

Assets and Constraints Relating to the Location Decisions of Small Manufacturing Businesses in Vermont

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Paper presented in the American Agricultural Economics Association Annual Meeting , Nashville,
Tennessee, August 8-11, 1999

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Abstract

The goal of this research is to identify the assets and constraints that exist specific to small business manufacturers in Vermont. To satisfy this goal, the study examines factors that influence location decisions as well as identifying what obstacles business owners have experienced. The idea for this project originated in response to the troubled economic condition of several Vermont communities, where unemployment rates are unusually high and income unusually low. Understanding what obstacles business faces might enable future ideas on how to solve these problems. Once assets are identified, they can be capitalized on, leading to more successful business operations.

Preliminary data was collected through a telephone interview survey with Vermont small business owners. The data was analyzed in order to discover incentives and obstacles that existed for Vermont manufacturers as a whole, as well as in specific industries.

Results from the survey suggested that Vermont's largest asset is that it offers an excellent quality of life. However, results alluded to several difficulties that owners are faced with, particularly complying with certain rules and regulations, obtaining adequate finances, a low-skilled workforce, and a weak communication network for small businesses.

Introduction

While Vermont has experienced a decline in its statewide unemployment rate since the national economy began rebounding from the recession in the late 1980s, there is still wide discrepancy in income levels and unemployment rates among Vermont communities. For example, in 1996, the national unemployment rate was 5.4% (Handbook of U. S. Labor Statistics, 1998) and Chittenden County saw an unemployment rate of 3.0% (Vermont Department of Employment and Training, 1998). However, three counties in Vermont, Orleans, Essex and Grand Isle, saw unemployment rates of 9.2%, 8.4% and 7.0% respectively in 1996. Current Vermont Department of Employment and Training figures show the same discrepancies within smaller community regions as well. For example, Burlington (the largest city in the state) showed an unemployment rate of 2.7% in February 1999, while smaller, more rural towns such as Newport and Enosburg (in the Northeast Kingdom) showed unemployment rates of 10.3% and 9.2% respectively.

Income levels also show discrepancies from community to community in Vermont. In 1990, Vermont's per capita income was \$17,721 while the U. S. level was \$19,188, with the two counties with the lowest income figures, Essex and Orleans counties, showing per capita incomes of \$11,945 and \$13,974 respectively. In 1996, the U. S. per capita income level rose to \$24,436 and Vermont's per capita income level was \$22,545. However, the two counties that ranked as the lowest in 1990, Essex and Orleans, continue to rank at the bottom of the per capita income level list with per capita incomes of \$14,641 and \$17,693 respectively (VT Department of Employment and Training, 1998).

To add to the problem of low wages, certain communities are experiencing a shift away from jobs in the manufacturing sector to retail trade and service-based industries. This movement

of employment from one sector to another has been a nationwide trend (McNamara and Kriesel, 1993). Between 1986 and 1995, the percentage of the Vermont manufacturing workforce has decreased 4.4% totally over the 10-year period, with decreases as high as 12.3% in Addison County and 11.4% in Bennington County (Vermont County Business Patterns, 1986 and 1995). Although manufacturing accounted for 48,500 jobs in Vermont as of January, 1999, services and retail trade accounted for 140,400 jobs, more than double the number of jobs in manufacturing (VT Department of Employment and Training, 1999). This trend raises concern because according to the Vermont Department of Employment and Training, manufacturing jobs are generally associated with higher wage rates than other sectors.

Much of the existing research on business location incentives has focused on larger-scale businesses, McNamara, Kriesel and Rainey (1995) found that for large businesses, the dominant factors involved when choosing a location are labor costs and access to interstate highways. Small businesses, however, having different levels of production and markets, will make decisions on locations differently from larger scale businesses. Understanding the differences between larger scale businesses and small firms in location decision behavior becomes a critical component for communities given that in 1996, 94% of business establishments and 75% of manufacturing establishments in Vermont had less than twenty employees. This reflects the size pertinent to Vermont's rural communities. Furthermore, approximately 90% of U.S. businesses are classified as small businesses, accounting for more than 20% of the U.S. workforce and 50% of net new job growth (Kuratko and Hodgets, 1998). As the employment growth continues to be created by small businesses, it becomes increasingly important to understand the conditions surrounding their decisions to locate, relocate and possibly to expand. Past studies and research have identified that in rural areas, one of the main factors that drives the decision to establish a business in a particular

