other branches or locations of multiunit firms (table 13). Industry groups were of secondary importance, and public or university programs were "very important" to 3 percent and "somewhat important" to 19 percent of nonmetro establishments that used outside marketing assistance. Sources of marketing assistance were similar for metro and nonmetro establishments, except that nonmetro establishments placed less importance on local industry groups.[5]

[5]For more analysis of local purchases by food and forest-related value-added manufacturers, see Gale (1998a). Gale (1998d) provides detailed analysis of rural manufactured exports.

Table 12—Supplier and market information for manufacturing establishments

Characteristic	Nonmetro	Metro
	Percent	
Percentage of raw materials, parts and other inputs obtained locally	31*	41*
Major machinery and equipment suppliers custom tailor their products to fit the establishment's needs	57*	53*
Establishments using just-in-time inventory and production system	48	48
Establishments acting as a supplier to other establishments using a just-in-time system	49	48
Destination of 1995 final shipments:		
Within a one hour drive	21*	29*
Elsewhere in the United States	71*	60*
Outside the United States	8*	10*
Establishments using marketing assistance from outside the establishment	42*	37*

* = Significant difference between nonmetro and metro responses at the 0.05 level.

Telecommunications

Communication with customers, suppliers, and headquarters is believed to be an important ingredient to success in manufacturing today, an industry in which quick turnaround times, lean inventories, and rapidly changing markets are common. Nonmetro plants appeared to be somewhat less likely than metro plants to make regular use of computer linkages to other locations and other firms, modems, and the Internet (table 14). Nearly all plants used fax machines. Satellite communications were used by only 8 percent of nonmetro plants and 5 percent of metro plants. Nonmetro establishments were more likely than metro establishments to use satellite communications, but they were less likely to use the other telecommunications technologies.

The most important barrier to telecommunications use was "lack of knowledge," identified as a major problem by 18 percent and as a minor problem by 49 percent of nonmetro respondents (table 15). Many rural America experts argue that inadequacy of telecommunications infrastructure is a key barrier to rural telecommunications use, but nonmetro survey respondents reported that "lack of access to adequate telecommunications infrastructure" was less of a problem than lack of knowledge and cost of equipment or software. In fact, more than half said infrastructure access was not an important problem. Respondents cited the cost of using telecommunications more often than infrastructure access as "somewhat important." Knowledge and costs appeared to be higher barriers to telecommunications use by manufacturing plants than infrastructure.

Nonmetro establishments did place higher importance on infrastructure as a telecommunications barrier than did metro establishments, while cost of equipment and software was cited less frequently by nonmetro establishments.

Nonmetro establishments obtained less assistance and expertise locally than metro establishments, but lack of local assistance seems to be a relatively minor problem for most manufacturers. For more analysis of telecommunications, see Gale (1997).

Table 13—Sources of marketing assistance used by manufacturing establishments

Source of expertise	Nonmetro: Very important	Nonmetro: Somewhat important	Metro: Very important	Metro: Somewhat important
	Percent		*Percent*	
Another location or branch of the firm[1]	68	18	63	19
State or national industry associations	9	43	8	40
Local industry groups	7*	31*	7*	41*
Public or university programs	3	19	3	15

* = Significant difference between nonmetro and metro responses at the 0.05 level.
[1]Applies only to multiunit firms. N=663 nonmetro, 182 metro.
Answered only by establishments reporting use of outside marketing assistance.

Table 14—Use of telecommunications technologies by manufacturing establishments

Type of technology	Nonmetro	Metro
	Percent	
Fax machines	98*	99*
Computer links to other locations in the same company[1]	72*	76*
Modems	64*	74*
Computer links to other companies	27*	31*
Internet	24*	35*
Satellite communications	8*	5*

[1]Applies only to establishments in multiunit firms.
* = Significant difference between nonmetro and metro responses at the 0.05 level.

Problems Associated with Rural Business Locations

There have been many studies of the factors affecting business location decisions, and many disadvantages of rural locations have been identified: labor problems, lack of infrastructure, lack of access to other businesses and services, and, in some areas, tax rates and environmental regulations that discourage business activity. When asked about the importance of 21 possible location-related problems that limit their ability to compete, nonmetro manufacturers cited quality of local labor most frequently (table 16). More than a third said labor quality was a major problem, and 41 percent said it was a minor problem. Quality of local labor (along with State and local tax rates) was also the problem most frequently cited by metro respondents. Most nonmetro respondents also identified State and local tax rates and environmental regulations as either major or minor problems. Tax rates were a major concern for more metro than nonmetro respondents. Another important rural problem was the "attractiveness of area to managers and professionals," which was cited more often by nonmetro than metro respondents. Nonmetro

Table 15—Problems limiting use of telecommunications by manufacturing establishments

Limiting factor	Nonmetro Major problem	Nonmetro Minor problem	Metro Major problem	Metro Minor problem
	Percent			
Lack of knowledge	18	49	21	48
Cost of equipment and software	16*	44*	18*	48*
Lack of access to adequate telecommunications infrastructure	11*	34*	6*	29*
Cost of using telecommunications	8	41	7	45

"Not a problem" responses are not shown. N=2,703 nonmetro, 1,040 metro.
* = Significant difference between nonmetro and metro responses at the 0.05 level.
Source: ERS Rural Manufacturing Survey, 1996.

respondents were more likely to report problems with access to other firms, access to training programs, and transportation infrastructure, but these tended to be minor problems in comparison with labor quality, taxes, and environmental regulations. Nonmetro plants were less likely than metro plants to report problems with cost-related factors, including tax rates, labor costs, and land and facilities costs. Metro and nonmetro respondents, however, reported labor quality and environmental regulations as problems with equal frequency. Also, similar percentages of metro and nonmetro respondents rated access to financial institutions and local labor relations as relatively minor problems.[6]

[6]McGranahan (1998a, 1998b) provides more in-depth analysis of local competitiveness problems.

Table 16—Factors related to the establishment's location that limit its ability to compete[1]

Factor	Nonmetro Major problem	Nonmetro Minor problem	Metro Major problem	Metro Minor problem
		Percent		
Quality of local labor	34	41	33	39
State and local tax rates	23*	42*	31*	42*
Environmental regulations	22	36	23	35
Attractiveness of area to managers and professionals	15*	33*	8*	23*
Quality of primary and secondary schools	10*	26*	8*	24*
Access to training courses	9*	36*	6*	23*
Local cost of labor	7*	29*	12*	34*
Access to airport facilities and services	9*	35*	2*	14*
Cost of facilities and land	8*	30*	18*	36*
Water and sewer systems	8*	23*	6*	19*
Access to material suppliers	7*	33*	3*	25*
Access to Interstates and major highways	7*	20*	3*	12*
Access to major customers	6*	31*	6*	25*
Local roads and bridges	6*	25*	4*	17*
Railroad access	6*	14*	2*	8*
Access to machinery and equipment suppliers	5*	29*	2*	20*
Access to information about markets	5*	29*	6*	25*
Access to financial institutions	4	20	5	17
Prevailing local labor-management relations	4	23	3	21
Police and fire protection	2*	16*	2*	9*
Access to legal and other business services	1*	19*	1*	11*

[1] "Not a problem" responses are not shown. N=2,715 nonmetro, 1,040 metro.
* = Significant difference between nonmetro and metro responses at the 0.05 level.
Source: ERS Rural Manufacturing Survey, 1996.