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TRANSPORTATION AND RURAL ECONOMIC DEVELOPMENT: A COMPARATIVE ANALYSIS OF IMPORTANT LOCATION FACTORS

by

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16. Abstract

Policy tools used for economic development have passed through three phases. The current phase focuses on providing a family of services to firms. In this study, a mail survey was sent to economic development specialists in ND, SD, and Neb. to measure their perceptions regarding different location factors. A ranked order of important location factors was calculated. Perceptions of economic development specialists and manufacturers were compared using a Spearman's rho correlation coefficient. A comparative analysis was also completed based on community sizes above and below 5,000 people.

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Preface

Policy tools used for economic development have passed through three phases. The current phase focuses on providing a family of services to firms. In this study, a mail survey was sent to economic development specialists in North Dakota, South Dakota, and Nebraska to measure their perceptions regarding different location factors. A ranked order of important location factors was calculated. Perceptions of economic development specialists and manufacturers were compared using a Spearman's rho correlation coefficient. A comparative analysis was also completed based on community sizes above and below 5,000 people.

Results indicate that the correlation of perceptions between economic development specialists and manufacturers is statistically significant. However, rankings of some specific location factors differ greatly. This divergence in ranks suggests that economic development specialists may not be aware of factors that are important to manufacturers. This lack of awareness may cause important services to be excluded from the family of services.

The most effective information delivery system for economic development specialists was also studied. Examination of the data processing capabilities revealed that many economic development specialists do not have a computer. Thus, a newsletter would be the best information delivery system. The newsletter may be supplemented with floppy disks for those with computer capabilities.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

by

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Since the 1930s, the policy models used for state economic development have evolved through three phases (Horowitz and Watrus). From the late 1930s until the late 1970s, the focus for state economic development policy was to recruit new businesses. "Home-grown" economic development was the emphasis for the phase from the late 1970s into the 1980s. Since the late 1980s, the focus has been on providing a "family of services."

During the first phase, states recruited existing companies from other states. In most cases, states "chased smokestacks," focusing their recruitment efforts on large firms or plants. Strategies commonly adopted for recruitment included marketing high points of the state (i.e.; low labor and land costs) and putting together inducement packages (low-cost financing). The benefits of inducement packages were hindered by bidding wars among states for the limited number of locating firms. Bidding wars caused some states to offer incentives which outweighed the benefits that would be received.

Bidding wars continued into the 1980s. For example, many states submitted bids as General Motors searched for a location to build their Saturn plant. Tennessee won the

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bid and the first cars rolled off the Saturn plant in late 1990. The next few years will reveal if benefits received exceed costs incurred for Tennessee.

Economic turbulence in the 1970s and the severe recession in the early 1980s forced many states to broaden their economic development efforts (Fosler). Inadequacies in business recruitment programs gradually moved states into the second phase of economic development. The second phase focused on home-grown economic development in addition to recruiting businesses. With emphasis on strengthening local businesses and promoting new business growth within the state, home-grown programs are more effective than relying only upon industrial recruitment (Horowitz and Watrus). Several small towns are learning to concentrate on making the best of available strengths, rather than attempting to be something they are not (Wall).

Home grown programs, however, are limited by four main factors. These are lack of scale, fragmentation and insensitivity to client needs, lack of integration between social and economic policy, and lack of accountability. Essentially, these are four different facets of the same problem (Horowitz and Watrus).

First, lack of scale occurs when public sector delivery mechanisms are used rather than efficient and effective private mechanisms. In addition, few state or community businesses are able to compete at the global level. Many businesses have higher prioritized problems than developing a global marketing strategy.

Second, fragmentation and insensitivity to client needs is evident as many communities provide uncoordinated support in areas such as financing or training. Too many assistance programs focus on what they can offer, rather than the needs of a client.

Third, a lack of integration between social and economic policy is a problem in chronically distressed communities. Social issues such as health, poverty, and education

must be considered when economic issues are addressed for a community to enjoy revitalization.

Fourth, a lack of accountability is due to the emphasis, placed on innovation, rather than evaluation, in the implementing stage of the program. As a result, there are few indicators to measure the success of the programs. Assessing indicators such as job creation or investment stimulus are possible ways to evaluate the marginal contribution of a program (Horowitz and Watrus).

Given the different aspects of the fundamental problem, current economic development efforts are addressed as a "family of services" rather than as individual issues. This phase has five components for a state's economic development. First, there is an increased focus on assisting small and medium-sized businesses utilize state offered services. Second, greater emphasis is placed on addressing regional issues by focusing on specific needs of particular industries. Third, the use of the private sector to deliver services is encouraged because private-public mixtures can react quickly to business needs. Fourth, an emphasis on coordinated and intensive services to firms "helps to meet the full needs of the client in a timely fashion" (Horowitz and Watrus). Finally, an increased orientation to group services "helps firms learn from each other, and develop stronger industry relations and linkages" (Horowitz and Watrus).

Michigan and Washington are excellent examples of states combining several of these factors. The Michigan Modernizing Services was established by the state to provide assistance to firms with fewer than 500 employees. The assistance provided includes technology assessment, work force training, market analysis, labor-management relations, and economic research for manufacturing businesses (Horowitz and Watrus). Such

services require private resources including human, technological, financial, and infrastructure which bring additional development to a community.

In Washington, many economic development policies are employed as a family of services. For example, they have marketplace programs connecting local purchasers with local suppliers.

> Purchasers benefit from savings on products and services, reduced order lag time, reduced shipping costs, savings on inventory and warehousing, and reduced communication and travel costs. Suppliers benefit from new sales, new markets, the manufacture of new products or the provision of new services, and the formation of new companies, partnerships or joint ventures. Furthermore, the community benefits from the jobs retained or created, new investment opportunities, expanded local markets, diversified local products and their export, and maximum use of local capital (Horowitz and Watrus).

Family of service programs should be initiated from the first stage of product development through the final stage of product delivery because of complex interdependencies. Entrepreneurial skills are an important factor in product development. Available resources, especially financial, may provide incentives for entrepreneurial skills.

Entrepreneurial skills are important to the growth of a small community. These skills are often enhanced through the use of networks. A major disadvantage to small communities is the absence of other similar or complementary businesses. Some argue it is not transportation cost that hinders growth in a small community, but rather the absence of networking (Horowitz and Watrus). Networking is important for innovation since ideas from peers, customers, and suppliers help improve business (Sommers 1989b). Flexible manufacturing networks can help maintain the vitality of small businesses. Linking small businesses together could be a cost effective method to help each accomplish commonly needed tasks. These tasks might include marketing, research and

development, employee training, or production of goods and services (Sommers 1989a). While these businesses maintain freedom and flexibility, they also "enjoy the benefits of agglomeration economies by pooling resources, facilities, and services" (Sommers 1989a).

At the other end of the spectrum is the delivery of products. There has been some uncertainty if transportation/logistics should be considered as a factor within the family of services. Transportation is an important issue as it relates to factors such as congestion problems, infrastructure requirements, and agglomeration.

Debates have centered around the relationship between transportation and "regionalization" of industry (Kraft, Meyer, and Valette). Some economists argue that transportation does little for shaping regions (Chinitz). In fact, they see transportation as a result rather than a cause of economic change because transportation may be adapted to the geography and growth patterns. A main argument is that demand for transportation is a derived demand (Kraft, Meyer, and Valette).

Other economists disagree, believing that transportation has locational effects and can generate its own demand. Wherever it may start, a chain of reactions between transportation and development follow (Wein). The extension of transportation networks may explain some of the improved locational trends in industrialized countries. Good national network connections are helpful to draw industries to a specific region, but are not the only factors considered.

One dilemma for businesses is whether to locate in rural or urban areas. Two conflicting factors influencing this decision are higher costs associated with congestion and the cost savings associated with agglomeration present in urban areas. Some firms are moving into smaller urban and rural areas to avoid congestion problems. This trend is occurring over the West, according to the San Francisco Federal Reserve Bank (Dean et

al.). Two examples of this trend include Seafirst moving a credit card division from Seattle to Spokane and Boeing announcing plans to locate a small plant in the Spokane area. Smaller communities will not be able to participate in the trend without sufficient plant facilities or highway, rail, or air networks. Therefore, the physical infrastructure is an important factor.

Conversely, economies realized through agglomeration represent an advantage in urban location. Agglomeration "is a net advantage gained by a common location with other firms" (Coyle and Bardi). Locations often center around skilled labor, marketing outlets, and proximity to auxiliary industries. Benefits of agglomeration cannot be attributed to one factor but rather a combination of scale, localization, and urbanization (Kraft, Meyer, and Valette).

RESEARCH PROBLEM

States' assistance to economic development has passed through different phases. "Family of services" is the current phase. It is a coordinated approach to combine all aspects involved in economic development. One uncertain aspect is the extent that transportation should be included in the family of services. The uncertainty stems from four sources.

First, the relationship between transportation and economic development is not well understood. The Canadians have been researching this issue for over twenty years and still have not reached a conclusion.[2] Transportation theory is limited in explaining

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[2]See *Transportation and Regional Development: Proceedings of a Conference.* ed. E.W. Tyrchniewicz and Om P. Tangri, Center for Transportation Studies, University of Manitoba, 1970; and *The Role of Transport in Manitoba's Economic Future: Proceedings of a Conference*, ed. E. W. Tyrchniewicz, University of Manitoba Transport Institute, 1988.

regional development because of an oversimplification of assumptions and the irrelevance of problems it is intended to solve (Kraft, Meyer, and Valette).

The second problem is the general lack of understanding by state and local economic development officials of the transportation service and pricing alternatives available. As a result of transportation deregulation in 1980, transport pricing alternatives are more flexible, with discounted rates available in many movements. All economic development specialists should be made aware of this and other changes.

Third, corporate transportation management may have a misconception that rural areas are lacking in transportation alternatives. Others may be unaware that rate discounts are available on outbound truck movements from rural areas. This lack of information may cause companies to overlook North Dakota or other rural areas during the location screening stage. As a result, fewer plants will locate in the rural areas, hindering economic development.

A shortfall of transportation information is the final problem. Initial interviews with state and local economic development specialists revealed they are uncertain about what transportation information to provide (Gray, and Davis). Without the correct transportation information, it is difficult to promote rural regions for plant location. Transportation is often a major cost consideration, and information must be readily available. Shortfalls in transportation information may stymie growth of rural economies. Rural economies may not be promoted by corporate transportation managers because they lack important information about transportation costs and alternatives.

OBJECTIVES OF STUDY

The general purpose of this study is to develop a better understanding of the relationship between transportation and economic development. The specific objectives of the study are:

1. Gather information about the perceptions of economic development specialists regarding important location factors, including transportation, used to attract firms.
2. Determine the location information needs, including transportation, of manufacturing companies that have located in rural regions.
3. Use the information gathered above to make a comparison between the perceptions of economic development specialists and manufacturers about important location factors.
4. Determine the most effective information delivery system to keep economic development specialists informed about important location factors, including transportation.

RESEARCH METHODS

Methods used to develop an understanding of the relationship between economic development and transportation included a literature review, an attitudinal survey, and a statistical analysis.

Many different subject areas have contributed to the literature. The objective of the literature review was to provide an overview of the principal disciplines relating transportation and economic development. The relationship of the rural economy and transportation was reviewed. In addition, insight into firm decision making was gained by a review of location theory literature.

The attitudinal survey was undertaken to map the perspectives of manufacturers and developers. This will aid in understanding each group's behaviors and in identifying key issues in economic development.

Questionnaires were mailed to North Dakota, South Dakota, and Nebraska economic development specialists. For the comparative analysis, data from the Leistritz and Ekstrom (1989) study were used to represent manufacturers views. The data representing manufacturer's view points was collected from the same states.

The methods used for analysis purposes consisted of a t-test to identify differences in attitudes between economic development specialists and manufacturers. Location factors were ranked on the basis of mean values generated from respondents views. These rankings were compared to the rankings of the same location factors by manufacturers. In addition to specific location rankings, an overall ranking of nine main location factors was constructed. A Spearman's rho correlation coefficient was used to detect correlation between the rankings of the main factors between groups. These groups included economic development specialists, locating manufacturers, and expanding manufacturers. A Spearman's rho correlation coefficient was also calculated between groups, based on community size.

In addition, the chi-square test was used on the cross tabulation of economic development specialists' data processing capabilities and demographics. This method was used to determine the most efficient way to transfer information to economic development specialists.

REPORT ORGANIZATION

The remainder of this report is divided into four parts. Theory will be examined in Chapter 2. In Chapter 3, the survey and methods used to examine the perceptions of

economic development specialists and manufacturers will be mapped out. The method used to determine the most efficient information delivery system will also be addressed. The empirical results of the location factors are presented in Chapter 4. The results from the data processing capabilities analysis are presented in Chapter 5. Finally, the summary, conclusions, study limitations, and the need for further study are presented in Chapter 6.

CHAPTER 2

REVIEW OF LITERATURE

For over twenty years, researchers have been studying the relationship between transportation and economic development. They still do not clearly understand this relationship. Considering the relationship from the firm level may add a new dimension. Issues involved can be put in context by considering the literature from two specific areas. First, a literature review of the rural economy and transportation is presented. While this literature provides a general perspective on the issues involved, it provides little guidance for firm or community decision-making. Thus, to obtain greater insights into firm-level decision-making, location theory is also reviewed.

THE RURAL ECONOMY AND TRANSPORTATION

Rural communities have experienced much change since the 1950s as a result of exogenous and endogenous forces. Exogenous factors, including social and economic trends, are the emphasis of this section. Endogenous factors affecting the rural economy are not as well understood as exogenous factors. As changes in the rural economy are examined in this section, important transportation aspects will also be considered.

Deaton and Weber (1988) explained three exogenous factors and cited four different social and economic trends that have impacted the rural economy. For purposes of this review, Deaton and Weber's explanation of exogenous factors and social and economic trends will be combined and presented as exogenous factors.

First, the technological change that has occurred since the 1950s has displaced many farmers (Deaton and Weber). The farm population decreased nearly 80 percent,

falling from 23,048,000 in 1950 to 4,951,000 in 1988[3] (U.S. Department of Commerce, Bureau of the Census). The scientific and technological revolution in agricultural greatly increased capacity for food production. The increased technology which led to greater increases in supply also put downward pressure on farm prices (Kohls and Uhl). Farmers reacted by adopting output-increasing and cost-reducing technologies that led to increased production. "This was called the agricultural treadmill because farmers had to run fast just to stay in one place" (Kohls and Uhl). As technology improved in the agricultural sector, less labor was required to more efficiently utilize land thereby displacing farmers. Technological progress continues to make the agricultural economy more efficient, and the farm population continues to diminish.

Farmers today have access to larger trucks because of technology. However, Zink (1986) indicated "the growth in size of trucks outstripped the road system's capability to accommodate the larger vehicles." Larger vehicles are important for moving grain between subterminals. Since 1981, elevators in the Upper Great Plains have formed cooperative systems that are centrally located and serve as grain subterminals. Independent elevators then serve as a satellite to the subterminals. This has changed grain flows and utilization of highways (Tolliver). The amount of grain moved between North Dakota elevators increased nearly 50 percent from the 1984-85 crop year to the 1986-87 crop year (Dooley). These changes have increased rail traffic and truck traffic on state, county, and local roads. Many roads handling the heavy loads were not designed for such capacities, and as a result may be deteriorating (Dooley).

Second, the balanced growth period from 1960 to 1972 was a time when domestic and international policy action was taken. Internationally, the Kennedy Round of GATT

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[3]Based on 1974 farm population definition.

negotiations worked to reduce trade barriers. Domestically, programs were set up to address "problems of poverty, malnutrition, and regional growth" (Deaton and Weber). In addition, manufacturing became more decentralized during this era. Lower labor wages in rural areas, fueled by increases in women and minorities entering the labor force, started this decentralization (Deaton and Weber).

Third, new internationalism began in 1972 and continues to the present. The Russian Wheat Deal of 1972 and the OPEC embargo of 1973 are examples of the international forces that impacted rural economies. Many rural regions of the United States continue to face stiff competition from abroad in agriculture and manufacturing. As rural regions have a narrower economic base than most urban areas, this increased foreign competition has had an extremely detrimental impact on several rural regions.

Initialization of the Canadian-United States free trade agreement (CUSFTA) in 1989 illustrates the broadening of internationalization as trade barriers are diminished. Although the CUSFTA does not include transport service industries presently, this could change by 2000 (Heads). The CUSFTA has modified the east-west trade flow to include a north-south trade flow. The north-south flow may continue to increase as the United States, Canada, and Mexico work on a free trade agreement (Baker, Weiner, and Borrus). Even a cursory look at a rail or highway map reveals that North American transportation infrastructure is not well developed for north-south flows. Internationalization is expected to continue into the next century.

The next group of exogenous factors were recognized by Deaton and Weber as social and economic trends shaping the rural economic environment. These include changing demographic structure, changing economic structure, decentralization of government, and deregulation of key economic sectors (Deaton and Weber).

First, a changing demographic structure has affected rural communities. Changes in geographic population dispersion, increases in single-parent and single-person households, and increases in female labor-force participation have occurred. Changes in employment and living environment preferences reshape rural society; some communities prosper while others falter (Deaton and Weber). For decades, migration to the South and West has continued (Table 2.1).

TABLE 2.1. U.S. Resident Population in Millions by Regions, Various Years

	Year		
Region	1970	1988	2000[a]
United States	203.3	245.8	267.7
Northeast	49.1	50.6	51.8
Midwest	56.6	59.9	59.6
South	62.8	84.7	96.9
West	34.8	50.7	59.4

[a] Estimated

SOURCE: U.S. Department of Commerce, Bureau of the Census. *Statistical Abstract of the United States 1990.* January 1990.

In 1970, the Northeast accounted for 24 percent of U.S. resident population. By 1988, the Northeast only accounted for 20 percent of U.S. population. During this same time frame, the South and West accounted for a larger portion of the growing population. The future does not look promising for the Northeast, as projections for its share of U.S. population fall to 19 percent for the year 2000.

The demographic shifts have implications for both the rural areas and larger cities. As rural areas lose population, demand for road service does not decrease proportionately (Dooley). Although demand for road service is lower, it still exists due to needed access to homesteads and farms. However, fewer people contribute to the financial base supporting the road systems. This out-migration from rural areas also causes problems in larger cities. Larger cities experience difficulties in planning for orderly growth and must prioritize local street needs (Dooley).

Another trend is the increasing single-parent families and single-person households (Deaton and Weber). From 1980 to 1988, the number of male householders with no spouse present increased 56.7 percent, while the number of female householders with no spouse present increased by 21.9 percent (U.S. Department of Commerce, Bureau of the Census). "This change has implications for the distribution of income..." (Deaton and Weber). A change in the distribution of income could be a result of more women in the labor force. In 1970, 43.3 percent of the females over age 16 participated in the civilian labor force, while in 1988, 56.6 percent participated. This trend is expected to continue and reach 62.6 percent in the year 2000 (U.S. Department of Commerce, Bureau of the Census).

Income gaps and population continue to widen between rural and urban areas (Sommers 1989b). From 1979 to 1990, the gap for median family income between metro and non-metro areas increased almost ten percent. On average, the real metro and non-metro income gap increased from 4,223 dollars in 1979 to 4,632 dollars in 1990 (U.S. Department of Housing and Urban Development).

Although income gaps are relevant, quality of life continues to be an important issue to many individuals. Rural America asserts to have an exceptional quality of life.

Yet they must maintain local population for vitality. Geographic dispersion of "homes, churches, markets, and places of employment" makes mobility a desirable factor in rural communities, particularly for an aging population (Gillis). Transportation plays an important role in rural quality of life, particularly since many communities offer transportation assistance to the elderly and handicapped (Bitzan and Tolliver).

Second, the changing economic structure is evident with sectoral employment shifts. For example, from 1975 to 1982, high-tech industries were locating in some rural areas and employment growth was greater in these rural areas than in larger non-metropolitan areas (Keith and Barkley). It appears this trend changed as Sommers (1989b) indicated that high tech manufacturing and business services preferred urban areas in the 1980s. The abundant labor supply and ready access to universities may explain this trend (Sommers 1989b).

As shifts in high tech industry location preference occurred, rural areas as a whole experienced less economic growth. One way to regain lost economic growth would be increased rural entrepreneurship. Rural entrepreneurship can be defined as "the creation of a new organization that introduces a new product, serves or creates a new market, or utilizes a new technology in a rural environment" (Wortman 1990a). "Very little empirical research has been attempted on rural entrepreneurship in the U.S." (Wortman 1990b).

As entrepreneurs succeed in their community, selling goods or services to other communities adds another dimension to the business. This new dimension requires adequate transportation planning and infrastructure to provide other markets with the goods or services. Entrepreneurs could be classified as independent businesses. A recent Economic Research Service (ERS) study found that "smaller independent business and manufacturing facilities are more likely to survive in rural areas than their larger,

corporate-affiliated counterparts" (Martinez). Fifty-three percent of the independent firms that started in rural areas between 1978 and 1980 stayed in business through 1986. In contrast, only 39 percent of the affiliates remained in business. The future is unclear and rural communities adjacent to urban areas and major state universities may be the best prospects for locating firms (Martinez).

Decentralization of government is the third trend influencing the rural environment. This is occurring as fiscal responsibility for governmental functions is shifting from federal to state, and state to local levels. Under the new highway bill, the Bush administration "wants to lessen the federal share of funding for new road building on highways of national importance, while giving states more flexibility in how they spend federal dollars" (Hall). In response, state levels could then shift responsibility to local levels (Deaton and Weber). Examples of federal policy of decentralization (United States Department of Transportation) include:

1. Increased emphasis on integrated state, local, and regional transportation planning, including efforts to coordinate land use and transportation planning and investment decisions,

2. The move toward greater flexibility in use of transportation funds at all levels of government, to permit investment in facilities and services in alternative modes that offer the most cost-effective solution, and

3. Higher priority to maintaining needed transportation infrastructure.

Finally, deregulation of key economic sectors is the fourth factor shaping the rural economic environment. "Regulation had a very significant and very real effect on rural areas; it brought a semblance of order where none had existed before" (Barkley). The cost of regulation was high and action for deregulation was sought in the 1970s. Deregulation has occurred in several industries. These include air, rail, trucking, telecommunications, financial institutions, natural gas, and bus.

With respect to transportation, some research has focused on problems in rural areas. However, Barkley emphasizes that only a few economists have analyzed the effects of deregulation on rural communities. According to Fuller et al., economists have contributed to the literature, identifying inefficiencies generated by Interstate Commerce Commission (ICC) regulations. However, there are limited efforts that measure the consequences of deregulation. Casavant identified several transportation deregulation studies in progress. The types of studies may be categorized as "expected impacts" and "post-impact" studies.

Uncertainties about impacts of transportation deregulation exist. Questions arise about what to do with the information once it is available. It is not clear how the knowledge would affect policy or individual action (Barkley). Work done by Johnson indicated that gainers and losers will exist with transportation deregulation but, from the agricultural view, the overall balance would be beneficial to agricultural (Casavant).