location is the “reasonable distance from one’s home” (Keeble and Tyler, 1995). Other incentives that influence decisions to locate in an area include a skilled local workforce, a pro-business community, and central location to markets (Wylie and Nelson, 1994). Yet another study of small firm formations in rural Britain found that “desire for a rural surrounding” and “quality of family life” were given as important location decision factors (Townroe and Mallalieu, 1993). North and Smallborne (1996) concluded in their study that the major obstacles that various British firms faced in the 1980's were related to demand, labor, finance, space, and site. To further examine the labor constraint, researchers have found that obtaining or maintaining qualified personnel is often a problem. Employers fail to improve this situation by enrolling their employees in training or skill enhancement programs because often times training centers are too far away (North and Smallborne, 1996).

The main objective of this study is to identify what assets as well as constraints that small business manufacturers in Vermont are facing. Such information can be used to create a more economically sustainable Vermont community structure and enable Vermont communities to become more successful in attaining and retaining small businesses. To achieve the goal of identifying the assets and constraints of doing business in Vermont, it is necessary to obtain information on: (1) location and relocation incentives of Vermont small business owners, (2) firm employment structure and skill requirements, (3) markets that businesses sell to, and (4) small business owners’ perceptions of and experiences regarding business environment and quality of life issues.

A description of the methodology associated with phone survey design is presented in the next section. The third section describes the data collected for this study. Results from this study are presented in the fourth section. Finally, the last section provides some concluding remarks

and discussions of future extensions based on this study.

Survey Design

The survey method selected for this study was a telephone-administered survey. A telephone survey has several advantages compared to other approaches such as relatively lower cost and higher response rates considering the sample population. Respondents to the survey were chosen from company owners and presidents, as most of the questions asked were location and operational management-related information. The questionnaire was constructed with open-ended questions. This format was decided after pre-testing of the survey twice with a focus group consisting of business owners and community leaders. The survey sample was obtained from Vermont Business Magazine's Directory. Included in the information from the database was business telephone number and name of the contact person. This particular database was chosen because it consists of 87.5% of the state registered manufacturing business population, lacking mainly the very small businesses whose sales are not large enough for them to register with a business directory.

Data Collection

The data were collected during March 1998 by a team of survey administrators using the telephone interview survey technique. Before the survey began, the team went through a training session to become familiar with the subject in question, learn how each question was designed to be asked to ensure consistency among the interpretations of the questions, and how to address any questions that interviewers might encounter during the interview. The surveys were administered during normal business hours from the University of Vermont in Burlington, Vermont. The original sample population consisted of 555 manufacturing firms from all regions of Vermont which employ 100 people or less. Before interviewing began, the sample population

was sorted by SIC codes in ascending order, then by phone number to create a stratified random ordering.

Results

For analysis, the responding businesses were grouped into ten categories based on the four digit SIC code of the business (see). The ten industry categories are: (1) Food and Kindred Products, (2) Textiles, Apparel and Accessories, (3) Wood and Lumber, (4) Furniture, (5) Publishing and Printing, (6) Tools, Machinery and Equipment, (7) Electronics and Computers, (8) Instruments, (9) Signs and Advertising, (10) Others. The total number of respondents was 191 (n=191).

Descriptive statistics were used to analyze the data from the survey. Thirty percent of all businesses surveyed had relocated at some point in time. The largest percentages of relocation occurred in the Instruments industries (50%) and the Wood and Lumber industries (47.4%). The three categories Signs and Advertising, Textiles, Apparel and Accessories and Other all had relocation percentages between 30 and 34%. Food and Kindred Products, Furniture, Publishing and Printing and Tools, Machinery and Equipment show relocation percentages between 20% and 27%. Electronics and Computers had the lowest rate of relocation with 12.5%. 23% of all the businesses that reported movement moved to Vermont from somewhere out-of-state. Most of these businesses moved here from the Northeast, most prevalently from Massachusetts. Two businesses reported movement out of Vermont, one to New Hampshire and one to Canada. The majority of businesses that moved within Vermont did not relocate very far away from their original locations, often moving within the same town. It appears that the many business owners and presidents learned of their current site simply because they were local residents and familiar with the area. The second most common source was word-of-mouth followed by 'existing

structure' as a source of site information.

