Southwest Minnesota Industry Cluster Study

June 1998

State and Local Policy Program
Humphrey Institute of Public Affairs
Lee W. Munnich, Jr., Senior Fellow and Director
Margaret M. Bau, Research Fellow and Project Director
Jennifer J. Clark, Research Assistant
Neal J. Young, Research Assistant

and

Minnesota Extension Service
Annette M. Patel, Extension Educator

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Executive Summary

Southwestern Minnesota encompasses an 18 county region bordering South Dakota and Iowa. It includes the key hub communities of (from largest to smallest in population): Willmar, Marshall, Hutchinson, Litchfield, Pipestone, Jackson, and Benson. The region has traditionally had a strong agricultural base. The University of Minnesota Extension Service engaged the Humphrey Institute of the University of Minnesota to analyze the key industries that serve as the backbone of regional economic development and that may continue to impact the future economy. The primary focus has been to explore opportunities to strengthen workforce preparedness in the region by looking at strong clusters of industries which already exist in Southwest Minnesota.

In his book entitled The Competitive Advantage of Nations, Michael Porter offers four key determinants of competitiveness which he calls the “Diamond of Advantage.” These four determinants, (1) factor conditions, (2) home demand, (3) related and supporting industries, (4) firm strategy, structure, and rivalry, served as the framework for the analysis.

The project identified four clusters for the region: (1) agriculture equipment manufacturing, (2) dairy processing, (3) value-added agricultural cooperatives, and (4) computer and electrical components manufacturing. Focus groups, individual interviews, and site visits with local business leaders and economic development professionals offered insight into the industries. The following is a brief overview of our findings.

Factor Conditions
- The labor shortage has resulted in a smaller pool of available workers with specific technical skills.
- The work ethic is traditionally strong in the region but companies wish to see soft skills emphasized in the schools.
- There is a need to promote technical education in the region.
- The housing shortage in the region contributes to the workforce shortage.

Home Demand
- Regional demand serves to stimulate industry innovation and product development (particularly in precision agricultural manufacturing).

Related and Supporting Industries
- Companies depend upon supplies from all over the world.
- Local suppliers vary in importance from critical to relatively unimportant.
Firm Strategy, Structure, and Rivalry
- Cooperative structure is highly successful and well understood in the region.
- Local entrepreneurs responded to the farm crisis by innovating new products and new businesses.
- Competition is regional as well as national and international.

Summary of Recommendations
- Develop strong linkages between businesses, communities, and educational institutions.
- Promote innovation and entrepreneurship.
- Increase affordable housing.
- Focus attention on livable wage issues and support services for employees.
- Continue to develop infrastructure.
Southwestern Minnesota

The area called “Southwestern Minnesota” encompasses Initiative Fund regions 6W, 6E, and 8. It includes 18 counties: Big Stone, Chippewa, Cottonwood, Jackson, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, McLeod, Meeker, Murray, Nobles, Pipestone, Redwood, Renville, Rock, Swift, and Yellow Medicine.
II. Michael Porter's Diamond of Advantage: A Tool for Economic Analysis

The diamond of advantage model was developed by Harvard Business School Professor Michael Porter. The model presents economic development in a different way than policy makers have thought of in the past. In his book, *The Competitive Advantages of Nations*, Porter argues that economic vitality is a direct product of the competitiveness of local industries. Previously, economists discussed a region's comparative advantage as being based upon cheap inputs and low cost labor. Porter contends that regions must develop a competitive advantage based on the ability to continually innovate. Innovations are based on the following four key elements:

1) **Factor conditions**, such as a specialized labor pool, specialized infrastructure, and sometimes selective disadvantages that drive innovation;
2) **Home demand**, or local customers who push companies to innovate, especially if their needs or tastes anticipate global or local demand;
3) **Related and supporting industries**, nationally competitive local supplier industries who create business infrastructure and spur innovation and spin off industries;
4) **Industry strategy, structure and rivalry**, intense rivalry among local industries that is more motivating than foreign competition and a local "culture" that influences individual industries' attitudes toward innovation and competition.

In addition to these areas, the Porter approach includes the roles of the government and chance. Historical accident and/or government actions tend to play significant roles in the early development or location of local industrial clusters.

Figure 1. Michael Porter Diamond of Advantage

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1 Industry clusters are geographic concentrations of competitive firms in related industries that do business with each other and that share needs for common talent, technology, and infrastructure. These regional clusters are the source of jobs, income, and export growth within a region.
III. Regional Economic Overview

In 1996, manufacturing, wholesale and retail trade, government, and services made up nearly 86% of the 119,841 payroll jobs in Southwestern Minnesota. According to Department of Economic Security statistics, manufacturing employs 29,605 people in Southwestern Minnesota, with 28,573 employed in wholesale and retail trade, 23,982 in local, state, and federal government, and 20,563 in services (Figure 2).

Figure 2. Source: MN Department of Economic Security

1996 Regional Percentage of Employment by Industrial Sector

Manufacturing, the largest employment sector, also has nearly the highest average wage at $26,424 in 1996. Government, another large employer in the region, also paid an annual average of $22,910 to employees. The two other industries that make up a significant proportion of regional employment do not tend to pay as well, however. The services and wholesale and retail trade industries bring up the rear in average annual wages at $15,720 and $14,608, respectively (Figure 3).