Two studies support the notion that transportation deregulation is beneficial to agriculture. First, Fuller et al. studied railroad deregulation and the effect on export-grain transportation rate structures. Results indicated that railroad deregulation led to a decline in wheat export rates, but had little impact on corn export rates. It is uncertain if these results would continue over the long run. Second, Fuller and Bessler examined the rate structure for fresh vegetables in Texas to compare pre- and post-effects from deregulation of motor carriage. They found rates declined up to 9.0 percent as a result of deregulation (Fuller and Bessler). It appears that transportation deregulation will have an impact upon the rural economy. Questions certainly can be raised about the role transportation will play in future economic conditions.

Rural communities have experienced much change over the past four decades, and it is likely to continue. Different forces have contributed to this change, including exogenous and endogenous forces. Different social and economic trends continue to shape rural economies. One survival tactic rural communities may use is entrepreneurial talents. As entrepreneurs surface, transportation will play an important role to them as inputs and outputs will need to be moved.

Although there is not a good understanding of the role of transportation in America's rural economy, location theory offers a different perspective to the relationship. The next section examines location theory, more specifically, the firm's involvement in rural economic development.

LOCATION THEORY

Attracting new industry is an alternative many rural communities have attempted to combat a declining local economy. Location theory offers an explanation for industrial attraction to a particular site and the manner in which industrial growth and spatial distribution may change in the future (Zink 1973). There are three parts to this section. First, the evolution of location theory will be summarized. Second, the search/decision rules that firms address before locating plants will be discussed. Finally, selected empirical studies completed over the last two decades will be reviewed.

Evolution of Location Theory

Johann Heinrich von Thunen in 1826 "was not the first writer to analyze the economic phenomena of space but he was the first to treat such phenomena with the aid of a spatial mode of analysis" (Blaug). He reduced the complexity of the problem by his assumptions and concentrated upon the transportation variable (Coyle and Bardi). "Von

Thunen assumed an isolated city state that was surrounded by a plain of equal fertility" (Coyle and Bardi). The city was the only market place for agricultural products and production of the products occurred at the same cost anywhere in the plain. Transportation was accessible to all locations and rates were a constant rate per ton-mile for all commodities. Von Thunen's "work remains as a major part of the foundation upon which our present location theory is predicated," even though his concentration was upon the agricultural sector (Coyle and Bardi).

A comprehensive theory involving many locational factors was developed by a German economist, Alfred Weber. He sought to determine an optimum site for an industrial firm to locate (Table 2.2). His theory emphasized locating where production costs would be the least. Three cost factors were considered: transportation costs, labor costs, and agglomeration factors. Most costs were modest in comparison with transportation costs. Therefore, transportation networks often determined industrial location.

Twenty-five years later, August Losch presented a new criterion for locating industries. His criterion was that a firm should locate where revenue is maximized rather than where costs are minimized. The two location theorists reached opposite conclusions, mainly because of different assumptions. During Losch's time, several modes of transportation were available, whereas Weber's generation relied upon major rivers for transportation. Finally, Greenhut synthesized these theories to form a profit maximization model. He considered transportation and production costs similar to Weber's along with demand factors similar to Losch's (Goode and Hastings).

TABLE 2.2. Summary of Location Theory Objectives, Assumptions, and Decision Factors

Item	Weber	Losch	Greenhut
Year	1929	1954	1956
Model Objective	Least Cost	Revenue Maximization	Profit Maximization
Assumptions	1. Inputs for production located at selected points in space. 2. Market for products are located and fixed in urban centers. 3. Labor is available at fixed price and is located at specific points in space.	1. Inputs uniformly distributed over space. 2. All-encompassing network of transp. 3. Goods could be transported on a straight line. 4. Rates do not vary over space. 5. Maximum revenues accomplished by controlling the largest possible market area.	1. Firms identify locations with aggregate market. 2. Determine revenues. 3. Determine costs.
Decision Factors	1. Transportation costs 2. Labor costs 3. Agglomeration	1. Revenues 2. Transportation costs 3. Production costs 4. Often closer to consumer rather than supplier.	1. Transportation costs 2. Production costs 3. Revenue or demand 4. Agglomeration economies 5. Revenue-enhancing factor 6. Personal considerations

DEVELOPED FROM: Goode, Frank and Steve Hastings, "The Effect of Transportation Service on the Location of Manufacturing Plants in Non-metropolitan and Small Metropolitan Communities," *Profitability and Mobility in Rural America*, Ed. William Gillis, Pennsylvania State University Press, 1989.

Decision Rules/Search Phases

Informal decision rules and search phases are an important part of the expansion or relocation process. Carlton (1979) indicates that high fixed costs of moving distinguishes plant expansion from location of a new plant. Firms expanding generally first consider on-site expansion (Schmenner). However, this is not always possible. Off-site expansion is the alternative. Off-site expansion is similar to relocation because a new site must be found. Companies address decision rules and search phases before selecting a new site. Many decisions are similar between expansion and relocation, therefore, each

may be discussed inter-changeably for purposes of this study. Schmenner addresses decisions rules and search phases independently. First, he reveals that three unwritten informal decision rules are discussed within the firm. He then moves on to illustrate an eight-step search phase that many companies use before selecting a site (Figure 2.1).

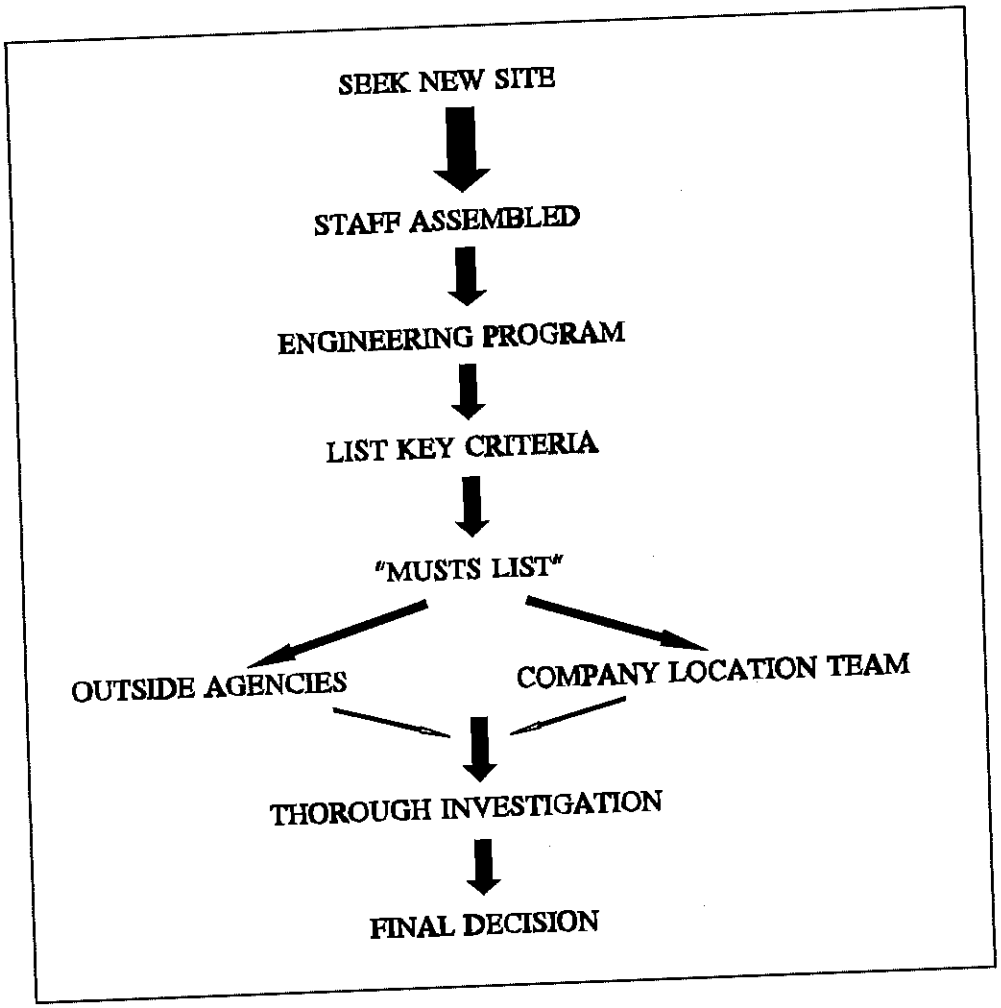

FIGURE 2.1. **Phases of the Location Search**

ADAPTED FROM: Schmenner, Roger. *Making Business Location Decisions.* Prentice Hall, 1982. p. 16-20.

The most prevalent informal decision rule regards plant size. Typically, this is stated in terms of employment. At times, a plant employment ceiling range is set (commonly between 500 to 1000 employees). Ceilings are placed for different reasons, including lack of control, inflexibility, and unionization. In addition, many large companies want to avoid becoming too dominant in a community. Therefore, they may place an employment ceiling of three to four percent of the population within commuting distance. This helps the firm avoid carrying the responsibility for a community's economic well being.

A second informal decision rule is that unionized plants seldom expand on site. This decision is based on management's concern for maintaining productivity and flexibility at the facilities. Often, relocating plants will select a right-to-work state where unionization is less prevalent. A third informal decision rule is that new plants are often assigned mature products to avoid engineering or management problems.

After the initial decision to seek a new site, a joint division-corporate staff team is assembled to develop basic information about the prospective plant. Schmenner's list for the likely team candidates include:

> *From the division:* director of manufacturing, chief plant engineer, personnel director, plant manager designate, and/or key staff people for each of these managers.
>
> *From the Corporate Staff:* director of facilities planning, director of real estate, staff aide to the industrial relations director, staff aide to the director of engineering, staff member from the transportation/logistics department, staff member from the environmental affairs department, staff member from the tax department.

This team is assembled to gather and study information on eight basic plant areas (Schmenner). The study areas are:

1. Size (acreage of the site and square feet under roof),

2. Product line(s) to be manufactured and production technology to be employed,

3. Labor force requirements (number of employees when plant operating at full capacity, skills, union/non-union desired, wage rates desired, shifts, number in office versus number in factory, manning plan for start-up),

4. Transportation needs (modes required, location of major customers and major supplies and the shipment sizes to/from each (so that the sensitivity of transport costs to location can be quantified)),

5. Utilities needs (power, water, sewerage, natural gas, etc. requirements),

6. Environmental consideration (expected levels of air, noise, and water pollutants),

7. Nature of interaction with other company plants (Is new plant to be a satellite of an existing operation or not?), and

8. Division views about desirable plant sites, especially whether metropolitan or rural areas should be sought.

The third phase consists of splitting apart the engineering program for the new plant from the location search team. Each simultaneously pursues their part in the search process. Once the actual site is chosen, engineers analyze topographical, geological, and other important engineering aspects.

Fourth, a list of key criteria is made for a new plant's location. This may include, "markets, labor, supplies and resources, logistics, environmental features and regulations, and competitive presence and reaction" (Schmenner). The criteria are likely to be highly individual to the corporation and to its industry. This often leads right to the fifth step. A "musts" list is constructed to use as a standard to evaluate major regions of the United States.

Sixth, there are two general means of site identification within particular regions. One, part of the burden can be placed on outside entities such as state development

agencies, railroads, electric power companies, location consultants, and other contacts. This narrows the candidate sites the company location team will visit to five to fifteen sites. Alternatively, the company location team may screen the promising sites alone. The company location team only visits a few metropolitan or rural areas. These selections are generally chosen because of some particular criterion such as population, service by a particular railroad, or a non-union town.

Seventh, a thorough investigation of the site is undertaken to gather qualitative and quantitative information about areas such as community, government, and the labor force.

> Information gathered earlier but verified by a site visit ordinarily includes: site price, option availability, terms, labor force statistics (population, unemployment, commuting patterns, wage rates), local and state tax rates and financing opportunities (industrial revenue bonds), state and federal environmental requirements, transportation rates, and service quality (Schmenner).

Once the necessary information has been gathered and verified, the search team ranks the locations. At times the team "may recommend that options be taken on the top one or two properties." (Schmenner).

The final location decision normally reverts to the division manager of the division seeking the new location. Since the division will be located at the new site, power is given to the manager to select the site or veto the matter (Schmenner). Most larger companies basically follow the same general phases, but they may organize the location search differently.

Most often a local search occurs for small, growing firms. As firms or plants purchase their second or third plant, it is often located a short distance from the first plant. This is advantageous for three reasons. First, "transportation expense to distant markets" is not yet great, "so geographic spread of manufacturing capacity is only

infrequently required" (Schmenner). Second, management economies of scale can be reached if the same management team is used for both plants. Third, as management is familiar with the area, uncertainties are less for the establishment of a second or third plant (Schmenner).

Coyle and Bardi (1984) adapted Schmenner's eight steps in location decisions. They then expanded on Schmenner's location factors, primarily concentrating on regional and specific site determinants. The regional determinants discussed are favorable labor climate, proximity to markets, quality of life, near supplies and resources, labor rates, environmental permits, facility/land already available, better transportation, taxes, and financing. The specific site determinants discussed are rail service, on expressway, special provisions of utilities, rural area, environmental permits, within metropolitan area, on water, and transportation (air and truck).

Coyle and Bardi (1984) extensively considered the relationship between transportation and the location decision. They view transportation as important because it was a primary factor in classical location theories. In addition, "many location analyses today emphasize transportation cost minimization" (Coyle and Bardi). They indicate that industries should look to minimize inbound transportation costs as well as minimize outbound transportation costs. The grid technique is a method used in the minimization of transportation costs.

The grid technique is helpful when multiple markets and raw materials are factors. The technique results in a least-cost transportation facility location. With accurate data, equation (2.1) can be implemented for quick preliminary results. As with most techniques, both strengths and limitations exist.

$$M = \frac{\sum_{1}^{n} R_i D_i FG_i + \sum_{1}^{m} r_i d_i RM_i}{\sum_{1}^{n} R_i FG_i + \sum_{1}^{m} r_i RM_i} \qquad (2.1)$$

where

M = Miles from origin,
D_i = distance from 0 point on grid to the grid location of finished good i,
d_i = distance from 0 point on grid to the grid location of raw material i,
FG_i = weight (volume) of finished goods sold in market i,
RM_i = weight of raw material purchased at source i,
R_i = finished good transportation rate/distance unit for finished good i, and
r_i = raw material rate/distance unit for raw material i.

There are three strengths to the grid technique. First, the technique is simple to use. Second, it provides a starting point for the location analysis. Third, unfavorable locations regarding transportation can be eliminated from the search, and other location determinants can be considered. This allows decision makers to spend more time on sites which may be more profitable.

There are four limitations to the grid technique. The main limitation is that the technique is static; it only allows an optimum solution for one point in time. As changes occur in variables such as volumes purchased or sold, or in transportation rates, etc., the least-cost location may shift. "Second, linear transportation rates are assumed, whereas actual transportation rates increase with distance, but less than proportionally" (Coyle and Bardi). Third, topographic conditions at the optimum location are not considered. For example, the chosen site may be in a lake. Fourth, the proper flow of movement is not considered. Being a grid, movements are vertical and then horizontal. Typically, a straight movement occurs between two points.

The primary function of the grid technique is not to find the ideal solution, but rather to eliminate unprofitable sites from the aspect of transportation costs. As a result, decision makers are able to "concentrate on those areas that are cost effective from a logistics standpoint" (Coyle and Bardi). The grid technique can be a valuable input used in the preliminary stages of the location search process.

Transportation is an important location factor in conjunction with many other factors. Next, several location factors will be examined in a review of four location studies from different regions of the country. The first study to be reviewed was conducted in North Dakota during the early 1970s. The other three studies were all published in 1989.

Empirical Studies

In late 1973, Helgeson and Zink published work that examined regional determinants of rural industrialization, mainly focusing on location factors. They studied the feasibility, costs, and benefits of incorporating a manufacturing sector into an agricultural dominated economy. The study reviewed the trend toward industrial decentralization during the 1960s and early 1970s. In 1970, 31 billion dollars was spent by manufacturing industries for capital, over 50 percent was for modern plants in rural areas (Zink 1973).

Four manufacturing firms that located in Jamestown and four firms which considered the site were surveyed. The three focuses of the questionnaire were location factors, manufacturer's expenditures (industrial impact), and employee characteristics. They ranked location factors by a weighted index. Next, they used an input-output model to examine the impact manufacturer's expenditures had on the gross business volume. They analyzed employee characteristics with the *Statistical Package for the Social*

Sciences. Results may not represent all of rural America, as the small number of firms surveyed only considered locating in the Upper Midwest.

Thirty-seven location factors[4] were evaluated as having a "strong positive influence," "slight positive influence," "not considered," or a "negative influence." Numeric values were placed to weight each factor. Values of two, one, zero, and negative one, respectively, were placed to measure the relative importance of each factor. They grouped location factors closely related to create an average weighted index. They measured twelve major location factors. The ranked order of the top three factors was local reaction to industry, subsidies, and capital (Table 2.3). The bottom three factors were utilities, raw material, and industrial concentration (Table 2.3).

The top location factors reported by the sample firms contradicted findings of previous studies (Zink 1973). Previous studies discounted reaction to industry and subsidies (Helgeson and Zink). The third factor, capital, may have ranked high as a result of the favorable terms granted for the purchase of plant and equipment (Helgeson and Zink).

Some mid-ranked factors were consistent with other national studies. For example, labor resources were viewed as important. A mixed reaction to product markets indicated a decline in importance of local markets as the Jamestown firms market less than two percent of their output within the region. Helgeson and Zink pointed out that state and local taxes were becoming more significant in location decisions than in the past empirical studies they reviewed.

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[4]List of location factors is provided in Appendix A, Table A.1.

TABLE 2.3. Ranked Order[a] of Location Factors by Four Firms Locating and Four Firms Who Considered Locating in Jamestown, North Dakota, 1973

Ranked Order of Location Factors	Weighted Index		
	Locating	Non-locating	All
1. Local Reaction To Industry	6.33	7.00	13.33
2. Subsidies	6.80	6.40	13.20
3. Capital	4.00	8.00	12.00
4. Labor	5.83	3.50	9.33
5. Product Market	5.00	3.00	8.00
6. State And Local Taxes	3.00	4.00	7.00
7. Transportation	2.67	2.67	5.33
8. Living Conditions	1.33	2.83	4.17
9. Preference For Home State	2.00	2.00	4.00
10. Utilities	1.00	2.00	3.00
11. Raw Material	1.00	1.00	2.00
12. Industrial Concentration	-.40	.60	.20

[a]Respondents evaluated each Jamestown location factor as "Strong Positive Influence," "Slight Positive Influence," "Not Considered," or "Negative Influence." Numerical values of two, one, zero, and negative one, respectively, were used to weight each factor by points.

SOURCE: Helgeson, Delmer, and Maurice Zink. *A Case Study of Rural Industrialization in Jamestown, North Dakota*, Department of Agricultural Economics, North Dakota State University, Report No. 95. 1973.

The least important location factors in this study were utilities, raw materials, and economies of industrial concentration. Negative reactions were given to utilities based on electrical service. When rates were high relative to other sites, service and supply of electricity were satisfactory (Helgeson and Zink). Because agricultural products were the only basic output, Helgeson and Zink were not surprised that raw material cost and supply were contradictory. Results indicated industrial concentration (agglomeration advantages) ranked last. They expected this result as economies of concentration typically do not occur in emerging industrialization areas (Helgeson and Zink).

Results indicated little regional economic impact was reaped from the nearly 400 new jobs provided in manufacturing. The employment multiplier effect within the region was limited. This could result from excess capacity in business and public service sectors as there were sufficient labor inputs to meet the increased industrialization demands. Rural and urban underemployed persons prospered from increased manufacturing. Several experienced an upward mobility in their occupations. In addition, the "decline in out-migration that would have taken place if employment opportunities had not been available" could be another factor to the low secondary impact (Zink 1973). "A 'catch-up' period may be necessary before the maximum employment or economic multiplier effect of industrialization is realized in lagging rural economies" (Helgeson and Zink). At best, rural communities dependent upon agriculture may maintain the status quo. Without new jobs being created, there may be a decline in the economic status of rural communities when commodity prices received by farmers fall at a faster rate than input costs.

Lopez and Henderson (1989) conducted a recent study that explored the determinants of location choices for new food processing plants. Top managers of 56 food processing plants in the Mid-Atlantic states (New Jersey, Pennsylvania, New York, Delaware, and Maryland) responded to a telephone survey addressing three general types of questions. They directed and designed questions toward processors of vegetables, fruits, eggs, poultry, and seafood because of the strong farming and fishery industries of the region.

They designed and scaled questions to find out characteristics of the processing plant, the importance of six general business climate categories, and the importance of 41

specific location factors contained in the business climate categories.[5] The six general categories included market, infrastructure, labor, personal, environmental regulation, and fiscal policies. Four types of answers were sought to scale the 41 specific location characteristics. These answers included "very important," "important," "not important," or "don't know."

Survey findings indicated that the majority of respondents operated a single plant. The two most important business climate categories were market and infrastructure. "Very important" market location factors included availability of raw material supplies, proximity to the market, and proximity to distribution centers. The availability/cost of truck/rail service was more critical to smaller plants than to larger ones. Infrastructure location factors considered "very important" included existing plant at site, water supply and quality, and waste disposal facilities.

The least important general variables were environmental factors and local fiscal policy. The ranking of environmental factors depended on industry type. For example, the poultry industry ranked environmental factors high because of their concern with water pollution regulation, water disposal costs, and disposal facilities (considered infrastructure). Nonpoultry industries considered environmental factors important but did not rank them in the top 10 of the 41 factors. Fiscal factors were ranked in the bottom 10 of the 41 factors. The authors found a positive correlation between the importance of fiscal policy and the size of the plant. Plants with a larger number of employees considered fiscal policy more important.

As market and infrastructure variables play an important role in location decisions, they also play a major role in economic development. Without proper

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[5]List of location factors is provided in Appendix A, Table A.2.

transportation to move the inputs/outputs to markets, a company would not be prosperous. Infrastructure, the second location variable, is closely linked to transportation. Transportation infrastructure, i.e., highways, airports, etc., is vital to marketing products.

Goode and Hastings (1989) more closely studied transportation location variables. They have conducted location related studies for over a decade. They conclude that,

> The dramatic growth of the manufacturing sector in rural areas from 1940 to 1980 is clear evidence that rural locations are profitable. It is conceivable, however, that many rural communities have not experienced growth, not because they are unprofitable locations, but because they do not have the amenities that plant managers find personally desirable (Goode and Hastings).

Goode and Hastings further explain that modern location theory involves a process of balancing cost and revenue considerations. The cost side considers transportation costs, tax rates, labor and land costs, intermediate inputs, and agglomeration effects. The revenue side considers the number and location of those purchasing the products, the location of competing firms, and the existence of agglomeration effects. Community amenities may be a determining factor if net revenue is equal at several alternative sites.