Markets Information and Employment Information

Markets for the businesses appear to be mostly in the United States. A majority of Vermont manufacturers distribute their products around New York and New England, with Local and Other US categories seeing almost as large a share. The Other Foreign market shows a larger proportion of businesses than does the Canadian market. According to the respondents, finding skilled labor/technicians was the most common difficulty, particularly for the Food and Kindred Products, Publishing and Printing and Other industries. General Labor/Technicians was the second hardest position to fill, most prevalently for the Food and Kindred Products and Tools, Machinery and Equipment industries. By industry category, Furniture, Signs and Advertising and Instruments did not suggest that they had trouble in hiring for any positions within their firms. Tools, Machinery and Equipment, Food and Kindred Products and Publishing and Printing industries had the most trouble finding employees. Tools, Machinery and Equipment cited Machine Operators and Engineers as being the hardest to fill, while for Publishing and Printing it is Sales. By job category, retailers, clerical, drivers, and computer programmers were not positions that respondents considered difficult to find employees for.

Business Images and Experiences

The top ten images that businesses have about business in Vermont. The most cited image is 'small business'. The next six images are very close in response frequency (from 17-12). Those images are: Quality/Work Ethic, Clean Business, High Tax Burdens, Politics/ Government Regulations, Difficult and Not Business Friendly. Four (High Tax Burdens, Politics/ Government Regulations, Difficult and Not Business Friendly) out of the top ten are negative, while six are positive images. The Tools, Machinery and Equipment, Wood and Lumber and Signs and

Advertising industries had the highest incidence of negative responses, 70%, 58% and 50% respectively. The Electronics and Computers and Instruments industries had no incidences of negative responses.

Several quality of life images emerged from the data. Excellent/high quality was the dominant perception of the respondents regarding Vermont quality of life particularly for the Food and Kindred Products, Wood and Lumber and Publishing and Printing and Other industries. All the top ten images are positive ones; the next most prevalent five images are: Clean Air/Land, Peaceful/ Quiet, Relaxed, Safe and Rural.

The most commonly faced obstacle by small business manufacturers in Vermont is Financing. The next four most prevalent obstacles were Adequate Cash Flow, State Regulations, Staffing and High Taxes. Ten businesses responded 'None' to the question about obstacles, as many responses as Bureaucracy, Customers and Skilled Labor.

Multivariate Analysis

Regarding choice of location, respondents list seventeen different factors that influenced their site decisions. The seventeen factors are Cheap Land, Markets, Environment, Schools, Health Care, Local Tax Laws, State Tax Laws, Zoning Laws, Local Residents, Location/Customer Accessibility, Owned Property, Work From Home, Existing Facilities, Space, Personal, Community Issues, and Other. Most of the respondents chose Local Resident and Environment as the most influential factors over all. The next most influential factors chosen by the respondents include Location/Customer Accessibility, Markets and Owned Property. The survey results suggested that no single factor was chosen by more than 30% of the respondents. Yet it is not objective to tell which factor is more influential relative to others without any statistical references. A multivariate analysis was applied to test if any factor or factors were

$$V_{ii} = b \times p \times q, \text{ where } n = \text{number of businesses surveyed}$$

statistically significantly preferred over other factors. In another word, the multivariate analysis was used to test if businesses identified any factor or factors to be more influential to their location decision comparing to others. The *Null Hypothesis* is defined as $P_1 = P_2 = \dots = P_k$, where $P_i, i=1, \dots, k$, represents the probability of each factor to be chosen, and k equals the number of location factors yielded in the survey ($k=12$). The *Null Hypothesis* states that each location factor has the same probability to be chosen by businesses; i.e. no single factor or few factors have higher chances to be chosen by Vermont manufacturing businesses. The *Alternative Hypothesis* is: $P_i \neq P_j$ (some $i \neq j$) which can be interpreted that one factor or few factors have different probabilities to be chosen by businesses; i.e. some factors are preferred to other factors among manufacturing businesses. The test statistics is defined as

$$[C * Y'] * C * V * C')^{-1} * [C * Y'], \text{ where}$$

$$C = \begin{matrix} 1 & -1 & 0 & \dots & 0 \\ 0 & 1 & -1 & 0 & \dots & 0 \\ 0 & 0 & 1 & -1 & 0 & \dots & 0 \\ 0 & \dots & 1 & -1 & 0 & \dots & 0 \\ 0 & \dots & 1 & -1 & \dots & 0 \\ 0 & \dots & 1 & -1 & \dots & 0 \\ \cdot & & & & & \\ \cdot & & & & & \\ 0 & \dots & 1 & -1 & & & 11 \times 12 \end{matrix}$$

A diagonal matrix (V) is defined as the following:

$$p = \text{sum of [responses / (n \times \text{number of factors})]} \\ q = 1 - p$$

The decision rules are: *if the test statistic is greater than the critical value with a significance level at 10%, then the null hypothesis can be rejected; otherwise there is no evidence to reject null hypothesis.* More details about the multivariate testing procedures can be found in Johnson and Wichern (1988). After calculation the test statistic is 243.11 which is

greater than the critical value 76.15. Therefore, some factors indeed have higher probabilities to be identified by Vermont manufacturing businesses. From the survey results, we may conclude that Local Residents and Environment are more influential to the location decision relative to other factors.

Discussion

This study has identified a variety of assets and constraints for Vermont manufacturing businesses. It appeared that Vermont's greatest strength lies in the excellent quality of life that it offers employers and employees. The data from the survey also suggested that small manufacturers are able to serve markets from local to national to international levels. Vermont small business owners do not seem to be particularly concerned with distribution infrastructure such as proximity to state and interstate highways, often because sampled respondents must serve as their own retail centers to maximize revenues.

In general, business owners conveyed that it is difficult to do business in Vermont due to numerous rules and regulations, and the depressed economical conditions in many communities. Some regulations can be costly to comply with, such as Act 250 (the State's Environmental and Development Regulation). When residents of communities are struggling financially, they do not have the capability to support local enterprises, causing a strain on a firm's revenues from the local market. Other constraints small businesses in Vermont face include a lack of skilled, quality workforce and finances for operations. Owners are able to find people willing to work, but all too often they are under-qualified for the position. In addition, some Vermont communities appear to lack a formal business relocation network, relying on word-of-mouth communications. With a more accessible information resource base, potential instate as well as out-of-state entrepreneurs could learn about potential business locations and community assets that in turn could enhance

community attractiveness. Having a strong and well-marketed, centralized Vermont resource providing business information might help small business manufacturers function more efficiently.

With out-of-state relocation occurring primarily in the Wood and Lumber and Instruments industries, it seems appropriate that communities interested in attracting new businesses might target these types of firms. Community marketing should focus on the assets that already exist in the community that would benefit specific industries. Future decisions on improving town infrastructure should be guided by the needs of desirable small businesses. In response to the concerns of manufacturers regarding compliance with rules and regulations, communities might consider reviewing them to provide business manufacturers a more business-friendly environment.

Healthy communities need small businesses and small businesses need healthy communities to survive and grow. A study by the Small Business Foundation of America (Chun, 1996) found that “the creation of small businesses is key to a healthy local economy.” This study offered several recommendations for communities in order to foster a business-friendly environment, most of them concerned with removing barriers, such as excessive regulations and barriers to financing.

Another study by Lyson and Tolbert (1996) found that nonmetropolitan areas with small businesses have lower poverty rates than those with large businesses. This study reveals some of the constraints that small business manufacturers feel they face in Vermont, as well as what small business manufacturers see as assets.

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