Goode and Hastings' empirical study was "designed to investigate the effect of a set of social and economic variables on the location of various types of manufacturing industries in rural and small metropolitan communities in the Northeast" (Goode and Hastings). These areas include New England, mid-Atlantic, and southern Atlantic states, and Virginia. Only variables associated with transportation were discussed in Goode and Hastings' study.

Goode and Hastings defined their units of study for communities as follows:

> A community was defined as a Census place and all surrounding Minor Civil Divisions or Census County Divisions whose population centroid was within five miles of the population centroid of the Census place. Rural communities were communities whose center (Census place) was not in a Metropolitan Statistical Area (MSA). Small metropolitan communities were MSA centers whose population was one hundred thousand or less. There were 730 rural communities and 368 small metropolitan communities.

Transportation related variables were incorporated in a dichotomous regression model to test their involvement in location decision making. The dependent variable received a value of one if the community attracted a new plant during the period 1970-78 and a value of zero if there was no new plant. They obtained data for this variable from the Duns Market Indicators (DMI) file. Sixty-nine industries were evaluated by analysis of four-digit Standard Industrial Class (SIC). Four-digit industries with similar input coefficients were combined to form 'aggregate industries' (Goode and Hastings).

They used six transportation factors as the independent variables. The variables include:

DR = Distance to Road,
DLH = Distance to Limited-Access Four-Lane Highways,
RL = Number of Rail Lines,
AL = Number of Airlines,
PNIA = Potential Net Input Availability, and
MA = Market Access.

The first four variables capture the importance of infrastructure and transportation, whereas the last two are somewhat different as they are transportation oriented, yet they also emphasize supply and demand. Essentially, PNIA identifies a particular community as being in an area with a surplus or deficit supply of an input. The last variable, MA, indicates communities that are in a region with an excess demand for the product. The importance of the variable is to determine whether or not industries respond to agglomeration effects and concentrate spatially. All six variables were

included in the regression model for each of the sixty-nine industries in both metropolitan and nonmetropolitan communities.

Results for nonmetropolitan communities indicate the variable rail service was important for only a few industries, primarily food processing and wood products (Table 2.4). These industries rely upon rail service for delivery of products to market areas. Air service was positively associated with some areas but negatively associated with other areas. Several of the industries where industrial location was positively associated with air service are characterized by large firms with multiple branch plants. It is not clear why the location of certain industries should be negatively associated with air service.

TABLE 2.4. Regression Results of Transportation Factors in the Northeast Communities

	Non-Metropolitan			Small-Metropolitan		
Variable	P[1]	Neu[2]	N[3]	P	Neu	N
Distance to Road	1	61	5	0	67	0
Distance to Limited-Access Four-Lane Highways	5	58	4	1	60	6
Number of Rail Lines	5	61	1	9	54	4
Number of Airlines	10	52	5	11	46	10
Market Access	6	32	29	3	37	27

[1]P represents positive coefficient that was significantly different from zero at the 10 percent level.
[2]NEU represents neutral.
[3]N represents significant negative coefficient.

ADAPTED FROM: Goode, Frank and Steve Hastings, "The Effect of Transportation Service on the Location of Manufacturing Plants in Nonmetropolitan and Small Metropolitan Communities," *Profitability and Mobility in Rural America*, Ed. William Gillis, Pennsylvania State University Press, 1989.

The variable, Distance to Limited-Access Highway, was positively associated with five industries and negatively associated with four industries.

These results are consistent with other studies that found interstate highway construction did not stimulate economic development in the counties in which the interstate highway was located but did in adjacent counties (Goode and Hastings). The variable, Distance to Limited-Access Four-Lane Highways, impacts rural economic development similarly to rail service. Market Access was a significant location factor for thirty-five of the industries. Twenty-nine industries responded with a negative coefficient. This indicates that plants in these industries tend to concentrate geographically. Goode (1986) has a more detailed discussion of this variable.

Results for small metropolitan communities differed from results for nonmetro communities. Air Service was less important in small metropolitan communities. Reasons for this difference may be that small metropolitan communities have airport facilities, even though they may not have scheduled air service. With airport facilities, corporate flights could still be made (Goode and Hastings). Distance to road was removed from the model for lack of discriminating power as all of the small metropolitan communities were within two miles from a state or federal paved road. Distance to Limited-Access Highways was a positive influence on the location of industries by one of the industries in small metropolitan communities (Table 2.4). Five industries viewed it positive in nonmetropolitan communities giving the impression of greater importance (Table 2.4). Although not all variables were reported, results of the study support that improved transportation has positive influence on community attraction (Goode and Hastings).

Leistritz and Ekstrom conducted a recent study evaluating location factors. There were three specific objectives for the study:

1. Identify firms that "export a substantial portion of their products or services from the local area and that have accounted for significant employment growth during the last ten years."

2. Determine "what factors business proprietors and executives regard as central to their selection of a given region, state, and community as the site for their activities."

3. Determine "the economic contributions of firms of different types in terms of numbers of jobs created and expenditures made within the regional economy" (Leistritz and Ekstrom).

Firms from three states (North Dakota, South Dakota, and Nebraska) made up the survey population. Data collection and analysis occurred in two stages. First, export-oriented firms from each state that accounted for employment growth were identified from three sources. The sources in the three states included state departments of economic development organizations, local economic development organizations, chambers of commerce, newsletters published by economic development officials, and each state's *Directory of Manufacturers*. The second stage began with the development of a comprehensive questionnaire. An initial telephone call was made to each firm before sending out the surveys, to distinguish who could best answer the questions. Among the three states, 921 questionnaires were sent out. The response rate was 58 percent , as 534 firms returned the questionnaire.

Subsequently, to be included in the analysis, firms had to meet two specific criteria. First, they had to "sell more than 10 percent of their product or service to out-of-state markets." Second, the firms "either began operations since 1977 or expanded their work force by 10 percent or more since that time" (Leistritz and Ekstrom). The authors

excluded firms failing to meet these criteria. As a result, 314 firms remained. Leistritz and Ekstrom analyzed data primarily by mean, median, and distribution analysis.

The majority of the responding firms were manufacturers.

> Of the firms included in the study, about 25 percent had relocated to their present site. About 68 percent of these had moved from an out-of-state location, and 59 percent had relocated the entire company. Minnesota was the most frequent origin of relocating firms, and South Dakota the most frequent destination (Leistritz and Ekstrom).

The seven part questionnaire contained an attitudinal section regarding location factors. The location section was comprised of 62 specific location factors which could be categorized within nine main factors. The nine main factors included state and local taxes, incentives and infrastructure, labor, transportation, utilities, quality of life, labor availability, markets, and higher education. Many topic areas were similar to those investigated by Lopez and Henderson. All firm types generally rated the factors similarly.

State and local taxes ranked highest of the factors. These results conflicted with the literature that Leistritz and Ekstrom reviewed. Incentives and infrastructure ranked second. When considering all 62 specific factors, "Respondents viewed the overall community attitude toward business development as the most important factor affecting their decision" (Leistritz and Ekstrom). Other important aspects included availability of local financing, cost of property, and availability of suitable buildings. Transportation factors were important, especially motor freight service. It was found that proximity to customers was more important than close proximity to suppliers.

Markets ranked low in comparison to other studies. Neither close proximity to suppliers/raw materials nor proximity to customers was viewed as a highly critical factor. Higher education ranked lowest. For the location decision, few of the firms viewed proximity to a college or university as a very important/critical factor. While businesses

indicated a need for research and development, proximity to the physical institution was not critical (Leistritz and Ekstrom).

Firms in this study indicated they planned ahead for growth. On average, they expect a 35 percent increase in sales and 23 percent growth in employment in the next five years (Leistritz and Ekstrom). One factor growing firms have to consider is transportation. Firms surveyed were export-oriented, indicating transportation cost is of major importance. It will also be of importance to firms expecting to expand physical facilities in the next five years. When planning to expand, Schmenner's decision rules and location phases would apply to these firms.

Considering the ranked order, the location studies reviewed have few similar rankings of location factors (Table 2.5). Infrastructure and incentives[6] ranked high in all three studies (it was not included in the Goode and Hastings study). Other factors vary according to each study. For example, market factors ranked number one in the Lopez and Henderson study, but ranked low in Helgeson and Zink and in Leistritz and Ekstrom. Since the latter two studies were for similar geographic regions, this was not a surprise. To the contrary, state and local taxes ranked highest in the Leistritz and Ekstrom study while, in the Helgeson and Zink study, it only ranked sixth. This contradiction may be explained by the sixteen year span between the studies. This time span may further support Helgeson and Zink's observation that state and local taxes were becoming more important than in past studies. Another explanation for this difference could be the sample size, since Helgeson and Zink surveyed only eight firms, while Leistritz and Ekstrom included 314 firms in their study.

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[6]Lopez and Henderson found Infrastructure ranked high, but incentives was not combined with it as was the case with Leistritz and Ekstrom.

Researchers have been studying the relationship between transportation and economic development for many years, but the relationship still is not well understood. This section focused on the transportation and economic development relationship in rural areas. First, exogenous factors which impact the rural economy were examined. Second, location theory was reviewed to better understand firm decision-making and their impact on rural economic development.

TABLE 2.5. Summary of Empirical Location Studies

Study	Helgeson and Zink	Lopez and Henderson	Leistritz and Ekstrom	Goode and Hastings
Year	1973	1989	1989	1989
Region (states)	Jamestown, ND	Mid Atlantic: NJ,PA,NY,DE,MD	Upper MidWest: ND,SD, NE	New England, Mid-Atlantic, and Southern Atlantic States, and Virginia
Location Factors by rank[1]	1. Local reaction to industry 2. Subsidies 3. Capital 4. Labor 5. Product Markets 6. State and local taxes 7. Transportation 8. Living Conditions 9. Home state preference 10. Utilities 11. Raw material 12. Industrial Concentration	1. Market 2. Infrastructure 3. Labor 4. Personal 5. Environmental 6. Fiscal Policy	1. State and local taxes 2. Incentives and Infrastructure 3. Labor 4. Transportation 5. Utilities 6. Quality of life 7. Labor availability 8. Markets 9. Higher education	1. Distance to Road[2] 2. Distance to limited-access four-lane highways 3. Number of Rail lines 4. Number of Airlines 5. Potential Net Input Availability 6. Market Access
Data Sources	Survey: 8 firms	Phone Survey: 56 firms	Mail Survey: 314 firms	Duns Market Indicators, and Standard Industrial Class

[1]A composite location factor list appears in Appendix A.
[2]Variables are not ranked.

CHAPTER 3

RESEARCH METHODS

Many rural communities have been attempting to attract new industry to their community to combat a declining local economy and enhance economic development. Economic development specialists prepare proposals to send to firms seeking a location. Policy makers and economic development specialists should be concerned whether their perceptions of important location factors match the perceptions of firms making location or expansion decisions. If the perceptions match, it is more likely that the economic development specialist understands the needs of locating or expanding firms. In addition, economic development specialists need to have access to important information or data that may impact their community.

DATA COLLECTION

To better understand the perceptions of economic development specialists and their data processing capabilities, primary data were collected by a mail survey. The survey was sent to economic development specialists from three states to gather pertinent attitudinal and community characteristic information. The data were collected to compare perceptions of economic development specialists with perceptions of manufacturers from the data collected by Leistritz and Ekstrom (1990). This comparison will reveal similarities and differences in the views of economic development specialists and manufacturers regarding the importance of different location factors. In addition, information regarding the data processing capabilities of economic development specialists were collected to determine the most efficient method of information delivery. The survey

and the methods used in this comparison will be examined more closely in the following pages.

Survey Group Selection

A census approach was taken as surveys were mailed to all economic development specialists in North Dakota, South Dakota, and Nebraska. The three states surveyed were chosen to be the same as those surveyed by Leistritz and Ekstrom (1990). Directories from state economic development specialists were obtained from South Dakota and Nebraska, and mailing lists from the North Dakota Economic Development Commission and the Industrial Development Association (IDA) were used to obtain the census of community leaders involved in economic development. Some North Dakota communities did not have a designated economic development specialist. In that case, questionnaires were mailed to more than one individual actively involved in economic development in the community.

Survey Instrument Design

The questionnaire (Appendix B) sent to economic development specialists contained seven parts. Part I was designed to document the organization being represented (e.g. Local Economic Development Corporation) and to determine the percentage of communities with an industrial park.

Part II was designed to collect community growth information from 1985 to the present. Community growth is defined by the three ways economic development occurs in communities. They include: 1) start ups, or entrepreneurs beginning a new business, 2) re-location, which refers to firms that have moved into the community to establish a

business or open a branch facility, and 3) expansion, referring to firms that have increased their work force or production facilities.

The importance of location factors was the emphasis of part III. Economic development specialists rated 65 individual factors between the range of one and five. The values were classified as 1 = "critical," 3 = "important," and 5 = "unimportant". Economic development specialists rated their attitude for each factor in the role of attracting firms to a particular community. The scaling used is identical to Leistritz and Ekstrom so that a comparison can be drawn. The 65 individual factors were categorized into nine main factors. The nine main factors are labor, labor availability, transportation, markets, utilities, quality of life, higher education, state and local taxes, and incentives and infrastructure.

In part IV, economic development specialists were asked about financing options available in their community. Six sources of start-up capital were listed, and economic development specialists rated them from one to five. The value of 1 = "strongly agreed" that a source of start-up capital was important, 3 = "neither agreed nor disagreed," whereas 5 = "strongly disagreed." In addition, the same scale was used to obtain attitudes about twelve government programs offering financial assistance mainly to North Dakota communities.

Economic development policies were the focus of part V. Questions were asked to find out how supportive state government and local regional councils were of each community's efforts to enhance economic development. Questions were also asked about proposals sent to firms searching for a location site.

Part VI contained questions regarding data processing capabilities of the respondent. The main purpose of the questions was to identify the type of hardware and

software economic development specialists have available, as well as their familiarity with information based programs.

Part VII included seven demographic questions. These were asked so the background of the economic development specialist could be developed and also to determine if there are differences among the different sub-groups. Questions were asked about the education level and area of study for those with a college degree. Questions were also asked to find out the number of years the individual has worked at economic development and if this is part-time or full-time work. In addition, respondents were asked to specify if they received compensation for their economic development efforts.

The questionnaire was quite extensive. For purposes of this project, only questions from parts I and III are used in the comparative analysis of economic development specialists and manufacturers. Questions from parts VI and VII are used in the analysis to find the most efficient information delivery system.

A cover letter was sent with the questionnaire to briefly explain the study objectives. A postage paid return envelope was also enclosed. It contained a box for respondents to check if they would like a copy of the results from the study.

To measure perceptions of economic development specialists about particular location factors, certain assumptions have been made. It has been assumed that economic development specialists understood the questions and were able to accurately report their perceptions. It is also assumed that the five point attitudinal scale adequately captures and measures perceptions of the developers. These assumptions are also made for the questionnaire that was completed by manufacturers for the Leistritz and Ekstrom study. Under these assumptions, a comparative analysis can be completed.

Pretest

Dwaine Gray, an economic development specialist for Fargo-Cass County Development Corporation, pretested the questionnaire for readability and ease of completion. A few minor changes were made. Three additional location variables were added to the location factor section, for a total of 65. However, the three additional factors rated by economic development specialists were dropped so an accurate comparison with the data Leistritz and Ekstrom collected on manufacturers could be made.

Mailings

The questionnaires were mailed to economic development specialists during the first week of April, 1991. Mailings were staggered among the three states. After two and a half weeks a reminder post card was mailed to those who had not yet responded. Once again the mailings were staggered among states. A second questionnaire was mailed to those who had not yet responded by May 17, 1991. The final mailing was not staggered among the states.

The response rate was 48.2 percent among the three states (Table 3.1). North Dakota has the highest response rate among the three states. The reasons are uncertain; however, it could be because the study was based in North Dakota. Initially, questionnaires were mailed to 451 possible respondents. In some cases, questionnaires were mailed to more than one person in a community. Generally only one person completed a survey for the community. Thus, the original sample size was lowered from 451 to 413 to reflect the communities with multiple mailings.

The types of individuals or organizations represented in the survey are summarized in Table 3.2. The majority of the respondents (74 percent) represent

TABLE 3.1. Response Rate, Survey of Economic Development Specialists, Upper Great Plains States, 1991

States Surveyed	Number Sent	First Mailing	Second Mailing	Total Received	Percent Response
North Dakota	130	65	20	85	65.4
South Dakota	143	31	21	52	36.4
Nebraska	140	43	19	62	44.3
TOTAL	413	139	60	199	48.2*

* Total overall percent response rate.

economic development corporations. This is comforting, as they were the target group. The next largest group (10 percent) are members of the Chamber of Commerce. This was also expected as Chamber of Commerce is often active in community development. The remaining 16 percent of the respondents are represented by county economic developments specialists, regional (planning) councils, job development authorities, city governments, reservations, and bankers (Table 3.2).

The sample can be judged acceptable for two reasons. First, the final response rate was 48.2 percent. This is very good considering the length of the survey and need for some research by the respondent to find the firms which started up, located, and expanded. Second, the population was representative for those which information was sought.

DATA ANALYSES

Responses for the location factor section were entered twice with the data entry program STATPAK. The two data sets were then compared using the PROC COMPARE

TABLE 3.2. Respondents to Survey of Economic Development Specialists, Upper Great Plains States, 1991

Individuals/Organizations Represented	Frequency	Percentage
Local Economic Development Corporation	146	74.1
Chamber of Commerce	20	10.3
Mayor/City Government	11	5.6
County Economic Development	6	3.0
Job Development Authority	6	3.0
Reservation	3	1.5
Regional (Planning) Council	2	1.0
Bankers	2	1.0
Missing	2	-
Total	199	100.0

command from the statistical package SAS. This comparison was made to detect errors made in the data entry step and to build an accurate data set.

After all the data had been entered for the individual location factors, a mean value was computed for each location factor. The mean values were then used to create an index for the nine main location factors. The index was constructed by averaging the rate each economic development specialist gave a particular location factor. Respondents were also broken into categories so the mean values of location factors could be analyzed on the basis of community size.

Consistent with Leistritz and Ekstrom, a t-statistic was generated for each location factor. In addition, a t-statistic was calculated for the indexed factors. A t-test was used to identify differences in attitudes for both the economic development specialists and the manufacturers. The t-test essentially tests if the means of two groups of

observations are equal. This test would indicate if the economic development specialists and the manufacturers view the importance of location factors similarly. Leistritz and Ekstrom tested for difference among location factor ratings between locating firms and expanding firms. A significant difference was found between some of the factors. As a result, each group was treated individually. Based upon Leistritz and Ekstrom's findings, locating and expanding manufacturers were each compared to economic development specialists. Thus, a t-test was run to test differences in the rating of location factors between economic development specialists and locating manufacturers. A t-test was also run to test the difference between economic development specialists and expanding manufacturers.

In addition, the t-test was used to test for difference in means between economic development specialists and manufacturers among various community sizes. The communities were broken into population ranges of 5,000 and fewer people and populations greater than 5,000 people. This could indicate if economic development specialists from larger communities better understand the needs of manufacturers making location decisions.

Another method to compare the perceptions of economic development specialists and manufacturers results from creating a rank of importance of the indexes for each group. The two sets of rankings could then be observed for correlation by Spearman's rho (Siegel). This procedure is similar to work done by Wood, McDonald, and Youngs (1989). A correlation of 1.0 would indicate a perfect match, which would illustrate that perceptions of economic development specialists and manufacturers are identical. On the other hand, a correlation of 0 or a negative value would indicate no correlation, or opposed

views, respectively. Spearman's rho could also be applied to the various community sizes to observe the correlation between these values.

The previously discussed methods can be used to test the following hypotheses.

1. Rankings of location factors are not correlated between economic development specialists and manufacturers.

2. Rankings of location factors are not correlated between economic development specialists from small metropolitan communities and economic development specialists from rural communities.

Variations of these two hypotheses are made in Chapter 4. The results of these hypotheses tests are also discussed in Chapter 4.

The method used to find the most efficient information delivery system was the chi-square test. This test was done on all cross tabulations of demographic and data processing variables. This method was used to determine if a relationship between the way economic development specialists answered questions exists. For example, the chi-square statistic would be statistically significant if there was a strong relationship between the age of the economic development specialists and computer usage. In general, a higher chi-square number relates to greater statistical significance. The results of this analysis are presented in Chapter 5.

CHAPTER 4

EMPIRICAL RESULTS OF LOCATION FACTORS

In this chapter, the empirical results of the analysis about economic development specialists' attitudes are presented. This chapter is divided into three sections. In the first section, overall results for the 9 main and 65 specific location factors for economic development specialists are discussed. In addition, results from previous studies discussed in the literature review are presented and compared where applicable.[7] In the second section, survey findings of economic development specialists' attitudes about specific location factors are compared to the attitudes of both manufacturing firms that have located and those that have expanded. Finally, a comparison of attitudes between economic development specialists in rural communities and those in small metropolitan communities is presented. In addition, the perceptions of rural and small metropolitan economic development specialists are compared to the perceptions of locating and expanding manufacturers.

ECONOMIC DEVELOPMENT SPECIALISTS' ATTITUDES ABOUT LOCATION FACTORS

The attitudes of 199 economic development specialists regarding 65 specific location factors were measured through a mail survey. A five-point category scale was used for expression of the importance of the 65 specific location factors. The number 1 portrayed critical importance for location decisions. The number 5 represented

[7]The differences in results between economic development specialists' perceptions and the perceptions from other studies referenced may be due to the differences in the populations. A detailed comparison with Leistritz and Ekstrom is made in the second section.

unimportance in the location decision. The number selected by the economic development specialist became the value for that specific factor.

The 65 specific factors were categorized into nine main factors. Throughout the remainder of the chapter the terms "specific" factors will represent the 65 individual factors and "main" factors will represent the nine categories of location factors. The nine main factors include incentives and infrastructure, state and local taxes, utilities, quality of life, transportation, labor, markets, labor availability, and higher education.

A mean value was generated for each of the 65 specific factors. The 65 mean values for the specific factors were used to generate a mean value for the nine main factors. The mean value generated for each main factor was used to rank the nine factors in order of importance for location decisions. The lowest mean value received a rank of one. As the values of the means increase, the rank is determined.

An objective was to determine how critical each of the specific factors was. The procedure for this determination was to first find the mean of the 65 specific factor means. This value was found to be 2.49. The standard deviation of 0.40 was used to construct upper and lower bounds for analytical purposes. The upper bound of 2.09 was used to recognize critically important specific location factors. Any specific factor with a mean value of 2.09 or lower was deemed critically important. Likewise a lower bound was determined to check for critically unimportant factors. Specific factors with a mean value of 2.89 or higher were defined as critically unimportant. All specific factors with a mean value between these upper and lower bounds were viewed as neutral.

For comparative purposes, an upper and lower bound criterion was also developed for the Lopez and Henderson data. The bounds were based upon a mean value of 2.42 and standard deviation of 0.34, derived from their 41 location factors. Factors

with mean values below 2.08 were viewed as critically important and factors with mean values above 2.76 were viewed as critically unimportant. Any factors with mean values between these upper and lower bounds were viewed as neutral.

For organizational purposes, the survey findings of economic development specialists' attitudes are presented in the order the nine main factors were ranked. The ranked order is as follows: incentives and infrastructure, state and local taxes, utilities, quality of life, transportation, labor, markets, labor availability, and higher education (Table 4.1).

TABLE 4.1. Rank and Mean of Main Location Factors and Number of Critically Important, Neutral, and Critically Unimportant Specific Factors, 1991

Main Factors	Economic Development Specialists		Number of Specific Factors That Are:		
	Rank	Mean[1]	Critically Important	Neutral	Critically Unimportant
Incentives and Infrastructure	1	2.25	5	8	0
State and Local Taxes	2	2.35	1	9	0
Utilities	3	2.43	1	6	2
Quality of Life	4	2.46	2	6	2
Transportation	5	2.54	0	4	0
Labor	6	2.68	2	2	2
Markets	7	2.72	1	1	2
Labor Availability	8	2.80	0	4	1
Higher Education	9	2.87	0	2	2

[1]Based on a scale from 1 (critical) to 5 (unimportant).

Incentives and Infrastructure

Incentives and infrastructure is the top ranked main factor (Table 4.1). Thirteen specific factors make up this main factor. Five of the thirteen specific factors were viewed as critically important because their mean value was 2.09 or lower (Table 4.1). The other eight factors were all judged to be neutral. The five specific factors noted as critically important are "Community Attitude Toward Business Development," "Developable Land Available," "Availability of *State* Financial and Developmental Incentives," "Availability of *Local* Financial and Developmental Incentives," and "Availability of Local Financing" (Table 4.2). With a mean of 1.71, "Community Attitude Toward Business Development" was the most critical factor among incentives and infrastructure. Over 47 percent of the respondents viewed this specific factor as critical (Table 4.2).

Specific factors from Lopez and Henderson closely matched several specific factors for economic development specialists. The results of these specific factors differed between studies. The specific factor "Buildings Available" was viewed as neutral by economic development specialists, whereas processors from the Lopez and Henderson study viewed "Availability of an Existing Plant Facility" as critically important (Table 4.3). "State and Local Developmental Incentives" was categorized as unimportant by Lopez and Henderson. In contrast, two similar factors, "Availability of *Local* Financial and Developmental Incentives" and "Availability of *State* Financial and Developmental Incentives," are categorized as incentives and infrastructure and viewed as critically important by economic development specialists (Table 4.3).

TABLE 4.2. Importance of Specific Location Factors by Economic Development Specialists, 1991

MAIN FACTOR/Specific Factor	Mean	1-[a]	2-	3-[a]	4-	5-[a]
		Percent Responses				
INCENTIVES AND INFRASTRUCTURE	2.25					
Community Attitude Toward Business Development	1.71*	47.5	35.4	16.2	0.5	0.5
Developable Land Available	1.96*	33.7	38.2	27.1	0.5	0.5
Availability of *State* Financial and Developmental Incentives	1.99*	33.5	37.6	25.9	2.5	0.5
Availability of *Local* Financial and Developmental Incentives	2.08*	31.8	34.8	27.8	4.5	1.0
Availability of Local Financing	2.09*	31.0	32.5	33.0	3.6	0.0
Buildings Available	2.22	22.2	41.4	29.3	6.6	0.5
Cost of Property	2.22	20.2	44.9	29.3	4.0	1.5
Cost of Construction	2.33	13.6	42.4	40.9	3.0	0.0
Environmental Regulations	2.42	17.4	29.2	48.2	4.1	1.0
State Assistance in Labor-training Programs	2.53	13.2	33.0	43.1	9.1	1.5
Incentives for Venture Capital Formation	2.54	14.8	32.1	39.3	11.7	2.0
Improved State Regulatory Climate	2.56	11.2	31.6	48.5	7.7	1.0
Streamlined Process for Obtaining Government Permits	2.58	14.2	30.5	41.6	10.2	3.6
STATE & LOCAL TAXES	2.35					
Overall Tax Burden on Business	2.07*	29.9	36.0	31.5	2.5	0.0
Worker's Compensation	2.14	27.9	36.5	29.4	5.6	0.5
Local Property Taxes	2.21	19.9	43.9	32.1	3.6	0.5
Sales Tax Exemption on Manufacturing Equipment	2.22	25.4	36.5	31.5	4.1	2.5
Unemployment Insurance Rate	2.24	25.5	31.6	36.2	6.1	0.5
State Corporate Income Taxes	2.28	22.8	35.5	34.0	6.1	1.5
State Property Taxes	2.41	19.4	34.2	36.7	5.6	4.1
State Personal Income Taxes	2.44	17.3	32.0	42.6	5.6	2.5
State Sales Tax	2.58	12.8	26.0	52.0	8.7	0.5
City Sales Tax	2.84	13.1	22.6	40.7	14.6	9.0

Continued

MAIN FACTOR/Specific Factor	Mean	1-[a]	2-	3-[a]	4-	5-[a]
		Percent Responses				
UTILITIES	2.45					
Availability of Electricity	2.07*	32.3	34.3	28.8	3.5	1.0
Water Supply	2.12	26.8	37.9	32.8	2.0	0.5
Cost of Electricity	2.17	27.87	34.3	31.8	5.6	0.5
Quality of Water Supply	2.20	22.6	40.2	33.2	2.5	1.5
Waste Treatment Facilities	2.39	15.2	37.9	40.4	5.6	1.0
Telecommunication Capacity	2.42	18.4	36.2	32.7	10.7	2.0
Telecommunication Costs	2.62	10.1	32.2	45.2	10.6	2.0
Cost of Natural Gas	2.91**	11.1	26.3	36.8	12.6	13.2
Availability of Natural Gas	2.92**	10.2	27.6	36.7	11.2	14.3
QUALITY OF LIFE	2.51					
Quality of Schools	1.95*	30.3	45.5	23.2	0.5	0.5
Availability of Medical Facilities	2.08*	30.5	34.0	33.0	2.5	0.0
Quality of Medical Facilities	2.15	26.6	34.7	36.2	2.5	0.0
Personal Tax Burdens (all taxes combined)	2.23	20.7	38.9	37.4	2.5	0.5
Quality of Housing	2.35	15.2	35.9	47.5	1.5	0.0
Cost of Housing	2.43	15.6	31.7	47.7	4.5	0.5
Close Proximity to Recreational Opportunities	2.63	8.1	35.4	43.9	10.6	2.0
Diversity of Businesses	2.85	8.0	21.1	50.8	17.6	2.5
Close Proximity to Cultural Opportunities	2.97**	4.5	20.2	51.0	22.2	2.0
Climate (weather)	2.97**	5.1	23.7	46.0	19.7	5.6
TRANSPORTATION	2.54					
Motor Freight Service	2.23	23.7	37.4	32.3	5.6	1.0
Interstate Highway Access	2.32	24.2	34.6	29.7	7.7	3.8
Rail	2.69	16.9	26.6	34.5	14.1	7.9
Scheduled Air Service	2.78	8.9	31.1	36.1	21.1	2.8
LABOR	2.68					
Work Attitudes	1.85*	38.9	40.4	18.7	0.5	1.5

Continued

MAIN FACTOR/Specific Factor	Mean	1-[a]	2-	3-[a]	4-	5-[a]
		Percent Responses				
LABOR CONTINUED						
Labor Productivity	1.88*	38.9	36.4	22.7	2.0	0.0
Wage Levels	2.52	14.4	26.7	52.3	6.2	0.5
Right to Work Laws	2.85	19.3	12.2	41.1	18.8	8.6
Absence of Union	3.03**	17.3	23.5	21.4	14.8	23.0
Presence of Union	4.00**	4.7	6.8	16.8	26.8	44.7
MARKETS	2.72**					
Close Proximity to Reliable Supply of Labor	2.08*	30.1	38.8	25.5	4.6	1.0
Close Proximity to Suppliers/Raw Materials	2.69	12.4	26.8	42.8	15.5	2.6
Close Proximity to Customers	2.91**	6.2	26.4	43.0	18.7	5.7
Close Proximity to Others in the Industry	3.19**	3.1	20.3	38.5	30.2	7.8
LABOR AVAILABILITY	2.79					
Skilled Industrial or Technical	2.43	12.9	36.6	45.4	4.6	0.5
Sales	2.76	10.4	21.2	53.4	12.4	2.6
Unskilled	2.83	10.8	23.1	42.6	19.5	4.1
Clerical	2.85	4.6	24.5	54.1	15.3	1.5
Professional (requiring 4-year degree)	3.10**	4.7	17.6	45.1	28.0	4.7
HIGHER EDUCATION	2.87					
Vocational-Technical Schools:						
- Programs Offered	2.71	6.6	32.8	46.0	12.6	2.0
- Close Proximity of Schools	2.84	5.1	26.9	49.7	15.7	2.5
Colleges & Universities:						
- Programs/Degrees Offered	2.94**	6.6	24.2	43.4	19.7	6.1
- Close Proximity of Institution	2.97**	4.6	25.9	42.6	21.3	5.6

[a]1 = Critical 3 = Important 5 = Unimportant
* = Critically important, mean value is 2.09 or less.
**= Critically unimportant, mean value is 2.89 or greater.

The high ranking of incentives and infrastructure was more consistent with Helgeson and Zink's findings. Local reaction to industry ranked first in the Helgeson and Zink study, followed by subsidies (Table 2.3). The specific factor "Community Attitude Toward Business Development" was viewed critically important (Table 4.2). This indicates a continuing perception that in the Northern Plains states, active promotion of a community is important.

State and Local Taxes

Overall, state and local taxes ranked second of nine main location factors by economic development specialists (Table 4.1). Ten specific factors comprise state and local taxes. Of the ten, only one was considered critically important, nine were considered neutral, and none were critically unimportant based on the upper and lower bounds criteria. The critically important specific factor, "Overall Tax Burden On Business," has a mean value of 2.07 (Table 4.2). Almost 30 percent viewed this factor as critical (Table 4.2).

The high rank of state taxes is supported by Bartik's conclusion that state taxes have an effect on business location. However, the high rank of state and local taxes is inconsistent with other studies. Lopez and Henderson's study found state and local taxes ranked last. They noted that their findings were consistent with other empirical findings of studies conducted for various industries. Specific factors in the Lopez and Henderson study that were comparable to this study of economic development specialists included "State Corporate Income Taxes," "Unemployment Insurance Taxes," "Workers Compensation Insurance," and "State Personal Income Tax." Lopez and Henderson's study viewed each of these specific factors as critically unimportant (Table 4.3). In this study similar specific factors are viewed neutral by economic

TABLE 4.3. Comparison Between Comparable Specific Location Factors Studied by Lopez and Henderson

Category	Lopez & Henderson	Rank	Economic Development Specialists	Rank
M	Availability of Labor	Critical	Close Proximity to Reliable Labor Supply	Critical
I	Availability of An Existing Plant Facility	Critical	Buildings Available	Neutral
M	Availability of Raw Agricultural (Seafood) Supplies	Critical	Close Proximity to Suppliers/Raw Material	Neutral
U	Availability and Quality of Water	Critical	Quality of Water Supply	Neutral
M	Proximity to Markets	Critical	Close Proximity to Customers	Unimportant
L	Labor Productivity and Work Ethics	Neutral	Labor Productivity	Critical
A	Skill of Labor Pool	Neutral	Professional (Requiring 4-year Degree)	Critical
I	State & Local Developmental Incentives	Unimportant	State Developmental incentives	Critical
I	State & Local Developmental Incentives	Unimportant	Local Developmental Incentives	Critical
S	State Corporate Income Taxes	Unimportant	State Corporate Income Taxes	Neutral
S	Unemployment Insurance Taxes	Unimportant	Unemployment Insurance Rate	Neutral
S	Workers Compensation Insurance	Unimportant	Workers Compensation	Neutral
S	State Personal Income Tax	Unimportant	State Personal Income Tax	Neutral

Note: Categories are defined as I = Incentives and Infrastructures, S = State and Local Taxes, U = Utilities, Q = Quality of Life, T = Transportation, L = Labor, A = Labor Availability, H = Higher Education, M = Markets. Variables were excluded if there was no comparable variable.

development specialists. In Helgeson and Zink's study, state and local taxes ranked sixth out of twelve factors (Table 2.3). Yet they expected taxes to become increasingly important.

A possible explanation for the difference is North Dakota, South Dakota, and Nebraska have a lower tax structure than most other states. Lower taxes is a promotional feature economic development specialists emphasize in proposals sent to manufacturers making location decisions. Thus, firms that have located in the region may have been attracted in part by the allure of low taxes.

Utilities

Overall, economic development specialists ranked utilities third (Table 4.1). Nine specific factors were related to utilities. Of the nine, one was critically important, six were neutral, and two were critically unimportant (Table 4.1). The critically important specific factor is "Availability of Electricity" (Table 4.2). Over 32 percent of the respondents viewed this specific factor as critical (Table 4.2). The two critically unimportant factors are "Cost of Natural Gas" and "Availability of Natural Gas" (Table 4.2). These factors were viewed as critical by 11.1 and 10.2 percent, respectively, of the respondents (Table 4.2).

Utilities were less important in the study by Helgeson and Zink. They found that overall, utilities, ranked 10th of 12 factors (Table 2.3). The difference may arise because utilities have taken on greater importance in the 18 years since Helgeson and Zink's study. For example, various Environmental Protection Agency (EPA) regulations have become more stringent.

Lopez and Henderson found that processors viewed "Availability and Quality of Water" critically important (Table 4.3). In comparison, economic development specialists viewed "Quality of Water Supply" as neutral. Only 22.6 percent of economic development specialists viewed "Quality of Water Supply" as critical.

Quality of Life

Quality of life is the fourth main factor (Table 4.1). Ten specific factors constructed the variable quality of life. Of the ten factors, two were viewed as critically important, six were neutral, and two were critically unimportant (Table 4.1). The two critically important factors are "Quality of Schools" and "Availability of Medical Facilities" (Table 4.2). "Quality of Schools" was viewed as critical by 30.3 percent of the respondents and very important by 45.5 percent (Table 4.2). "Availability of Medical Facilities" was viewed as critical by 30.5 percent and very important by 34 percent (Table 4.2). Although "Availability of Medical Facilities" received a slightly larger number of critical responses than "Quality of Schools," the higher percent of respondents who viewed "Quality of Schools" very important led to its slightly higher rank.

The two specific factors that were considered critically unimportant are "Close Proximity to Cultural Opportunities" and "Climate (weather)." Less than six percent of the respondents viewed these factors as critical (Table 4.2). This was not surprising since the upper midwest has some cultural opportunities, but not as many as larger metropolitan cities. The climate change, which people must grow accustomed to, is extreme in the Upper Midwest. Given the national perception of the extreme weather conditions in the Upper Midwest, promotion of the climate is seldom used by economic development specialists. On the other hand, economic development specialist Dwaine Gray of Fargo-Cass County Economic Development Commission noted that other regions also experience extreme weather conditions. Regions in the South must contend with the cost of air conditioning their buildings year around.

No comparable factors were included in the Henderson and Lopez study. Their quality of life issues were termed "personal" and dealt mainly with "place to live" type of factors.

Transportation

Transportation ranked fifth among the main location factors (Table 4.1). Four specific factors were categorized under transportation. They include "Motor Freight Service," "Interstate Highway Access," "Rail," and "Scheduled Air Service." All four factors were viewed as neutral (Table 4.2).

The ranked position of transportation is similar to the findings of Helgeson and Zink. In their study, transportation was ranked seventh of 12 factors (Table 2.3). Lopez and Henderson grouped truck and rail availability and cost together. This factor was judged to be neutral and was considered very important by over 16 percent of their respondents.

Labor

The sixth main factor is labor (Table 4.1). Six specific factors comprise the main factor labor. Two of these six factors are critically important, two are neutral, and two are critically unimportant (Table 4.1). The critically important factors are "Work Attitude" and "Labor Productivity" (Table 4.2). Each factor was viewed as critical by 38.9 percent of the respondents. "Work Attitudes" was ranked slightly higher because 40.4 percent viewed it as very important whereas 36.4 percent viewed "Labor Productivity" as very important. These critically important variables are consistent with the belief and promotion of the "strong work ethic" in the Upper Midwest. Proposals sent to potential locating firms emphasize this as a strong point of their particular community or region.

The critically unimportant factors include "Absence of Union" and "Presence of Union" (Table 4.2). "Absence of Union" was viewed as critical by 17.3 percent of the respondents, but it was viewed as unimportant by 23.0 percent (Table 4.2). "Presence of Union" was relatively less important as only 4.7 percent viewed it as critical whereas 44.7 percent viewed it as unimportant (Table 4.2). One would expect the difference in these two factors to be more extreme as they are opposites. There may have been some confusion about this variable. If it would be critical to have a union present, then, intuitively, it should be unimportant to have absence of union. A possible reason for the unimportance in the union issue may be due to the labor legislation in the United States. After World War II individual states have been allowed to pass right-to-work laws under the Taft-Hartley Act of 1947 (Ehrenberg and Smith). Communities from right-to-work states trying to attract locating businesses/manufacturers are able to avoid alienating unions by simply stating they are a right-to-work state.

Lopez and Henderson found that "Labor Productivity and Work Ethics" were viewed as neutral by processors (Table 4.3). Lopez and Henderson also addressed "Unionization of Labor." This factor was also viewed neutral (Table 4.3).

Markets

Markets ranked seventh out of the nine main factors (Table 4.1). Four specific factors were included in the questionnaire. One of the factors was viewed as critically important, one was neutral, and two critically unimportant (Table 4.2). The critically important factor, "Close Proximity to Reliable Supply of Labor," was viewed as critical by over 30 percent of the respondents (Table 4.2). "Close Proximity to Customers" and "Close Proximity to Others in the Industry" were viewed critically unimportant. Over six percent

viewed "Proximity to Customers" as critical and 3.1 percent viewed "Close Proximity to Others in the Industry" as critical (Table 4.2).

The low ranking of markets is inconsistent with findings by Henderson and Lopez. Markets was the most important factor in their study. "Availability of Labor" and "Proximity to Markets" were both critical in their findings (Table 4.3). The geographic locations of each study may be an explanation for the apparent contradiction. Lopez and Henderson studied the Mid-Atlantic area which is much more densely populated than the Upper Midwest. This larger population would allow for closer proximity to customers, as well as closer proximity to others in the industry.

Labor Availability

The eighth main factor ranked by economic development specialists is labor availability (Table 4.1). Five specific factors comprise this category. Of the five, four were neutral and one was viewed as critically unimportant (Table 4.2). "Professional (requiring 4-year degree) " was the critically unimportant factor. It was viewed as critical by only 4.7 percent of the respondents, while only 4.7 percent viewed it as unimportant (Table 4.2).

The lack of importance for this factor is probably dependent upon the types of firms already present in the community surveyed. One question regarding the unimportance of "Professional (requiring 4-year degree)" is whether a skill based or a knowledge based (i.e. blue collar or white collar) work force is being promoted for these communities. Results indicate the promotion of a skill based work force. If this is the case, communities should question if they are seeking low wage jobs for their residents.

The findings of neutral labor availability factors are consistent with Henderson and Lopez. The factor "Skill of Labor Pool" was considered neutral by processors (Table 4.3).

Higher Education

Finally, higher education was the ninth main factor ranked by economic development specialists (Table 4.1). A total of four specific factors were categorized under higher education. Two were related to vocational-technical schools and the other two related to colleges and universities (Table 4.2). The two vocational-technical school factors were viewed as neutral, while the two colleges and universities factors were viewed as critically unimportant (Table 4.2). Less than seven percent viewed "Programs/Degrees Offered" and "Close Proximity of Institution" as critical (Table 4.2). This is consistent with the findings of a "Professional (requiring 4-year degree)" from the main factor labor availability as being critically unimportant. Once again, this may be dependent upon the type of firms already situated in the community. Other studies reviewed did not address higher education as a location factor.

COMPARATIVE ANALYSIS BETWEEN ECONOMIC DEVELOPMENT SPECIALISTS AND MANUFACTURERS

To compare attitudes between economic development specialists and manufacturers, data were obtained from Leistritz and Ekstrom (1990). They used a limiting criteria that firms must have sold more than 10 percent of their product or service to out-of-state markets and their work force must have expanded by more than 10

percent since 1977. By excluding these limitations, the number of manufacturing firms for comparison increased from 314 to 358.[8]

Leistritz and Ekstrom (1990) found a significant difference between the attitudes about location factors for firms that were new or had relocated and firms that had expanded. As a result of their findings, the attitudes of economic development specialists are compared to two groups of manufacturers. First, the comparative analysis is between economic development specialists and manufacturing firms that were new or relocated (referred to as locating). Second, the analysis is between economic development specialists and manufacturing firms that have expanded (referred to as expanding). In addition, a brief comparison between findings for the two types of manufacturers (locating and expanding) is addressed. The total of 358 firms used for comparison are broken into 196 locating firms and 162 expanding firms.

For comparative purposes, rankings were determined for locating and expanding manufacturers by calculating the mean value for each of the nine main location factors. The nine main location factors are identical to those discussed in the previous section. The factors were ranked in the same manner as for economic development specialists. That is, the lowest mean received a rank of one, etc.

To be consistent with the location factors included in the Leistritz and Ekstrom study, three of the 65 specific factors that economic development specialists rated have been omitted. These specific factors are "Close Proximity to Reliable Supply of Labor," "Quality of Water Supply," and "Availability of Medical Facilities." Thus, rankings for all groups were based on 62 specific location factors.

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[8]The additional number of respondents slightly changed the rank originally calculated for Leistritz and Ekstrom's study.

Paired t-tests were run to test the difference between the mean value for the nine main factors for economic development specialists and locating manufacturers. Paired t-tests were also run to test the differences between the mean values for economic development specialists and expanding manufacturers. For both comparisons, the paired t-tests revealed the nine main factors are significantly different at the .05 level (Table 4.4). The mean values reflecting the economic development specialists' views are consistently lower than the mean values representing the locating manufacturers' views (Table 4.4). This indicates that the economic development specialists view all nine main factors as more critical than manufacturers do for making a location decision.

Economic Development Specialists Versus Locating Manufacturers

The ranks between economic development specialists and locating manufacturers were quite consistent. Main factors that varied, typically varied no more than one ranking. For example, locating manufacturers ranked state and local taxes first, and incentives and infrastructure second (Table 4.4). This was the reverse from the rank of economic development specialists (Table 4.4). Both groups ranked higher education and markets eighth and ninth, respectively. The only real discrepancy was for the ranking of the main factor labor. Locating manufacturers ranked labor third, whereas economic development specialists ranked it sixth (Table 4.4).

An overall rank was determined for each of the specific factors based upon the mean value (Table 4.5). Thus, the factors were ranked from 1 to 62. The specific

TABLE 4.4. Comparison of Ranked Main Location Factors Between Economic development Specialists and Manufacturers

Main Factors	Economic Development Specialists		Locating Manufacturers		Expanding Manufacturers	
	Rank*	Mean[1]	Rank	Mean[1]	Rank	Mean[1]
Incentives and Infrastructure	1	2.25	2	2.78[a]	3	2.98[b]
State and Local Taxes	2	2.36	1	2.65[a]	1	2.73[b]
Utilities	3	2.45	5	3.19[a]	4	3.12[b]
Quality of Life	4	2.51	4	3.17[a]	5	3.13[b]
Transportation	5	2.54	6	3.35[a]	7	3.41[b]
Labor	6	2.68	3	2.95[a]	2	2.89[b]
Labor Availability	7	2.80	7	3.50[a]	6	3.34[b]
Higher Education	8	2.87	8	3.54[a]	8	3.45[b]
Markets	9	2.93	9	3.60[a]	9	3.53[b]

[1]Based on a scale from 1 (critical) to 5 (unimportant).
[a]Significant difference at .05 level between economic development specialists and locating manufacturers.
[b]Significant difference at .05 level between economic development specialists and expanding manufacturers.
*Ranks differ from Table 4.1 because three specific factors were omitted to be consistent with Leistritz and Ekstrom.

labor factors were analyzed to explain the difference in the ranks for labor. Economic development specialists ranked "Work Attitudes" and "Labor Productivity" second and third, respectively (Table 4.5). Locating manufacturers viewed these slightly less in importance, with "Work Attitudes" ranking fifth, and "Labor Productivity" ranking eighth. "Wage Levels" were also closely paired with economic development specialists ranking it 33rd, while locating manufacturers ranked it 32nd (Table 4.5).

TABLE 4.5. Rankings of Specific Location Factors by Economic Development Specialists and Manufacturers

Factor	Category	EDS[1]		Locating		Expanding	
		Overall Rank	Mean Value[2]	Overall Rank	Mean Value	Overall Rank	Mean Value
Community Attitude Toward Business Development	I	1	1.72	2	2.28	5	2.43
Work Attitudes	L	2	1.86	5	2.37	1	2.33
Labor Productivity	L	3	1.88	8	2.43	3	2.40
Developable Land Available	I	4[a]	1.96	21	2.78	22	2.89
Quality of Schools	Q	5[a]	1.96	19	2.71	11	2.65
Availability of *State* Financial and Developmental Incentives	I	6	2.00	22	2.80	32[b]	3.06
Availability of Electricity	U	7	2.07	7	2.42	4	2.41
Overall Tax Burden on Business	S	8	2.08	1	2.21	2	2.35
Availability of *Local* Financial and Developmental Incentives	I	9	2.09	17	2.65	24	2.90
Availability of Local Financing	I	10	2.10	12	2.56	19	2.85
Water Supply	U	11	2.12	38[b]	3.23	35[b]	3.16
Quality of Medical Facilities	Q	12	2.15*	31	3.05	29	2.98
Worker's Compensation	S	13	2.15*	4	2.36	6	2.52
Cost of Electricity	U	14	2.17	13	2.60	9	2.56
Buildings Available	I	15[a]	2.22	18	2.69	37	3.19
Local Property Taxes	S	16[a]	2.22	10	2.52	16	2.75
Cost of Property	I	17[a]	2.22	3	2.34	12	2.67
Sales Tax Exemption on Manufacturing Equipment	S	18	2.23*	26	2.90	20	2.85
Motor Freight Service	T	19	2.23*	16	2.65	10	2.64
Personal Tax Burdens (all taxes combined)	Q	20	2.24	9	2.52	7	2.54
Unemployment Insurance Rate	S	21	2.26	6	2.38	8	2.55
State Corporate Income Taxes	S	22	2.29	11	2.54	15	2.70
Cost of Construction	I	23	2.34	14	2.61	14	2.68

Continued

Factor	Category	EDS[1]		Locating		Expanding	
		Overall Rank	Mean Value[2]	Overall Rank	Mean Value	Overall Rank	Mean Value
Quality of Housing	Q	24	2.36	29	2.96	30	2.99
Interstate Highway Access	T	25	2.38	30	3.02	44	3.31
Waste Treatment Facilities	U	26	2.40	56[b]	3.66	57[b]	3.64
State Property Taxes	S	27	2.42	15	2.62	13	2.68
Telecommunication Capacity	U	28[a]	2.43	42	3.35	38	3.25
Cost of Housing	Q	29[a]	2.43	27	2.94	23	2.90
Environmental Regulations	I	30	2.43*	24	2.81	20	2.85
State Personal Income Taxes	S	31[a]	2.45	20	2.72	18	2.77
Skilled Industrial or Technical	A	32[a]	2.45	35	3.14	25	2.90
Wage Levels	L	33	2.53*	32	3.05	31	3.03
State Assistance in Labor-Training Programs	I	34	2.53*	39	3.25	52	3.51
Incentives for Venture Capital Formation	I	35	2.55	37	3.21	48	3.40
Improved State Regulatory Climate	I	36	2.56	23	2.80	27	2.93
Streamlined Process for Obtaining Government Permits	I	37[a]	2.59	40	3.32	46	3.38
State Sales Tax	S	38[a]	2.59	33	3.06	28	2.96
Telecommunication Costs	U	39	2.62	34	3.12	34	3.14
Close Proximity to Recreational Opportunities	Q	40	2.63	52	3.55	51	3.50
Close Proximity to Suppliers/Raw Materials	M	41	2.70	43	3.36	43	3.31
Programs Offered (Vo-Tech Schools)	H	42	2.71	44	3.38	39	3.27
Rail	T	43	2.73	62	4.17	61	4.14
Sales	A	44	2.76	49	3.53	41	3.30
Scheduled Air Service	T	45	2.80	51	3.54	53	3.55
Unskilled	A	46	2.83	45	3.42	50	3.48
City Sales Tax	S	47	2.84*	36	3.18	36	3.18
Close Proximity of Schools (Vo-Tech Schools)	H	48	2.84*	47	3.46	47	3.39

Continued

Factor	Category	EDS[1]		Locating		Expanding	
		Overall Rank	Mean Value[2]	Overall Rank	Mean Value	Overall Rank	Mean Value
Clerical	A	49	2.85*	48	3.46	40	3.27
Right to Work Laws	L	50[a]	2.85	28[b]	2.94	17[b]	2.75
Diversity of Businesses	Q	51[a]	2.85	46	3.44	42	3.30
Cost of Natural Gas	U	52	2.91*	50	3.54	45	3.33
Close Proximity to Customers	M	53	2.91*	41	3.32	33[b]	3.13
Availability of Natural Gas	U	54	2.92	53	3.58	49	3.44
Programs/Degrees Offered (Colleges & Universities)	H	55	2.94	55	3.64	55	3.59
Climate (weather)	Q	56[a]	2.97	54	3.62	56	3.59
Close Proximity to Cultural Opportunities	Q	57[a]	2.97	58	3.76	58	3.72
Close Proximity of Institution (Colleges & Universities)	H	58[a]	2.97	57	3.68	54	3.57
Absence of Uunion	L	59	3.03	25[b]	2.89	26[b]	2.91
Professional (requiring 4-year degree)	A	60	3.10	59	3.92	59	3.74
Close Proximity To Others in the Industry	M	61	3.19	61	4.10	62	4.16
Presence of Union	L	62	4.00	60	3.97	60	3.94

NOTE: Categories are defined as I = Incentives and Infrastructures, S = State and Local Taxes, U = Utilities, Q = Quality of Life, T = Transportation, L = Labor, A = Labor Availability, H = Higher Education, M = Markets. Rankings based on mean values.

[1]EDS = Economic Development Specialists

[2]Mean Values may differ slightly from values in Table 4.1 due to corrections for missing values in the analysis.

[a]Denotes overall ranks with the same rank and same mean value. Ties were broke by looking at the percent of respondents viewing each factor as critical.

[b]Difference in rank from EDS by 20 or more.

*Denotes a mean value that is the same as other mean values due to rounding error.

There was a much greater discrepancy in the rankings of "Right to Work Laws" and "Absence of Union." Economic development specialists ranked "Right to Work Laws" 50th, while locating manufacturers ranked it 28th (Table 4.5). "Absence of Union" was

ranked 59th by economic development specialists, but 25th by locating manufacturers (Table 4.5). "Presence of Union" had a small difference in ranks, economic development specialists ranked it last (62nd) while locating manufacturers ranked it 60th. These findings reveal that "Right to Work Laws" and "Absence of Union" are more important to locating manufacturers. Perhaps economic development specialists need to promote these factors more to attract manufacturers.

Aside from differences in specific labor factors, two specific utility factors were ranked inconsistently between economic development specialists and locating manufacturers. These specific factors are "Water Supply" and "Waste Treatment Facilities." "Water Supply" was ranked 11th by economic development specialists, but 38th by locating manufacturers (Table 4.5). One possible reason for the large difference is that the manufacturers surveyed may not necessarily need a large supply of water to manufacture or process their products. "Waste Treatment Facilities" was ranked 26th by economic development specialists and 56th by locating manufacturers (Table 4.5). Once again this difference may be dependent upon the types of manufacturing firms represented. Perhaps economic development specialists need to focus less on these specific utility factors to attract additional manufacturing firms. Of course, this strategy is dependent upon the needs of the specific manufacturers.

Economic Development Specialists Versus Expanding Manufacturers

Results of the comparison between economic development specialists' and expanding manufacturers' perceptions are similar to the results for locating manufacturers. The similarities exist because the rankings of the nine main factors by expanding manufacturers largely mirror the rankings of the locating manufacturers. Although rankings of the nine main factors are similar between manufacturers,

differences within specific factors were found. For this reason, a comparison of specific factors between economic development specialists and expanding manufacturers is considered.

The major discrepancy is that expanding manufacturers ranked labor second, which is higher than either economic development specialists or locating manufacturers ranked it (Table 4.4). Once again, the specific labor factors, "Work Attitude" and "Labor Productivity," were ranked high across groups. Similar to locating manufacturers, "Right to Work Laws," "Absence of Union," and "Presence of Union," were much more important to expanding firms than to economic development specialists (Table 4.5).

Another difference between economic development specialists and expanding manufacturers occurred for the main factor incentives and infrastructure. Economic development specialists ranked it first while expanding manufacturers ranked it third (Table 4.4). The major difference in rankings of specific incentives and infrastructure factors occurred for the factor "Availability of *State* Financial and Developmental Incentives." This factor was ranked sixth by economic development specialists, but 32nd by expanding manufacturers (Table 4.5). Since the expanding firm is already present in the community, the "Availability of *State* Financial and Developmental Incentives" may not be very important to them.

Large differences in rank also occurred for the factor "Water Supply" (Table 4.5). Economic development specialists ranked this factor 11th, while expanding manufacturers ranked it 35th (Table 4.5). "Proximity to Customers" was another factor with a large discrepancy in rank. Expanding manufacturers ranked this factor 33rd while economic development specialists ranked it 53rd, which is considerably lower (Table 4.5).

Correlation Coefficient Across Groups

To test the similarities between the rankings of main factors by economic development specialists and locating manufacturers, a Spearman's rho correlation coefficient was calculated. A Spearman's rho correlation coefficient was also calculated for the differences in rankings of the main factors by economic development specialists and expanding manufacturers. The correlation coefficients were high. The correlation in rank of the nine main factors by manufacturers was .950 and found to be statistically significant (Table 4.6). The correlation in rank between economic development specialists and locating manufacturers was .867 and statistically significant at the .05 level (Table 4.6). Even the lowest correlation coefficient of .767 between economic development specialists and expanding manufacturers illustrates a high positive correlation that is statistically significant at the .05 level (Table 4.6). The significant difference between these correlation coefficients allows for rejection of the null hypothesis that the statistic is zero (meaning no correlation) (Table 4.6).

A Spearman's rho correlation coefficient was also calculated for the 62 specific factors. The correlation coefficients also revealed a high positive correlation (Table 4.7). Locating and expanding manufacturers have a statistically significant correlation of .946 (Table 4.7). Economic development specialists and locating manufacturers have a statistically significant correlation of .820 (Table 4.7). Expanding manufacturers and economic development specialists have a correlation of .758, that is also statistically significant at the .05 level.

TABLE 4.6. Spearman's Rho Correlation Matrix of the Nine Main Factor Rankings, by Manufacturer Type and Community Size, 1991

	Economic Development Specialists	Locating Manufacturers	Expanding Manufacturers	Rural EDS[1]
Economic Development Specialists (EDS)	-	-	-	-
Locating Manufacturers	.867*	-	-	-
Expanding Manufacturers	.767*	.950*	-	-
Rural EDS[1]	.983*	.883*	.750*	-
Small Metropolitan EDS[2]	.667*	.483	.417	.583

[1]Perceptions of Economic Development Specialists for community populations of 5,000 or less.
[2]Perceptions of Economic Development Specialists for community populations greater than 5,000.
*Significant difference at the .05 level

All the correlations are slightly smaller than those calculated for the nine main factors. For example, the coefficient between economic development specialists and expanding manufacturers decreased from .767 to .758 (Table 4.6 and 4.7). Once again a significant difference existed between all correlation coefficients, indicating the rankings were correlated. These findings may indicate that economic development specialists are aware of the main location factor of interest to manufacturers. However, they are less aware of the specific factors that are important to manufacturers when they make location decisions.

Overall, the paired t-test showed that the mean value representing each main location factor differed significantly between economic development specialists and

TABLE 4.7. Spearman's Rho Correlation Matrix of the 62 Specific Factor Rankings, by Manufacturer Type and Community Size, 1991

	Economic Development Specialists	Locating Manufacturers	Expanding Manufacturers	Rural EDS[1]
Economic Development Specialists (EDS)	-	-	-	-
Locating Manufacturers	.820*	-	-	-
Expanding Manufacturers	.758*	.946*	-	-
Rural EDS	.992*	.819*	.756*	-
Small Metropolitan EDS	.816*	.720*	.704*	.755*

[1]Perceptions of Economic Development Specialists from a community of 5,000 people or less.
[2]Perceptions of Economic Development Specialists from a community of 5,000 or more people.
*Significant difference at the .05 level

locating manufacturers, and between economic development specialists and expanding manufacturers. In addition, the Spearman's rho coefficients calculated for the nine main factors and for the 62 factors indicated a positive correlation between economic development specialists and locating manufacturers, and also between economic development specialists and expanding manufacturers. Although the correlations were positive, they were not perfect. The findings in this section allows for rejection of the null hypotheses that the correlation statistic is zero for the nine main location factors and also for the 62 specific location factors. The rejection of the null hypotheses indicates the ranks between economic development specialists and manufacturers are correlated.

COMPARATIVE ANALYSIS BY COMMUNITY SIZE

In this section, the differences in attitude for economic development specialists about location factors is based on the size of the community in which they work. Communities throughout North Dakota, South Dakota, and Nebraska vary in size. There are particularly a large number of small communities throughout the three states in the study. For example, in North Dakota, 96.7 percent of the communities have populations below 5,000 (North Dakota Census Data Center). The tendency appears to be for firms to locate in larger communities. Leistritz and Ekstrom's (1990) results indicated that industries surveyed would select a median community size of 10,000 people as a minimum when making a location decision. Due to the large number of small communities in the Midwest, but the preference for firms to locate in larger communities, a population size of 5,000 was chosen for comparative purposes. Communities with populations of 5,000 and less are referred to as rural communities. Communities larger in size are defined to be small metropolitan communities.

First, the differences in perceptions of economic development specialists from rural communities and small metropolitan communities are considered. Second, comparisons are made between perceptions of economic development specialists from rural communities to the perceptions of locating and expanding manufacturers. In turn, comparisons are made between perceptions of economic development specialists from small metropolitan communities to the perceptions of locating and expanding manufacturers. Within each of these comparisons, transportation factors are examined in more detail to detect differences in perceptions. These differences may indicate whether transportation should be included within the family of services.

Rural Versus Small Metropolitan Economic Development Specialists

Of the 199 respondents, 159 represented rural communities and 40 represented small metropolitan communities. The ranks of the nine main location factors sharply differ for economic development specialists from rural and small metropolitan communities (Table 4.8). Rankings of the nine main location factors by economic development specialists in rural areas are nearly identical to the overall ranking by the economic development specialists (Tables 4.4 and 4.8). Incentives and infrastructure and state and local taxes rank at the top again, while higher education and markets rank at the bottom (Tables 4.4 and 4.8). The only switch is minor, quality of life and utilities exchanged positions.

In contrast, the rank of the nine main location factors by small metropolitan economic development specialists differ from the ranks of rural economic development specialists. The factors which differ by more than two ranks are transportation and quality of life (Table 4.8). Economic development specialists from small metropolitan communities ranked transportation considerably higher than economic development specialists from rural communities. On the other hand, quality of life was ranked higher by economic development specialists from rural communities.

To measure the correlation of the ranks for the main factors by size of city, a Spearman's rho coefficient was calculated. The correlation coefficient equals .583 (Table 4.6). This value is not significant at the .05 level. Therefore, the hypothesis that the ranks have no correlation is not rejected.

To more closely measure the correlation of the perceptions of economic development specialists, a Spearman's rho correlation coefficient was also calculated

TABLE 4.8. Comparison of Main Location Factors Between Economic Development Specialists in Rural and Metro Areas

Main Factors	Economic Development Specialists Rural		Economic Development Specialists Small Metro	
	Rank	Mean[1]	Rank	Mean[1]
Incentives and Infrastructure	1	2.22	3	2.40*
State and Local Taxes	2	2.36	4	2.40
Quality of Life[2]	3	2.47*	7	2.66
Utilities	4	2.47	2	2.39
Transportation[2]	5	2.59	1	2.30
Labor[2]	6	2.74	5	2.46
Labor Availability	7	2.82	8	2.70
Higher Education[2]	8	2.94	6	2.58
Markets	9	2.97	9	2.80

[1]Based on a scale from 1 (critical) to 5 (unimportant).
[2]The two groups (rural versus metro) are significantly different at the .05 level using the t-test.
*Value is rounded up.

for the 62 specific location factors. This correlation coefficient equals .755 (Table 4.7). The coefficient is significant at the .05 level. Thus, the null hypothesis that the ranks have no correlation is rejected. The Spearman rho gives different results, depending upon the number of factors. The significance for the specific factors arises because of the large differences in rank for a few specific factors.

Seven specific factors differ by more than 20 in rank between rural and small metropolitan communities (Table 4.9). These specific factors are from five of the nine main factor categories. These categories are labor, labor availability, transportation, state and local taxes, and incentives and infrastructure.

TABLE 4.9. Ranks Between Rural and Small Metropolitan Economic Development Specialists and Manufacturers

FACTOR	CATEGORY	EDS[1]	Rural	Metro	Locating	Expanding
		Rank	Rank	Rank	Rank	Rank
Community Attitude Toward Business Development	I	1	1	1	2	5
Work Attitudes	L	2	2	3	5	1
Labor Productivity	L	3	3	2	8	3
Developable Land Available	I	4	4	6	21	22
Quality of Schools	Q	5	5	7	19	11
Availability of *State* Financial and Developmental Incentives	I*	6	6	13	22	32
Availability of Electricity	U	7	9	9	7	4
Overall Tax Burden on Business	S	8	10	8	1	2
Availability of *Local* Financial and Developmental Incentives	I	9	7	15	17	24
Availability of Local Financing	I	10	8	17	12	19
Water Supply	U*	11	12	16	38	35
Quality of Medical Facilities	Q*	12	11	26	31	29
Worker's Compensation	S	13	13	10	4	6
Cost of Electricity	U	14	14	12	13	9
Buildings Available	I*	15	17	21	18	37
Local Property Taxes	S	16	15	27	10	16
Cost of Property	I*	17	16	24	3	12
Sales Tax Exemption on Manufacturing Equipment	S	18	19	14	26	20
Motor Freight	T	19	21	11	16	10
Personal Tax Burden	Q	20	18	19	9	7
Unemployment Insurance Rate	S	21	20	23	6	8
State Corporate Income Taxes	S	22	22	18	11	15
Cost of Construction	I*	23	23	35	14	14
Quality of Housing	Q	24	24	34	27	23
Interstate Highway Access	T*	25	32	5	30	44
Waste Treatment Facilities	U*	26	26	31	56	57

Continued

FACTOR	CATEGORY	EDS[1]	Rural	Metro	Locating	Expanding
		Rank	Rank	Rank	Rank	Rank
State Property Taxes	S*	27	25	45	15	13
Telecommunication Capacity	U*	28	30	20	42	38
Cost of Housing	Q	29	28	38	29	30
Environmental Regulations	I	30	27	39	24	21
State Personal Income Taxes	S	31	29	29	20	18
Skilled Industrial or Technical	A*	32	38	4	35	25
Wage Levels	L	33	33	42	32	31
State Assistance in Labor-Training Programs	I*	34	36	32	39	52
Incentives for Venture Capital Formation	I	35	31	55	37	48
Improved State Regulatory Climate	I*	36	34	46	23	27
Streamlined Process for Obtaining Government Permits	I	37	35	52	40	46
State Sales Tax	S	38	37	43	33	28
Telecommunication Costs	U	39	40	37	34	34
Close Proximity to Recreational Opportunities	Q	40	39	54	52	51
Close Proximity to Suppliers/Raw Material	M	41	42	36	43	43
Programs Offered (Vo-Tech Schools)	H	42	44	28	44	39
Rail	T*	43	41	48	62	61
Sales	A	44	43	50	49	41
Scheduled Air Service	T*	45	50	22	51	53
Unskilled	A	46	45	56	45	50
City Sales Tax	S	47	48	53	36	36
Close Proximity of Schools (Vo-Tech Schools)	H	48	51	33	47	47
Clerical	A	49	46	59	48	40
Right to Work Laws	L*	50	53	30	28	17
Diversity of Businesses	Q	51	47	57	46	42

Continued

FACTOR	CATEGORY	EDS[1] Rank	Rural Rank	Metro Rank	Locating Rank	Expanding Rank
Cost of Natural Gas	U	52	55	40	50	45
Close Proximity to Customers	M	53	52	51	41	33
Availability of Natural Gas	U	54	56	41	53	49
Programs/Degrees Offered (Colleges and Universities)	H	55	57	44	55	55
Climate (weather)	Q	56	49	61	54	56
Close Proximity to Cultural Opportunities	Q	57	54	58	58	58
Close Proximity of Institution (Colleges and Universities)	H	58	58	47	57	54
Absence of Union	L*	59	59	25	25	26
Professional (4-year degree)	A	60	60	49	59	59
Close Proximity to Others in Industry	M	61	61	60	61	62
Presence of Union	L	62	62	62	60	60

NOTE: Categories are defined as I = Incentives and Infrastructures, S = State and Local Taxes, U = Utilities, Q = Quality of Life, T = Transportation, L = Labor, A = Labor Availability, H = Higher Education, M = Markets.
[1]EDS = Economic Development Specialists
*Indicates rank differences of 20 or more among groups.

Within the main factor, labor, two specific factors were ranked higher by small metropolitan economic development specialists by more than 20. They are, "Right to Work Laws" and "Absence of Union" (Table 4.9). From the main factor labor availability, "Skilled Industrial or Technical" labor was ranked considerably higher by small metropolitan economic development specialists (Table 4.9). The higher rank of "Right to Work Laws" and "Absence of Union" by small metropolitan economic development specialists may have occurred because they are aware of evidence that high unionization has strong negative effects on business activity in a state (Bartik). The higher rank of "Skilled Industrial or Technical" labor raises the question of the type of work force being

promoted in the community. Are the small metropolitan economic development specialists seeking lower wage jobs for their residents?

Three transportation factors are ranked higher by small metropolitan economic development specialists. These factors are "Motor Freight Services," "Interstate Highway Access," and "Scheduled Air Service" (Table 4.10). Two factor ranks differed by more than 20, "Interstate Highway Access" and Scheduled Air Service" (Table 4.10). The transportation factors may have been ranked higher in small metropolitan communities because these areas are probably distribution centers.

TABLE 4.10. Comparison of Ranked Transportation Factors Between Economic Development Specialists and Manufacturers

Transportation Factors	Economic Development Specialists		Manufacturers	
	Rural Rank	Metro Rank	Locating Rank	Expanding Rank
Motor Freight Service	21	11	16	10
Interstate Highway Access*	32	5	30	44
Rail*	41	48	62	61
Scheduled Air Service*	50	22	51	53

* Differences in ranks among groups by more than 20.

Two specific factors, each from different main categories, were ranked higher by rural economic development specialists. These factors are "State Property Taxes" from the category state and local tax, and "Incentives for Venture Capital Formation" from incentives and infrastructure factor (Table 4.9). Perhaps rural economic

development specialists viewed the factors "State Property Taxes" and "Incentives for Venture Capital Formation" higher because firms making location decisions were attracted by these factors. Differences do exist between rural and small metropolitan economic development specialists' perceptions. This may suggest that problems and opportunities vary by size of the community.

Rural Economic Development Specialists and Manufacturers

The perceptions of rural economic development specialists were compared to both locating and expanding manufacturers. First, a Spearman's rho correlation coefficient for the nine main factors was calculated to measure correlation between rural economic development specialists and locating manufacturers. A correlation coefficient of .883 indicates a high positive correlation, significant at the .05 level (Table 4.6). A Spearman's rho correlation coefficient was also calculated for the 62 specific factors. The correlation coefficient of .819 is also significant at the .05 level (Table 4.7).

Six specific factors differed by 20 or more in rank. Locating manufacturers viewed "Right to Work Laws" and "Absence of Union" considerably higher than rural economic development specialists (Table 4.9). The other four factors, "Rail," "Water Supply," "Waste Treatment Facilities," and "Quality of Medical Facilities" were ranked much higher by rural economic development specialists (Table 4.9).

Considering transportation factors in more detail, locating manufacturers ranked two factors higher than rural economic development specialists ranked the factors. These factors are, "Motor Freight Services" and "Interstate Highway Access" (Table 4.10). The higher rankings of these factors could be due to the belief of locating manufacturers that the trucking industry is able to utilize the highway system of 714,000 miles more extensively than the 147,000 mile rail system (Due, et al.).

A Spearman's rho correlation coefficient was calculated to measure the correlation between rural economic development specialists and expanding manufacturers. The coefficient was .750 (Table 4.6) for the nine main factors and .756 (Table 4.7) for the 62 factors. In both cases, it was significant at the .05 level.

Seven specific factors were the driving force behind the lower correlation coefficient. Five of the specific factors are identical to those listed in the comparison between rural economic development specialists and locating manufacturers. They are "Right to Work Laws," "Absence of Union," "Rail," "Water Supply," and "Waste Treatment Facilities" (Table 4.9). The additional factors that differ are "Buildings Available" and "Availability of *State* Financial and Developmental Incentives." Both of these are viewed as more important by rural economic development specialists than by expanding manufacturers. There also is not a large discrepancy between rural economic development specialists and expanding manufacturers for the factor "Quality of Medical Facilities," which occurred in the comparison with locating manufacturers.

Looking at transportation factors more closely, expanding manufacturers ranked the factor "Motor Freight Services" in the top 10 specific location factors (Table 4.10). This high rank illustrates the importance of this transportation factor in expansion decisions. In comparison, rural economic development specialists ranked the factor 21st (Table 4.10). Rural economic development specialists ranked the other three transportation factors higher than expanding manufacturers ranked them.

One could conclude that perceptions of rural economic development specialists are more highly correlated with locating manufacturers than with expanding manufacturers. This is especially true for the nine major factors. However, this difference somewhat disappears when the 62 specific factors are considered. If rural communities wish to

pursue economic development, it would seem as though they need to focus more on providing necessary services to existing firms so they can expand and flourish to their full potential. This would suggest that rural communities combine the previous economic development home-grown phase and the current phase, family of services. It also appears that transportation should be included within the family of services because of the high ranking "Motor Freight Services" received from locating and expanding manufacturers.

Small Metropolitan Economic Development Specialists and Manufacturers

The perceptions of small metropolitan economic development specialists were also compared to both locating and expanding manufacturers. A Spearman's rho correlation coefficient was calculated between each group.

A Spearman's rho correlation coefficient of .483 for the nine main location factors indicated a statistically insignificant correlation between ranks of small metropolitan economic development specialists and locating manufacturers (Table 4.6). Yet, when Spearman's rho was calculated for the 62 specific factors, the correlation coefficient was .720 (Table 4.7). For the 62 factors, the correlation coefficient was significant at the .05 level.

Ten specific factors that differ by 20 or more in rank is the impetus for the low coefficients (Table 4.9). Six of the ten factors were ranked higher by small metropolitan economic development specialists. These are "Skilled Industrial or Technical" labor availability, "Interstate Highway Access," "Scheduled Air Service," "Water Supply," "Waste Treatment Facilities," and "Telecommunication Capacity" (Table 4.9). The remaining four were ranked higher by locating manufacturers. They are "State Property Taxes," "Improved State Regulatory Climate," "Cost of Property," and "Cost of Construction" (Table 4.9).

Large differences in perceptions of transportation factors exist between small metropolitan economic development specialists and locating manufacturers. Small metropolitan economic development specialists ranked all four transportation factors higher than the locating manufacturers (Table 4.10). "Motor Freight Services" was ranked high for both groups, as small metropolitan economic development specialists ranked it 11th and locating manufacturers ranked it 16th (Table 4.10).

Finally, the Spearman's rho correlation coefficient calculated for the ranks of the nine main location factors between small metropolitan economic development specialists and expanding manufacturers is .417 (Table 4.6). This coefficient is insignificant at the .05 level. The correlation coefficient for the 62 specific factors is .704 (Table 4.7). This coefficient is statistically significant at the .05 level. These correlation coefficients are consistent with those between small metropolitan economic development specialists and locating manufacturers.

There is a divergence of 20 or more in rank for seven of the specific factors. Five of the seven factors were ranked higher by small metropolitan economic development specialists. These are "Skilled Industrial or Technical" labor availability, "Interstate Highway Access," "Scheduled Air Service," "Waste Treatment Facilities," and "State Assistance in Labor-training Programs" (Table 4.9). The two factors expanding manufacturers ranked higher are "State Property Taxes" and "Cost of Construction" (Table 4.9).

Considering the transportation factors in more detail, expanding manufacturers and small metropolitan economic development specialists ranked one factor similarly. Expanding manufacturers ranked "Motor Freight Services" 10th, while small metropolitan economic development specialists ranked the factor 11th. The other three transportation

factors were ranked considerably higher by small metropolitan economic development specialists.

One could conclude from this comparison that small metropolitan economic development specialists' perceptions do not match the perceptions of manufacturers. Large differences in perceptions of specific factors may be hindering the economic development of small metropolitan communities.

Spearman rho coefficients indicated mixed perceptions toward location factors between rural and small metropolitan economic development specialists. The coefficient (.583) calculated for the nine main factors was statistically insignificant and relatively low (Table 4.6). Yet, the coefficient (.755) calculated for the 62 specific factors was statistically significant (Table 4.7). The difference in significance could be a result of the small number of factors considered in the main category.

Spearman rho coefficients calculated among the two groups of economic development specialists and the two groups of manufacturers also indicated mixed perceptions. The coefficients (.883) calculated for the nine main location factors (Table 4.6), and also the 62 specific factors (.819) (Table 4.7), were statistically significant between rural economic development specialists and locating manufacturers. Similarly, the coefficients (.750) calculated for the nine main location factors (Table 4.6), and the 62 specific factors (.756) (Table 4.7), were statistically significant between rural economic development specialists and expanding manufacturers.

In comparison, the coefficients calculated between small metropolitan economic development specialists and manufacturers indicated differences in perceptions. The correlation coefficient (.483) calculated for the nine main factors was low and insignificant between small metropolitan economic development specialists and locating manufacturers

(Table 4.6). However, the coefficient (.720) calculated for the 62 specific factors was higher and statistically significant (Table 4.7). Likewise, the correlation coefficient (.417) calculated for the nine main location factors was low and insignificant between small metropolitan economic development specialists and expanding manufacturers (Table 4.6). However, the coefficient (.704) calculated for the 62 specific factors was higher and statistically significant between small metropolitan economic development specialists and expanding manufacturers (Table 4.7). The analysis indicates that large discrepancies in a few of the factors cause the ranks of the main factors to differ among groups. One could conclude there is correlation between the groups, however, there are some specific factors with large discrepancies in perceptions.

CONCLUSION

Overall, there was not much difference in the ranks of main factors between economic development specialists and both types of manufacturers, locating and expanding. The major difference in ranks appeared to be with the main factor labor. Manufacturers viewed it relatively more important than economic development specialists. Another difference was in the rankings of the main factors between economic development specialists of different community size. Economic development specialists from communities over 5,000 in population viewed transportation and utilities much higher than the economic development specialists from communities of 5,000 and less. Findings from the comparisons between economic development specialists from different community sizes and manufacturing firms reveals that differences in perceptions exist. The implications and conclusions of these findings are discussed in Chapter 6.

CHAPTER 5

DEMOGRAPHICS AND DATA PROCESSING CAPABILITIES

In this chapter, the results from the "Data Processing Capabilities" section of the questionnaire are provided. The purpose of this chapter is to provide information on the data processing equipment being used by the economic development specialists. This information is used to determine the most effective delivery system for transportation information.

The chapter is divided into four sections. In the first section, demographic information about the economic development specialists is provided. In the second section the data processing capabilities of the economic development specialists is presented. This includes both computer hardware and software. In the third section, the significant variables of a chi-square test on demographics and computer usage are presented. Finally, a summary of the information presented in this chapter helps determine the most efficient information delivery system to reach economic development specialists.

DEMOGRAPHICS

The demographic section provides a profile of economic development specialists separated by the three states surveyed. This section is separated into four subsections. They are background, education, employment, and demographic factors by community size.

Background

In this section, gender, age, and economic development experience, are considered. A demographic profile of economic development specialists by state shows that most (81.2

percent) were men (Table 5.1). South Dakota has the highest percentage of male economic development specialists (90.2 percent), North Dakota was second with 81.0 percent.

TABLE 5.1. Profile of Economic Development Specialists by State, 1991

Demographic Variable	State							
	Nebraska		North Dakota		South Dakota		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Gender								
Male	46	74.2	68	81.0	46	90.2	160	81.2
Female	16	25.8	16	19.0	5	9.8	37	18.8
Age								
Less Than 36 Years Old	9	14.8	17	20.5	6	12.0	37	18.6
36-45 Years	25	40.9	33	39.7	21	42.0	79	39.7
More Than 45 Years Old	27	44.3	33	39.8	23	46.0	83	41.7
Experience								
Less Than 3 Years	13	21.0	14	16.9	4	7.8	31	15.8
3-5 Years	14	22.5	18	21.7	16	31.4	48	24.5
6-15 Years	23	37.1	32	38.5	19	37.3	74	37.8
16 Years or Greater	12	19.4	19	22.9	12	23.5	43	21.9
Position								
Full-time Paid	12	19.4	24	29.3	11	22.0	47	24.2
Full-time Volunteer	2	3.2	-	0.0	1	2.0	3	1.5
Part-time Paid	5	8.1	5	6.1	1	2.0	11	5.7
Part-time Volunteer	43	69.4	53	64.6	37	74.0	133	68.6

The greatest percentage of economic development specialists by age was over 45 years old (41.7 percent), the next highest group was between 36 and 45 years old (39.7 percent) (Table 5.1). South Dakota has the oldest group of economic development specialists, with 88 percent 36 years of age or older. North Dakota has the youngest group of economic development specialists, with 20.5 percent under 36 years old and 79.5 percent over 35 years of age.

Most respondents (37.8 percent) have between 6 and 15 years of experience in economic development (Table 5.1). The three states queried were all within one percentage point of this average. The respondents with 3-5 years and 16 years or more years of experience followed with 24.5 percent and 21.9 percent, respectively.

A chi-square test, comparing age and demographic variables revealed the length of time involved in economic development as the most significant variable. The chi-square uses a null hypothesis that states the correlation between variables in the cross tabulation is insignificant. Most economic development specialists that have worked in economic development over 15 years were 46 years of age and older (83.72 percent) (Table 5.2). The results are intuitive. The younger economic development specialists have not been around long enough to have more experience. The economic development specialists with 6-15 years of experience were most often in the 36-45 year bracket (59.46 percent). Those with less than three years experience, were usually under 36 years of age (44.12 percent) (Table 5.2).

Education

The education level of the economic development specialist varies significantly with age. Older economic development specialists have less education than younger economic development specialists (Table 5.2). The high school, technical school and two

TABLE 5.2. Cross Tabulation For How Old Are You, by Demographic Variables.

Demographic Variables	Chi-Square	Age (in percent)		
		Less than 36 years	36-45 years	46 or more years
Overall		18.59	39.70	41.71
How Long Have You Been Involved With Economic Development Efforts?	67.10[a]			
Less Than 3 Years		44.12[c]	17.65[d]	38.24
3-5 Years		29.17[c]	45.83	25.00[d]
6-15 Years		10.81[d]	59.46[c]	29.73[d]
16+ Years		0.00	16.28[d]	83.72[c]
How Long At Your Current Position?	29.91[a]			
Less Than 3 Years		30.00[c]	38.00	32.00[d]
3-5 Years		29.55[c]	40.91	29.55[d]
6-15 Years		16.07	48.21[c]	35.71
16+ Years		0.00	30.61[d]	69.39[c]
Work at Economic Development	8.28[b]			
Part-time		15.97	36.81	47.22[c]
Full-time		24.00[c]	52.00[c]	24.00[d]
Receive Income for Economic Development Efforts?	10.95[a]			
Yes		25.86[c]	50.00[c]	24.14[d]
No		15.00	35.71	49.29[c]
Highest Level of Education Attained?	23.17[a]			
High School, Technical/2 Year College		15.15	21.21[d]	63.64[c]
Some College		14.29	32.65	53.06[c]
4 Year College Degree		26.67[c]	36.67	36.67
Four Year Plus Some Graduate Work		14.81	66.67[c]	18.52[d]
Graduate Degree		16.67	53.33[c]	30.00

[a] and [b] Denote significance at the 95 and 90 percent levels of confidence, respectively.
[c]Denotes a significantly higher response rate.
[d]Denotes a significantly lower response rate.

year college degree (63.64 percent) and some college (53.06 percent) categories were education levels reached by most economic development specialists over 45 years of age (Table 5.2). The 36-45 year olds have the most education. They hold 66.67 percent of the four year college degrees plus some graduate work and 53.33 percent of the graduate degrees (Table 5.2).

The most common level of education among economic development specialists, was a four year college degree (30.5 percent), followed by some college (24.9 percent) and graduate school (15.2 percent) (Table 5.3). North Dakota has the highest percentage of economic development specialists with a four year college education or more (64.3 percent), South Dakota was second (56.9 percent), and Nebraska was third with (54.8 percent).

Table 5.3. Education Levels of Economic Development Specialists, 1991

Education	State							
	Nebraska		North Dakota		South Dakota		All	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
High School	5	8.1	7	8.3	8	15.7	20	10.2
Technical School or Two Year College Degree	5	8.1	4	4.8	2	3.9	11	5.6
Some College	18	29.0	19	22.6	12	23.5	49	24.9
College	17	27.4	29	34.5	14	27.5	60	30.5
College Plus Some Graduate School	8	12.9	10	11.9	9	17.6	27	13.7
Graduate School	9	14.5	15	17.9	6	11.8	30	15.2

There were a total of 16 majors reported by economic development specialists. The most frequent major for economic development specialists was Business Administration/ Marketing/Management (31.78 percent), followed by Agricultural Economics (10.28 percent) and Education/Administration (8.41 percent) (Table 5.4). No other major had more than six responses. The wide variety of majors may be due to 74.3 percent of economic development specialists working part-time (Table 5.1). The age variable may also be a factor, as many of the older economic development specialists may have started in one area and changed career objectives over the years.

TABLE 5.4. Profile of Education Major of Economic Development Specialist, 1991

Education Major	Frequency	Percentage
Business Administration/ Marketing/Management	34	31.78
Agricultural Economics	11	10.28
Education/Administration	9	8.41
Accounting	6	5.61
Agricultural Education	5	4.67
Economics	5	4.67
Engineering/Architecture	5	4.67
Journalism/English	5	4.67
Pharmacy/Chiropractor	5	4.67
Planning/Economic Development	5	4.67
Urban Affairs/Public Administration	4	3.74
Vocational Education/Education	4	3.74
Finance/Banking	3	2.80
Law/Political Science	3	2.80
Geography	2	1.87
Science	1	0.94

Employment

A comparison of whether economic development specialists receive an income from economic development and whether they work part-time or full-time showed statistical significance (Table 5.5). Overall, less than 30 percent of economic development specialists receive an income for their economic development efforts.

TABLE 5.5. Cross Tabulation of Do You Receive Income for Your Economic Development Efforts?, by Do You Work at Economic Development?, 1991

	Chi-Square	Do You Receive an Income from Your Economic Development Work?			
		Yes		No	
Work at Economic Development	132.1[a]	No.	%	No.	%
Overall		58	29.9	136	70.1
Part-time		11	7.6[d]	133	92.4[c]
Full-time		47	94.0[c]	3	6.0[d]

[a]Denotes significance at the 95 percent levels of confidence.
[c]Denotes a significantly higher response rate.
[d]Denotes a significantly lower response rate.

A majority of full-time economic development specialists (94 percent) receive an income from economic development. In contrast, 92.4 percent of the part-time economic development specialists receive no income for their economic development work.

A majority (68.6 percent) work at economic development as volunteers, on a part-time basis (Table 5.1). Working on a full-time and paid basis was the next most frequent position (24.2 percent). Remarkably, three economic development specialists reported

they worked full-time at economic development on a volunteer basis. Two were male, ages 52 and 71, the other was a 29 year old female.

The 36-45 year old economic development specialists were most likely to receive an income (50 percent) and work full-time (52 percent). In contrast, the group over 45 years of age, were more likely to work part-time (47.22 percent) as volunteers (49.29 percent) (Table 5.2).

Demographic Factors Separated by Community Size

Nearly 80 percent of economic development specialists were from rural communities (less than 5,000 people) while 20.1 percent were from small metropolitan communities (over 5,000 people) (Table 5.6). The most significant difference occurred in the area of whether they work part-time or full-time and whether they receive an income. Fifty-six percent of full-time economic development specialists work in small metropolitan communities. In contrast, over 91 percent of the part-time economic development specialists were from rural communities (Table 5.6). Most full-time economic development specialists (94 percent) receive an income, while only 7.6 percent of part-time economic development specialists did (Table 5.5). The size of the communities may play a large part in this discrepancy. Rural communities may not have the financial resources to pay an economic development specialist full-time or even part-time.

When length of employment was considered, the economic development specialists working at their current position 3-5 years were less likely than the average (79.9 percent) to work in rural communities (61.4 percent) (Table 5.6). The economic development specialists were more likely than the average (20.1 percent) to work in small metropolitan communities (38.6 percent). One hundred percent of the respondents who have worked at their current position 16 or more years work in rural communities.

TABLE 5.6. Cross Tabulation for 1990 City Population, by Demographics, 1991

Demographic Variables	Chi-Square	Population Less than 5000	Population 5000+
		Percent	
Overall		79.9	20.1
Do You Work at Economic Development Efforts?	51.5[a]		
Part-time		91.67[c]	8.33[d]
Full-time		44.00[d]	56.00[c]
Do You Receive an Income for Your Economic Development Efforts?	50.6[a]		
Yes		48.28[d]	51.72[c]
No		92.86[c]	7.14[d]
How Long Have You Been At Your Current Position?	21.9[a]		
Less Than 3 Years		78.0	22.0
3-5 Years		61.4[d]	38.6[c]
6-15 Years		78.6	21.4
16+ Years		100.0	0.0
The Highest Level of Education You Have Attained?	18.3[a]		
High School or Tech. School/2 Year College Degree		97.0	3.0[d]
Some College		89.8	10.2[d]
4 Year College Degree		76.7	23.3
4 Year College Plus Some Graduate Work		70.4	29.6[c]
Graduate Degree		60.0	40.0[c]
How Old Are You?	7.4[b]		
Less Than 36 Years		81.1	18.9
36-45 Years		70.9	29.1[c]
46+ Years		88.0	12.0[d]

[a]and [b]Denote significance at the 95 and 90 percent levels of confidence, respectively.
[c]Denotes a significantly higher response rate.
[d]Denotes a significantly lower response rate.

The economic development specialists from small metropolitan communities were more likely to have a four year college degree plus some graduate work (29.6 percent), or a graduate degree (40 percent) (Table 5.6). The economic development specialists from rural communities usually were less educated, with most having some college education, or less.

Rural communities have more economic development specialists who were older than 45 years of age (Table 5.6). The economic development specialists from small metropolitan communities were more likely to be 36-45 years old, and less likely to be over 45 years old.

DATA PROCESSING CAPABILITIES

This section reports the economic development specialist's data processing capabilities. The capabilities are broken into three groups, hardware, software, and information delivery.

Hardware

A total of 46.6 percent of economic development specialists use computers in their operation (Table 5.7). Nebraska has the highest computer usage (53.2 percent), followed closely by North Dakota (50 percent).

The IBM PC (48.4 percent) was the most popular type of computer used (Table 5.7). The IBM compatible was second with 40.7 percent. The IBM PC and the IBM compatible, together make up 89.1 percent of the computer models used by the economic development specialists (Table 5.7). The Apple computer was third with 6.6 percent. Respondents from North Dakota use more IBM PCs or IBM compatibles (92.8 percent) than respondents from either Nebraska (87.1 percent) or South Dakota (83.4 percent).

TABLE 5.7. What Type of Computer Does Your Organization Use?

	Nebraska		North Dakota		South Dakota		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Overall Computer Usage	33	53.2	42	50.0	18	36.7	93	46.6
IBM PC	20	64.5	19	45.2	5	27.8	44	48.4
IBM Compat-ible	7	22.6	20	47.6	10	55.6	37	40.7
Apple	1	3.2	2	4.8	3	16.7	6	6.6
Other	3	9.7	1	2.4	0	0.0	4	4.4

Note: two respondents did not specify which type of computer they used. The total amount of computers used by economic development specialists was 93. Other includes one each of IBM System 36, Texas Instruments, and Unisys.

The Apple family of computers was most popular in South Dakota where 16.7 percent of the respondents use Apple computers, compared to 3.2 percent and 4.8 percent for Nebraska and North Dakota, respectively (Table 5.7).

Of the respondents who use a computer, 52.7 percent also use a laser printer (Table 5.8). South Dakota, which was last in computer usage (36.7 percent), has a higher percentage of laser printers (61.1 percent) than either North Dakota (50.0 percent) or Nebraska (47.1 percent).

Modems, which are used to communicate between computers over telephone lines, were used by an average of 36.7 percent of the respondents who also use a computer (Table 5.8). North Dakota has the highest percentage use of modems (50.0 percent) compared to Nebraska (32.4) and South Dakota (27.8 percent). Of those respondents using a computer, only 15.5 percent have access to any computer network such as the

TABLE 5.8. Percent of Economic Development Specialists Using Peripheral Computer Equipment, by State, 1991

Does Your Office Use:	Nebraska		North Dakota		South Dakota		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Laser Printers	16	47.1	21	50.0	11	61.1	48	52.7
Modems	11	32.4	21	50.0	5	27.8	37	36.7
Computer Network	7	23.3	3	7.3	3	15.8	13	15.5

Higher Education Computer Network or BITNET. North Dakota had the fewest number of respondents with access to a computer network (7.3 percent) (Table 5.8).When computer hardware usage was compared between rural and small metropolitan communities, significant differences arose in computer and modem usage.

Rural economic development specialists (38.1 percent) were less likely to use a computer compared to small metropolitan economic development specialists (85.0 percent) (Table 5.9). This difference may be due to the budget constraints of rural economic development organizations when compared to those of small metropolitan communities. Another factor may be the age of the economic development specialists. Those over 46 were less likely to use a computer (Table 5.13) and economic development specialists from rural communities were more likely to be over 46 years old (Table 5.6). Modems were more popular in rural communities (50.1 percent) with computers than small metropolitan communities (Table 5.9).

TABLE 5.9. Cross Tabulation for 1990 City Population, by Data Processing Capabilities, 1991.

Data Processing Capabilities	Chi-Square	Population	
		Less than 5000	5000+
		Percent	
Percent of Sample Population		79.9	20.1
Does Your Organization Use a Computer?	28.1[a]		
Yes		38.1[d]	85.0[c]
Do You Have a Laser Printer?	1.3		
Yes		46.7	58.8
Do You Have a Modem?	7.9[b]		
Yes		50.0[c]	20.6[d]

[a]Denotes significance at the 95 percent level of confidence.
[b]Denotes significance at the 90 percent level of confidence.
[c]Denotes a significantly higher response rate.
[d]Denotes a significantly lower response rate.

The data processing capabilities of the economic development specialists were merged together to find the common data processing equipment (Table 5.10). Of those economic development specialists with computers, 47.3 percent have an IBM or IBM compatible with no peripheral equipment, while 30.1 percent have an IBM or IBM compatible with a modem. When all combinations of IBM or IBM compatible and other equipment were combined, most (87.1 percent) use an IBM or IBM compatible. The combinations of Apple computer equipment included an Apple computer only (4.3 percent), an Apple computer with a modem (1.1 percent), and an Apple computer with a modem and access to a computer network. When all combinations of Apple computers were merged, 6.5 percent used an Apple computer (Table 5.10).

TABLE 5.10. Common Data Processing Equipment, 1991

Hardware Combination	Quantity	Percent
IBM OR IBM COMPATIBLE	(81)	(87.1)
IBM or IBM Compatible Only[1]	44	47.3
IBM or IBM Compatible With Modem Only	28	30.1
IBM or IBM Compatible With Network Only	6	6.5
IBM or IBM Compatible With Modem and Network	3	3.2
APPLE	(6)	(6.5)
Apple Only	4	4.3
Apple With Modem	1	1.1
Apple With Modem and Network	1	1.1
OTHER	(6)	(6.6)
"Other" Computer Only	2	2.2
"Other" Computer With Modem	2	2.2
Computer With Type Missing Only	2	2.2
TOTAL	93	100.2[a]

[1]Contains four with no modem and network data missing and two with modem and network data missing.
[a]Total does not equal 100 percent because of rounding.

Software

Word processing packages were used by 97.8 percent of those respondents who use a computer in their organization (Table 5.11). Spreadsheet software programs were the second most popular, with 73.5 percent using this type of software. Accounting software, data base management software, and "other" software, which includes graphics and publishing software, ranked third, fourth and fifth, respectively (Table 5.11). At least 55.2 percent of the respondents used each of these types of programs.

TABLE 5.11. Percent Of Economic Development Specialists Using Computer Software, By State, 1991

Does Your Office Use:	Nebraska	North Dakota	South Dakota	Total
	Percent Using			
Word Processing Software	93.5	100.0	100.0	97.8
Spreadsheet Software	54.8	85.7	80.0	73.5
Accounting Software	67.7	64.3	64.7	66.2
Data Base Management Software	48.4	57.1	60.0	55.2
Other Software	22.6	40.5	20.0	27.7

The Lotus 123 software package was used by more respondents than any other software package overall (24.7 percent) (Table 5.12). This may be due to the respondents who use the Symphony software package reporting the use as Lotus. The word processing software package, Word Perfect, was second with 20.0 percent. Enable and First Choice were tied for third with 10.8 percent each. Microsoft Word ranked fifth, with 9.7 percent of the respondents using this software package (Table 5.12).

Word Perfect was the word processing package used by most respondents (37.3 percent), followed by Lotus 123 (13.7 percent), Microsoft Word (9.8 percent) and Wordstar (7.8 percent). The spreadsheet software category was lead by Lotus 123 (60.0 percent), followed by Enable (11.4 percent). Data Base III was the data base management package used by most economic development specialists (31.3 percent). The accounting package used by most economic development specialists was Quicken (27.8 percent), followed by Peachtree (22.2 percent). Print Shop (30.0 percent) and Desktop Publishing (20.0 percent) were software packages that ranked high in the "other" category.

TABLE 5.12. What Brand of Software does your organization use?

Name of Software	Type	Rank	Frequency	Percent
Lotus	ss	1	23	24.7
Word Perfect	wp	2	19	20.0
Enable	wp	3	10	10.8
First Choice	wp	3	10	10.8
Microsoft Word	wp	5	9	9.7
DAC Easy	act	6	5	5.0
VP Planner	act	6	5	5.0
Quicken	act	6	5	5.0
Word Star	wp	9	4	4.0
Peach Tree	act	9	4	4.0
Q&A	db	11	3	3.0
Open Access	wp	11	3	3.0
Red Wing	act	11	3	3.0
Integrated Seven	ss	11	3	3.0
Other		15	14	14.0

Note: "Other" includes Appleworks, Memo Maker, Professional Write, Computer Associates, ITI and One Write, each had one percent. ss = Spread sheet, wp = word processing, act = accounting, db = data base management.

Information Delivery

There are four possible methods for information delivery. The methods include a newsletter, a computer floppy disk, a combination of newsletter and a floppy disk, or a computer network system similar to BITNET. Given that only 46.6 percent of economic development specialists have a computer, the best option would be to use a newsletter to convey information to the economic development specialists as needed. Because 89.1 percent of economic development specialists use an IBM or IBM compatible, another

option would be to supplement the newsletter format with IBM compatible floppy disks. The conclusions are examined further in Chapter six.

COMPARISON OF DEMOGRAPHICS AND COMPUTER USAGE

The comparison between the economic development specialists using a computer and the demographic factors, using a chi-square test, shows five significant demographic variables (Table 5.13). Overall, 47.7 percent of the economic development specialists use a computer, while 52.3 percent do not use a computer in their organization (Table 5.13).

The most significant difference was if economic development specialist worked part-time or full-time. Of those that work full-time, 88 percent use a computer. In contrast, only 34.5 percent that work part-time use a computer (Table 5.13). Most (84.5 percent) economic development specialists that receive an income for their economic development efforts use a computer.

When comparing education and computer usage, only 25 percent of those economic development specialists with a high school, technical school, or two year college degree and 35.4 percent with some college use a computer in their organization. The economic development specialists with four years of college plus some graduate work (80.8 percent) or that have a graduate degree (73.3 percent) were more likely to use a computer than those with less education (Table 5.13).

The economic development specialists with 16 or more years of experience were less likely to use a computer (68.8 percent), which coincides with the results of their computer usage by age (Table 5.13). The economic development specialists that have been at their current position less than three years and between six and 15 years were equally divided on computer usage.

TABLE 5.13. Cross Tabulation for Does Your Organization Use a Computer, by Demographic Variables.

Demographic Variables	Chi-Square	Does Your Organization Use a Computer? (in percent)	
		Yes	No
Overall		47.7	52.3
Age	9.5[a]		
Less Than 36		47.2	52.8
36-45 Years		60.3[c]	39.7[d]
46 Years or Greater		35.8[d]	64.2[c]
Level of Education	28.8[a]		
High School, Technical School, or Two Years of College		25.0[d]	75.0[c]
Some College		35.4[d]	64.6[c]
Four Year College Degree		42.4	57.6
Four Years Plus Some Graduate Work		80.8[c]	19.2[d]
Graduate Degree		73.3[c]	26.7[d]
How Long Have You Been at Your Current Position?	7.8[b]		
Less Than 3 Years		50.0	50.0
3-5 Years		59.1	40.9
6-15 Years		50.9	49.1
16+ Years		31.3[d]	68.7[c]
Do You Work at Economic Development	42.4[a]		
Part-time		34.5[d]	65.5[c]
Full-time		88.0[c]	12.0[d]
Do You Receive an Income For Your Economic Development Efforts?	44.8[a]		
Yes		84.5[c]	15.5[d]
No		32.1[d]	67.9[c]

[a]Denotes significance at the 95 percent level of confidence.
[b]Denote significance at the 90 percent levels of confidence.
[c]Denotes a significantly higher response rate.
[d]Denotes a significantly lower response rate.

SUMMARY

The demographic profile of an economic development specialist shows that a majority were male (81.2 percent), were older than 45 years of age (41.7 percent), have more than 6 years of experience in economic development (59.7 percent) and work as a part-time volunteer (68.6 percent) (Table 5.1). Most economic development specialists have a four year college degree or more (59.4 percent) (Table 5.3). A majority of economic development specialists work in rural communities (79.9 percent) (Table 5.6).

The cross tabulations of data processing variables by demographic variables provides results that can be expected. The organizations that use a computer have economic development specialists that work full-time (88 percent) and receive an income (84.5 percent) (Table 5.13). When comparing the age of the economic development specialists, those under 46 years of age were more likely to work full-time and receive an income for their efforts (Table 5.2). In general, those that work part-time at economic development do not receive an income (92.4 percent) and those that work full-time receive an income for their efforts (94 percent) (Table 5.5).

Over 46 percent of the economic development specialists polled use a computer (Table 5.7). Of those with computers, 89.1 percent use an IBM or IBM compatible computer, 6.6 percent use Apple computers and 4.4 percent use some other type of computer (Table 5.7). Peripheral equipment used by those with computers included laser printers (52.7 percent), modems (36.7 percent) and computer networks (15.5 percent) (Table 5.8). The economic development organizations in small metropolitan communities were more likely to use a computer (85 percent) and use a laser printer (58.8 percent) (Table 5.9).

Most respondents (97.8 percent) with computers use word processing software (Table 5.11) Word Perfect was the most popular word processing package (37.3 percent). Spreadsheet software ranked second in usage (73.5 percent), with Lotus being the most popular spreadsheet software (Table 5.11).

CHAPTER 6

SUMMARY AND CONCLUSIONS

In this chapter, a summary of the study is presented. In addition, conclusions drawn from the literature review and empirical findings are presented. Finally, study limitations and the need for further study are addressed.

SUMMARY

Economic development has evolved through three phases since the 1930s. From the 1930s until the late 1970s, the recruitment of new businesses was the focus. Economic turbulence in the 1970s and the severe recession in the early 1980s forced many states to broaden their economic development efforts (Fosler). This gradually moved into the second phase of "home-grown" programs. The emphasis was to strengthen local businesses and promote new business growth within the state. This phase was not without limitations. Lack of scale, fragmentation and insensitivity to client needs, lack of integration between social and economic policy, and lack of accountability weakened economic development efforts. As a result, economic development moved into the current phase, addressed as "family of services." The focus is to assist small and medium sized businesses utilize state offered services. The points at which "family of services" programs should be initiated and terminated are uncertain.

It may be argued that "family of service" programs should be initiated from the first stage of product development through the final stage of product delivery because of complex interdependencies. An economic development specialist should have a basic understanding of manufacturers' or firms' needs to know what services to provide. If a

specific community is unable to meet the needs of a manufacturer, the firm can "vote with its feet" and move to a more appropriate community.

To understand firm needs, location theory plays a role. Location theory explains factors involved in the location decision process. Location theory would, in turn, offer a foundation that can be used to help determine factors in the family of services.

There is some uncertainty if transportation/logistics should be considered as a factor within the family of services. Debates have centered around the relationship of transportation and the regionalization of industry (Kraft, Meyer, and Valette). Some economists argue that transportation does little for shaping regions (Chinitz). Other economists believe that transportation has locational effects and can generate its own demand (Wein).

To gather the necessary information about factors to include within the family of services, an attitudinal survey was mailed to economic development specialists from North Dakota, South Dakota, and Nebraska. The seven part survey contained a section with 65 specific location factors. Economic development specialists rated the 65 factors on a scale of one to five. The 65 factors were categorized into nine main factors which are labor, labor availability, transportation, markets, utilities, quality of life, higher education, state and local taxes, and incentives and infrastructure.

The data collected were used in a comparative analysis with data from Leistritz and Ekstrom's study of manufacturers from the same three states. Manufacturers had responded to 62 identical specific location factors. Manufacturers were split into two groups, those that started up or located and those that had expanded since 1977. Comparisons were drawn between economic development specialists and the groups of manufacturers. In addition, comparisons were made based on a breakdown by community

size. Paired t-tests and Spearman's rho correlation coefficients were the methods used in the comparative analysis.

Information was also gathered on demographics of economic development specialists and their data processing capabilities. Comparisons between the demographics and data processing capabilities were done using cross tabulations. A chi-square test was used to determine if any cross tabulations were statistically significant. The data processing results were used to determine the best information delivery system.

CONCLUSIONS

In conclusion, differences in perceptions about location factors exist between economic development specialists and manufacturers. The differences indicate that economic development specialists may not understand the specific factors that manufacturers view as important. If they do not understand what factors are important, they may not know what type of services to provide the manufacturers in their community.

Certain conclusions and suggestions are made based upon the results of this study. The major difference in the ranks of the nine main factors between economic development specialists and manufacturers occurred for the factor labor. Manufacturers ranked labor considerably higher than economic development specialists, indicating it is more important. The specific labor factors that manufacturers ranked higher were "Right to Work Laws" and "Absence of Unions." This indicates that proposals sent to prospective locating manufacturers should emphasize if the state has right to work laws.

Utilities are a second main factor with inconsistencies in ranks of specific factors. Economic development specialists rank "Water Supply" and "Waste Treatment Facility" much more important than manufacturers. This suggests these factors may require less

emphasis in the family of services. This would be dependent upon the needs of the specific manufacturers within the community.

Results indicated that perceptions of rural and small metropolitan economic development specialists sharply differ. Small metropolitan economic development specialists ranked transportation first. The higher rank could arise because many small metropolitan communities are important regional centers for the distribution of inputs and final products. The factor quality of life was ranked lower by small metropolitan economic development specialists. A possible explanation is small metropolitan economic development specialists overlook the quality of life issues that rural communities work to promote.

Perceptions of rural economic development specialists differ from manufacturers. Perceptions of rural economic development specialists were more highly correlated with locating manufacturers than with expanding manufacturers. If rural communities wish to pursue economic development, it would seem as though they need to focus more on providing services to the home-grown or firms that already exist in the community. Large discrepancies occurred for the specific factors "Buildings Available" and "Availability of *State* Financial and Developmental Incentives." It appears that less emphasis needs to be placed on these factors. Of course this will depend upon the type of expansion (i.e., on site).

The diverse perceptions of small metropolitan economic development specialists and manufacturers reveals that emphasis on particular factors needs to be reexamined. Small metropolitan economic development specialists ranked "Skilled Industrial or Technical" labor availability and "State Assistance in Labor-training Programs" higher than manufacturers. This suggests that developers are encouraging a more skill based

work force. If this is the case, they should question if they are seeking low wage jobs for the residents of the community. "Interstate Highway Access" and "Scheduled Air Service" were also ranked higher by small metropolitan economic development specialists. This suggests other factors may be of higher concern to manufacturers.

Results suggest that overall ranks between economic development specialists and manufacturers are correlated. Yet, large discrepancies exist for a few specific factors. It is suggested that developers meet with manufacturers in their community to determine the firm-specific needs.

Further conclusions of the study reveal that the high rank of state and local taxes is inconsistent with previous studies. However, it is consistent with the findings by Bartik, and Leistritz and Ekstrom. An explanation for the inconsistent findings may be that the importance of location factors is a function of the region studied.

Each of the nine main factors may have some importance within the "family of services." The extent each factor is included would be dependent upon the needs of manufacturers within the community. Transportation should be included in the "family of services." The specific factor "Motor Freight Services" ranked high among groups. The high rank of this specific factor combined with the consistent middle rank of transportation for other studies indicates importance for the main factor transportation. In addition, other factors such as markets, which have a lower rank, are included in the family of services.

Less than half of the economic development specialists use a computer. This limits the options available for efficient information delivery. Because of the lack of widespread computer capability, a newsletter is the first option to deliver new information to the economic development specialists. This would allow all economic development

specialists to have access to pertinent information. The drawback to this option is that information provided in the form of a data set would require inputting by economic development specialists with computers. The busy schedules of economic development specialists and also the chance of input errors reduces the efficiency of this option. The more efficient option is the combination of a newsletter and a floppy disk. All economic development specialists would receive information, while those with computers would also have access to more data. The majority of economic development specialists with a computer, have an IBM or IBM compatible. Therefore, the disks should be IBM compatible.

LIMITATIONS

Four limitations exist for this study. First, the conclusions were based on an attitudinal survey. Thus, if either economic development specialists or manufacturers did not reveal their true perceptions toward the location factors considered, results may be biased. In addition, location and expansion decisions of manufacturers play an important role in economic development. Yet perceptions of other business sectors should also be considered when determining the factors to include within the family of services. Second, 62 specific factors were categorized into nine main factors. Some of the factors may have fit better in a new category. For purposes of this study, the main factors were consistent with the categories Leistritz and Ekstrom developed for their study. Third, conclusions were based upon results from ranked factors. The ranks were determined from calculated mean values. The mean-based ranks used to calculate correlation coefficients may have reduced the precision of the analysis. However, this procedure was used in other studies and appeared appropriate for this analysis. Finally, The type of information that economic development specialists may need access to was not expanded upon in this

study. However, the location factors addressed in the comparative analysis are potential information areas economic development specialists may have need of.

NEED FOR FURTHER STUDY

Sixty-two specific factors were categorized into nine main factors. Interdependencies exist among the 62 factors, and the factors may be categorized more effectively into more than nine main factors. Factor analysis, cluster analysis, or multidimensional scaling are techniques that could be used to categorize the 62 specific factors.

To more specifically look at the impacts transportation has on economic development, an empirical model similar to the one developed by Goode and Hastings might be appropriate. This model would investigate the effects of particular transportation services on the location of manufacturing industries. This study would indicate what manufacturers have actually been doing and more specifically if transportation is important in the "family of services." However, because of data limitations, this model may be difficult to replicate for the rural Midwest region.

WORKS CITED

Baker, Stephen, Elizabeth Weiner, and Amy Borrus. "Mexico: A New Economic Era." *Business Week*. November 12, 1990, pp. 102-113.

Barkley, Paul. "The Effects of Deregulation on Rural Communities." *American Journal of Agricultural Economics*. 70(5):1091-1096, 1988.

Bartik, Timothy, J. "Business Location Decisions in the United States: Estimates of the Effects of Unionization, Taxes, and Other Characteristics of States." *Journal of Business and Economic Statistics*. 3(1):14-22, January 1985.

Bitzan, John, and Denver Tolliver. *An Analysis of the Efficiency and Effectiveness of Selected Rural Transit Systems in the State of North Dakota*. UGPTI Report No. 84. Upper Great Plains Transportation Institute, North Dakota State University, Fargo, 1990.

Blaug, Mark. "Spatial Economics and the Classical Theory of Location." *Economic Theory in Retrospect*. 4th ed. Cambridge: Cambridge University Press, 1985.

Carlton, Dennis. "Why New Firms Locate Where They Do: An Econometric Model." *Interregional Movements and Regional Growth*. ed. W. Whenton. Washington, D.C.: The Urban Institute, 1979. pp. 13-50.

Casavant, Kenneth L. "An Examination of the Relationship Between Staggers Rail Act and Agriculture in the United States." *Journal of the Transportation Research Forum*. 26(1):373-376, 1985.

Chinitz, Benjamin. "Differential Regional Economic Growth and Changing Industrial Structure: Impact on and of Transportation." *Transportation Design Considerations*. Publication No. 841. National Academy of Sciences-National Research Council. Washington, D.C., 1961, pp. 107-113.

Coyle, John and Edward Bardi. *The Management of Business Logistics*, 3rd ed. St. Paul, MN: West Publishing Company, 1984.

Davis, William. North Dakota Economic Development Commission. Bismarck, ND. Personal Interview, August 1990 and February 1991.

Dean, Stephen O., Scott D. Gilbert, Ronald H. Schmidt, and Carolyn Sherwood-Call. "The West: Slow but Still Strong." *FRBSF Weekly Letter (Federal Reserve Bank of San Francisco*, November 18, 1988,) In Paul Sommers. "The Rural-Urban Gap: A Policy Problem for the 1990's." *A Northwest Reader: Options for Rural Communities*. Seattle, WA: The Northwest Policy Center, University of Washington, Graduate School of Public Affairs, 1989b.

Deaton, Brady, and Bruce Weber. "The Economics of Rural Areas." *Agriculture and Rural Areas Approaching the Twenty-first Century: Challenges for Agricultural Economics*. Ames, Iowa: Iowa State University Press, 1988.

Dooley, Frank. *A Comprehensive Review and the Proposed Reorganization of North Dakota State Government Transportation Agencies*. UGPTI Publication No. 65. Upper Great Plains Transportation Institute, North Dakota State University, Fargo, 1988.

Due, John, F., Benjamin J. Allen, Mary R. Kihl, and Michael R. Crum. *Transportation Service to Small Rural Communities: Effects of Deregulation*. Ames, Iowa: Iowa State University Press, 1990.

Ehrenberg, Ronald, G. and Robert S. Smith. *Modern Labor Economics: Theory and Public Policy*, 3rd ed., Glenview, Illinois: Scott, Foresman and Company, 1988.

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

Fuller, Stephen and David Bessler. "Effect of Deregulating Motor Carriage of Agricultural Commodities in Texas: An Examination of the Rate Structure for Fresh Vegetables." *The Logistics and Transportation Review*, 25(4):343-353, 1987.

Fuller, Stephen, James MacDonald, David Bessler, and Michael Wohlgenant. "Effect of Deregulation in Export-Grain Rail Rates in the Plains and Corn Belt." *Journal of the Transportation Research Forum*, 28(1):160-7, 1987.

Gillis, William R. "Introduction: The Relevance of Rural Transportation." *Profitability and Mobility in Rural America*. ed. William R. Gillis. University Park and London: Pennsylvania State University Press, 1989.

Goode, Frank M. "The Efficacy of More Refined Demand Variables in Industrial Location Models: Note." *Growth and Change*, 17(1):66-75, 1986.

Goode, Frank and Steven Hastings. "The Effect of Transportation Service on the Location of Manufacturing Plants in Nonmetropolitan and Small Metropolitan Communities." *Profitability and Mobility in Rural America*. ed. William R. Gillis. University Park and London: Pennsylvania State University Press, 1989.

Gray, Dwaine. Fargo Cass County Economic Development Corporation. Fargo, ND. Personal Interview, September 1990, March 1991.

Hall, Kevin. "Public Works Chairman Backs Five-year Highway Reauthorization Bill," *Traffic World*, February 4, 1991, pp. 15-16.

Heads, John. *Manitoba Transportation Action Plan to the Year 2000*. Executive Summary. Winnipeg: University of Manitoba Transport Institute, 1990.

Helgeson, Delmer and Maurice Zink. *A Case Study of Rural Industrialization in Jamestown, North Dakota*. Agricultural Economics Report No. 95. North Dakota State University, Fargo, 1973.

Horowitz, Mitchel and Bob Watrus. "Economic Development Policy Models in Washington and Other States." *Forging Sectoral Linkages: Strategies for Increasing the Vitality of the Wood Products, Food Products, and Metal Manufacturing Industries in Washington*. Seattle: Northwest Policy Center, University of Washington, 1989.

Keith, John and David Barkley. *A Comparison of Estimates for the Location of High Tech Industries*. Study Paper #89-01, Department of Economics, Utah State University, Logan, 1989.

Kohls, Richard L., and Joseph N. Uhl. *Marketing of Agricultural Products*, 5th ed. New York: Macmillan Publishing Co. Inc., 1979.

Kraft, Gerald, John Meyer, and Jean-Paul Valette. *The Role of Transportation in Regional Economic Development*. Lexington, MA: Lexington Books, 1971.

Leistritz, Larry and Brenda Ekstrom. *Characteristics of New or Expanding, Export-Oriented Firms in the Upper Great Plains*. Agricultural Economics Report No. 256. North Dakota State University, Fargo, 1990.

Lopez, Rigoberto and Nona Henderson. "The Determinants of Location Choices for Food Processing Plants." *Agribusiness*. 5(6):619-632, 1989.

Martinez, Doug. "Independent Firms Survive Better In Rural Areas." *Farmline*. 11(5):7-9, 1990.

North Dakota Census Data Center. *North Dakota In Perspective: A Comparative Portrait, 1991*. Department of Agricultural Economics, North Dakota State University, Fargo, February 1991.

Role of Transport in Manitoba's Economic Future: Proceedings of a Conference. ed. E.W. Tyrchniewicz. University of Manitoba Transport Institute, Winnipeg, 1988.

Schmenner, Roger. *Making Business Location Decisions*. Englewood, NJ: Prentice Hall, 1982.

Siegel, Sidney. *Nonparametric Statistics for the Behavioral Science*. New York: McGraw-Hill, 1956.

Sommers, Paul. "Building Linkages Between Firms and With Service Programs." *Forging Sectoral Linkages: Strategies for Increasing the Vitality of the Wood Products, Food Products, and Metal Manufacturing Industries in Washington*. Seattle, WA: Northwest Policy Center, University of Washington, October 1989a, p. 24.

Sommers, Paul. "The Rural-Urban Gap: A Policy Problem for the 1990's." *A Northwest Reader: Options for Rural Communities*. Seattle, WA: The Northwest Policy Center, University of Washington, Graduate School of Public Affairs, 1989b.

Tolliver, Denver. *The Impacts of Grain Subterminals on Rural Highways, Vol. 1.* UPGTI Publication No. 74. Upper Great Plains Transportation Institute, North Dakota State University, Fargo, January 1989.

Transportation and Regional Development: Proceedings of a Conference. ed. E.W. Tyrchniewicz and Om P. Tangri. Center for Transportation Studies, University of Manitoba, Winnipeg, 1970.

United States Department of Commerce, Bureau of the Census. *Statistical Abstract of the United States 1990*. Library of Congress Card No. 4-18089, January 1990.

United States Department of Housing and Urban Development. Housing and Urban Development Office of Economic Affairs, Economic and Market Analysis Division. Washington, D.C., January 1990.

United States Department of Transportation (USDOT). *Moving America: New Directions, New Opportunities*. Washington D.C.: USDOT, February, 1990.

Wall, Milan. "Heartland Center: Helping Small Towns Grow." *North Dakota Rural Electric Cooperative/Rural Telephone Cooperative Magazine*. March 1991, pp. 41-43.

Wein, Harold. "Transportation and Regional Change." *Transportation Design Considerations*. National Academy of Sciences-National Research Council. Washington: NAS-NRC Publication No. 841, 1961.

Wood, Robert A., Thomas D. McDonald, and George A. Youngs, Jr. "Professional Perceptions of Drunk Driving Countermeasures." *Sociology and Social Research*. 73(3):140-43, 1989.

Wortman, Max, S., Jr. "Rural Entrepreneurship Research: An Integration into the Entrepreneurship Field." *Agribusiness*. 6(4):229-244, 1990a.

Wortman, Max, S., Jr. "A Unified Approach for Developing Rural Entrepreneurship in the U.S." *Agribusiness*. 6(3):221-236, 1990b.

Zink, Daniel. *Changing Demands on North Dakota's Road and Bridge Network*. UGPTI Staff Paper No. 78. Upper Great Plains Transportation Institute, North Dakota State University, Fargo, November 1986.

Zink, Maurice. *Impact of Rural Industrialization*. Master's Thesis, North Dakota State University, Fargo, 1973.

APPENDIX A
Composite Location Factor List

APPENDIX A TABLE A.1. HELGESON AND ZINK'S 37 LOCATION FACTORS

Availability of product markets

Availability and cost of raw material

Abundance of skilled or semi-skilled labor

Large trainable labor pool

Transportation facilities

Costs of transporting products to principal markets

Transportation costs of raw material

Labor costs

Labor's willingness to put out a full day's work

Labor relations

Costs of living

Hospital and medical facilities

Climatic conditions

Cost and adequacy of water supply

Fuel costs and availability

Cost and availability of electricity

Plant rental or construction cost

Cost and availability of building sites

Labor laws

Worker's happiness and well-being

State and local taxes

Tax concessions

Recreational facilities

Labor unions

Community attitudes toward industry

Grants or concessions on building and/or site

General living conditions of key personnel

Cost and availability of capital for plant construction and equipment

Cost and availability of operating capital

Continued

APPENDIX A TABLE A.1. HELGESON AND ZINK'S 37 LOCATION FACTORS

Subsidies or other incentives by state or local groups
Cooperativeness of other business people
Information supplies by state or local industrial development groups
Preference for home state
Availability of prime contractors
Availability of sub-contractors
Vocational education and training facilities
Use of byproducts of other industries

APPENDIX TABLE A.2. LOPEZ AND HENDERSON'S 41 LOCATION FACTORS

Location Factor
Availability of an Existing Plant Facility
Availability of Raw Agricultural (Seafood) Supplies
Already Reside or Do Business in the State
Proximity to Markets
Availability of Labor
Availability and Quality of Water
Proximity to Distribution Centers
Availability of Waste Treatment/Disposal Facilities
Attractive Place to Live
Labor Productivity and Worth Ethics
Existence of Municipal Sewers to Handle Water Waste
Land Costs
Prevailing Wage Rate
Water Pollution Regulations
Proximity to Relatives
Skill of Labor Pool
Existence of Municipal Facility to Handle Solid Waste
Water Waste Disposal Costs
Availability and Cost of Truck and Rail Services
Solid Waste Disposal Regulations
Utility Costs
Construction Costs
Annual Costs to Comply with Environmental Regulations
Stringency of Enforcement of Environmental Regulations
Unionization of Labor
Ease and Speed of Compliance with Environmental Regulations
Proximity to Existing Food Processing Facilities
Proximity to Ports
Air Pollution Regulations

Continued

APPENDIX TABLE A.2. LOPEZ AND HENDERSON'S 41 LOCATION FACTORS

Cost of Living
Capital Expenditures for Pollution Abatement, Including New Equipment
Difficulty of Identifying Relevant Environmental Regulations, Permits, and Permitting Agencies
State Corporate Income Taxes
Unemployment Insurance Taxes
Image of State
Local Property Taxes
Worker's Compensation Insurance
Insurance Costs
State and Local Development Incentives
State Personal Income Tax
State Marketing Assistance Programs

APPENDIX B

Questionnaire Sent to Economic Development Specialists

Part I: Characteristics of the Community

Answers to questions in the following sections will allow us to better understand the characteristics of communities which are experiencing economic growth.

1. What kind of organization do you represent (e.g., Local Economic Development Corporation)?

_____

2. What year did your organization begin operations?_____

3. a. Does your community have an industrial park?

___ YES
___ NO (Skip to 4. a.)

b. What are the major strengths of your community's industrial park?

_____

_____

c. What are the major weaknesses of your community's industrial park?

_____

_____

Part II: Start Up, Location, and Expansion

There are three ways in which most economic development occurs in communities. These are business start ups, firm location, and firm expansion. **Start up** refers to entrepreneurs beginning a new business in your community. **Location** refers to firms which have moved into your community since 1985 to establish a business or open a branch facility. **Expansion** refers to firms in your community which have increased their work force or production facilities. Please answer the questions below with only primary sector (value added) businesses (e.g., manufacturing, processing, assembly, etc.,)

4. a. How many **start ups** have occurred in your community since 1985? _____

b. Please list their company name, their primary product, the number of employees, and the year they began operations. (If additional space is needed, please continue on page 12.)

FIRM	PRIMARY PRODUCT	NUMBER OF EMPLOYEES	YEAR 19_ _

5. Please rank the reasons you believe the **start ups** chose your community for their business.

1st_____
2nd_____
3rd_____
4th_____

6. a. How many companies have **located** in your community since 1985? _____

b. Please list their company name, their primary product, the number of employees, the city and state if they relocated, and year they located. (If additional space is needed, please continue on page 13.)

FIRM	PRIMARY PRODUCT	NUMBER OF EMPLOYEES	PREVIOUS LOCATION	YEAR 19_ _

7. Please rank the reasons you believe firms chose your community for the **location** of their business.

1st _____
2nd _____
3rd _____
4th _____

8. a. How many companies in your community have **expanded** since 1985? _____

b. Please list their company name, their primary product, the number of employees, and year they expanded. (If additional space is needed, please continue on page 13.)

FIRM	PRIMARY PRODUCT	TOTAL EMPLOYEES	NEW HIRES	YEAR 19_ _

9. Please rank the reasons you believe firms chose to **expand** in your community.

1st _____
2nd _____
3rd _____
4th _____

10. Please rank your community's economic development goals in order of importance. (1 = most important and 3 = least important.)

_____ to start up businesses
_____ to attract firms
_____ to expand firms

Part III: Location Factors

11. Below are some location factors. How important do you believe these are to attracting firms to your community? (The shading is provided only as a guideline; please answer all questions.)

	Critical				Important / Unimportant
LABOR					
Wage levels	1	2	3	4	5
Labor productivity	1	2	3	4	5
Work attitudes	1	2	3	4	5
Right to work laws	1	2	3	4	5
Presence of union	1	2	3	4	5
Absence of union	1	2	3	4	5
LABOR AVAILABILITY					
Professional (requiring 4-year degree)	1	2	3	4	5
Sales	1	2	3	4	5
Skilled industrial or technical	1	2	3	4	5
Clerical	1	2	3	4	5
Unskilled	1	2	3	4	5
TRANSPORTATION					
Interstate highway access	1	2	3	4	5
Distance from your location to Interstate: _____ miles					
Motor freight service	1	2	3	4	5

	Critical				Unimportant
Rail	1	2	3	4	5

Is your town on a...*(check one)*

___ mainline

___ branchline

___ no rail service

Scheduled air service	1	2	3	4	5

Distance from your location to nearest scheduled service: _____ miles

MARKETS

Close proximity to customers	1	2	3	4	5
Close proximity to suppliers/raw materials	1	2	3	4	5
Close proximity to others in the industry	1	2	3	4	5
Close proximity to reliable supply of labor	1	2	3	4	5

UTILITIES

Water supply	1	2	3	4	5
Quality of water supply	1	2	3	4	5
Waste treatment facilities	1	2	3	4	5
Availability of natural gas	1	2	3	4	5
Cost of natural gas	1	2	3	4	5
Availability of electricity	1	2	3	4	5
Cost of electricity	1	2	3	4	5
Telecommunication costs	1	2	3	4	5
Telecommunication capacity	1	2	3	4	5

QUALITY OF LIFE

Climate (weather)	1	2	3	4	5
Diversity of businesses	1	2	3	4	5
Close proximity to recreational opportunities	1	2	3	4	5

	Critical		Important		Unimportant
Close proximity to cultural opportunities	1	2	3	4	5
Availability of medical facilities	1	2	3	4	5
Quality of medical facilities	1	2	3	4	5
Quality of housing	1	2	3	4	5
Cost of housing	1	2	3	4	5
Quality of schools	1	2	3	4	5
Personal tax burdens (all taxes combined)	1	2	3	4	5

HIGHER EDUCATION

Vocational-technical schools:					
- Close proximity of schools	1	2	3	4	5
- Programs offered	1	2	3	4	5
Colleges & Universities:					
- Close proximity of institution	1	2	3	4	5
- Programs/degrees offered	1	2	3	4	5

STATE & LOCAL TAXES

State corporate income taxes	1	2	3	4	5
State personal income taxes	1	2	3	4	5
State sales tax	1	2	3	4	5
Sales tax exemption on manufacturing equipment	1	2	3	4	5
Unemployment insurance rate	1	2	3	4	5
State property taxes	1	2	3	4	5
Local property taxes	1	2	3	4	5
Worker's Compensation	1	2	3	4	5
City sales tax	1	2	3	4	5
Overall tax burden on business	1	2	3	4	5

	Critical				Unimportant
INCENTIVES AND INFRASTRUCTURE					
Community attitude toward business development	1	2	3	4	5
Developable land available	1	2	3	4	5
Buildings available	1	2	3	4	5
Cost of property	1	2	3	4	5
Cost of construction	1	2	3	4	5
Environmental regulations	1	2	3	4	5
Availability of local financing	1	2	3	4	5
Availability of *local* financial and developmental incentives	1	2	3	4	5
Availability of *state* financial and developmental incentives	1	2	3	4	5
Improved state regulatory climate	1	2	3	4	5
Incentives for venture capital formation	1	2	3	4	5
Streamlined process for obtaining government permits	1	2	3	4	5
State assistance in labor-training programs	1	2	3	4	5

IF NO FIRMS HAVE LOCATED OR EXPANDED IN YOUR COMMUNITY SINCE 1985, PLEASE GO TO QUESTION 14 ON PAGE 8.

Part IV: Availability of Financing

12. Many businesspersons say that a lack of start-up capital is a problem for new businesses in rural areas. We would like to know your attitudes about financing options you are using or have used in your community. Below are several possible sources of start-up capital. Please indicate the importance of these sources for start-up capital in your community. What are your opinions about the importance of the various sources of capital? (Circle 1 if you strongly agree that the capital source is important, etc.)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Commercial Loans (commercial banks, S&L, credit union, finance companies)	1	2	3	4	5
Small Business Administration Loan	1	2	3	4	5

Commercial Investors (venture capital firms, insurance companies)	1	2	3	4	5
Supplier or Dealer Credit	1	2	3	4	5
Government programs	1	2	3	4	5
Sale of corporate stock	1	2	3	4	5
Other: *Please specify*					
_____	1	2	3	4	5
_____	1	2	3	4	5

13. Government programs offer communities financial assistance to enhance economic development. What are your opinions about the various government programs. (Circle 1 if you strongly agree that the program is important, etc.)

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Business Development Loan	1	2	3	4	5
Small Business Loan Program	1	2	3	4	5
PACE Fund	1	2	3	4	5
MATCH Program	1	2	3	4	5
Micro Business Loans	1	2	3	4	5
TRIP Loans *(Tourism & Recreation Investment Program)*	1	2	3	4	5
Community Development Revolving Loan Fund	1	2	3	4	5
FmHA Business and Industrial Loan	1	2	3	4	5
Roughrider Equity Corporation	1	2	3	4	5
Myron G. Nelson Fund	1	2	3	4	5
Agricultural Product Utilization Grant	1	2	3	4	5
Job Development Authority Mill Levy	1	2	3	4	5
Other: *Please Specify*					
_____	1	2	3	4	5
_____	1	2	3	4	5

14. a. Do you see a need for revisions or additional economic development financial assistance programs?

___ YES
___ NO

14. b. If YES, please explain what changes should be made _____

_____

_____

_____

Part V: Economic Development Policies

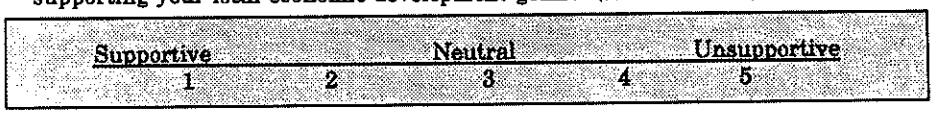
15. a. On a scale of 1-5, how supportive is the ***state*** government toward supporting your local economic development goals? (*circle number*)

15. b. What can be done to improve this area?

_____

_____

16. a. On a scale of 1-5, how supportive is the ***Local Regional Council*** toward supporting your local economic development goals? (*circle number*)



16. b. What can be done to improve this area?

_____

_____

17. Annually, what dollar amount does your community spend on promotion?

$_____

18. a. What, in your opinion, are the top three ***strengths*** of your community for retaining and attracting business?

1st _____
2nd _____
3rd _____

18. b. What in your opinion, are the top three ***shortcomings*** your community should improve upon, or eliminate in an effort to retain and attract business?

1st _____
2nd _____
3rd _____

19. In your opinion, what is the minimum-size (number employed) and maximum size of company that would consider locating in your community?

Minimum size (Number of employees) _____
Maximum size (Number of employees) _____

20. By what percentage do you expect the community's **workforce** to increase or decrease...

in the next five years?	**in the next ten years?**
____% increase or ____% decrease	____% increase or ____% decrease

21. How do you give firms information? (Check all that apply)

__ A. Brochures
__ B. Presentations
__ C. Have booth at trade shows
__ D. Have video tape with highlights of your community
__ E. Proposals
__ F. Other (Please specify) _____

22. a. Does your community prepare a proposal for firms seeking information?

__ YES
__ NO

22. b. If YES, is the proposal:

__ A. A standard proposal for all requests.
__ B. A customized proposal for each request.
__ C. Other (Please specify) _____

23. When communicating with firms that might locate in your community, what percentage of the communication is by: (the total should add to 100 percent)

TELEPHONE	___ %
FACE TO FACE	___ %
LETTER	___ %
FAX	___ %
OTHER (Please specify)	___ %
TOTAL	100 %

Part VI: Data Processing Capabilities

24. Does your organization use a computer?
- ___ YES
- ___ NO (If answered NO, please go to question 29)

25. a. What type of computer does your organization use?
- ___ A. IBM PC
- ___ B. IBM clone (Please specify) _____
- ___ C. Apple
- ___ D. Other (Please specify) _____

25. b. How many personal computers do you have in your office? ____

25. c. Do you have a laser printer?
- ___ YES
- ___ NO

25. d. Do you have a modem?
- ___ YES
- ___ NO

26. What types of software does your organization use?

TYPE OF SOFTWARE	DO YOU USE THIS?	IF YES, NAME OF THE PROGRAM
WORD PROCESSING	YES NO	
SPREADSHEET	YES NO	
DATA BASE MANAGEMENT	YES NO	
ACCOUNTING	YES NO	
OTHER (Please specify)	YES NO	

27. Do you have access to any computer network such as the Higher Education Computer Network or BITNET?
__ YES (Please specify which one) _____
__ NO

28. Are you familiar with computer programs that present information by displaying it on your computer?
__ YES
__ NO

Part VII: Demographics

Since successful economic development depends on interpersonal skills, it is also important that we gather information about your background.

29. Are you:
___ A. Male
___ B. Female

30. How old are you? _____ years

31. What is the highest level of education you have attained?
___ A. High school
___ B. Technical school or two year college degree
___ C. Some college
___ D. Four year college degree *Please specify major* _____
___ E. Four year plus some graduate work *Please specify major* _____
___ F. Graduate degree *Please specify major* _____

32. How long have you been at your current position? _____ years

33. How long have you been involved in economic development efforts? _____ years

34. Do you work at economic development...
___ A. Part-time
___ B. Full-time

35. Do you receive an income for your economic development efforts?
___ A. YES
___ B. NO

Additional Comments:

THANK YOU FOR YOUR TIME!
WE GREATLY APPRECIATE YOUR COOPERATION

Continued from Question 4.b. (Start up firms)

FIRM	PRIMARY PRODUCT	NUMBER OF EMPLOYEES	YEAR 19_ _

Continued from Question 6.b. (Locating firms)

FIRM	PRIMARY PRODUCT	NUMBER OF EMPLOYEES	PREVIOUS LOCATION	YEAR 19_ _

Continued from Question 8.b. (Expanding firms)

FIRM	PRIMARY PRODUCT	TOTAL EMPLOYEES	NEW HIRES	YEAR 19_ _