Figure 3. Source: MN Department of Economic Security

1996 Average Yearly Wage by Industry
The breakdown of employment by industry for the region is somewhat different from statewide distribution of employment. Southwestern Minnesota has a significantly larger percentage of its workforce in manufacturing (24% to 18%) and government (20% to 14%) than in the state as a whole. On the other hand, the state as a whole has a significantly larger percentage of its workforce in services (27% to 17%) than in Southwestern Minnesota (Figures 2 and 4).

Figure 4. Source: MN Department of Economic Security

1996 Statewide Percentage of Employment by Industrial Sector

- Agriculture: 0.0%
- Construction: 3.8%
- Transportation and Utilities: 4.8%
- Trade: 15.0%
- Finance: 6.0%
- Government: 13.5%
- Manufacturing: 18.1%
- Services: 27.2%
- Mining: 0.3%

Income and earnings per capita in the region tended to be well below state averages. Income per capita was nearly $5,000 lower for people in Southwestern Minnesota ($19,025 versus $23,937). Earnings per capita in the region were also well below statewide averages ($11,255 versus $16,433). (Figure 5).

Figure 5. Source: MN Department of Economic Security

1995 Income and Earnings Per Capita

Average wages in Southwestern Minnesota also lagged behind statewide wages in 1996. The average wage paid across all industries for the region was $20,706, compared to an average wage of $28,872 for workers across the state. Regional workers earned in excess of $8,000 less than their counterparts statewide. Wages for workers in the four large industries previously
mentioned also lagged behind their statewide counterparts. Manufacturing workers in the region earned nearly $11,000 less than their counterparts ($26,424 versus $37,268), while government employees earned nearly $8,000 less ($22,910 versus $30,830). Wholesale and retail trade workers averaged over $6,000 less ($14,608 versus $20,875), and services averaged nearly $10,000 less ($15,720 versus $25,277). It should be noted, however, that some portion of this differential might be attributed to regional differences in the cost of living (Figure 6).

Figure 6. Source: MN Department of Economic Security

High levels of educational attainment imply a skilled regional workforce. Skilled workers add more value because of higher productivity and tend to be more adaptive to the changing needs of an economy. However, educational attainment for the region slightly lags state averages. According to 1990 census data, 73% of all adults aged 25 or older in Southwestern Minnesota graduated from high school, compared to 82.4% of all adults statewide and 77.6% for the entire U.S. Similar conclusions result from an examination of four-year degree completion rates. In the region, 11.9% of all adults aged 25 or older have a bachelor’s degree or higher. This number is well below the statewide average of 21.8% and the U.S. average of 21.3% (See Figure 7).
IV. INDUSTRY PROFILES

A. AGRICULTURE EQUIPMENT MANUFACTURING

Industry Profile

- Agriculture equipment manufacturing is a dynamic industry with mergers, spin-offs, and innovations.
- Major companies, such as Case Corp. and John Deere, have made recent acquisitions in the area of precision agriculture.
- Most companies are involved in secondary (components) or finished goods.
- The major constraint for the industry appears to be the labor shortage.

Agriculture equipment manufacturing, as an industry, has a long history in Southwestern Minnesota. Several of the firms interviewed were formed as early as the 1930's. It has been a traditional strength of the region, as have other agriculture-related industries.

Recent years have been a time of change for the industry, both countrywide and within the region. Technological advances and low market prices have forced the industry to be more scientific and more productive. Throughout the industry, firms innovated products in response to customer demands. Often, the entrepreneur initiated these demands.

The struggles facing farmers during the 1980's also affected the industry significantly. Several other firms interviewed started up during this period. As a result of entrepreneurship and a selective disadvantage facing farmers in the region, the industry expanded.

At present, agriculture equipment manufacturing is facing another technological revolution. Innovations in site-specific agriculture, often called precision agriculture, are changing methods of production and improving agricultural yields. Precision agriculture seems to be in the process of changing a strong industry into a core cluster of dynamic, high technology firms supported by more traditional farm equipment manufacturers.
Precision agriculture uses the Global Positioning System (GPS) to thoroughly map fields on a computer grid. These maps can then be used to get more accurate data on the impact of various seeds, fertilizers, and herbicides. Yield monitors and chemical applicators equipped with GPS allow farmers, over the course of time, to maximize yields. Precision methods seem to be the future of agriculture.

Despite the potential of precision agriculture, agriculture equipment manufacturing remains a backbone of the regional economy. To concentrate solely on precision agriculture equipment manufacturing would be to exclude a valuable and extremely important economic activity (namely, other forms of agriculture equipment manufacturing). Therefore, this profile examines the industry as a whole, rather than only the subcomponent termed precision agriculture.

Factor Conditions
- Labor shortage is a issue region wide. Several companies cited the size of the labor force as a constraint to growth. Companies that do not have trouble attracting workers admit that they may be taking workers from other companies.
- Skills most often cited as in short supply include metal fabrication, welders, and other technical skills.
- Many companies said that local technical schools are adequate. However, in several company representatives’ opinions, not enough students take advantage of the opportunity.
- Availability of financing for capital is another key issue for the region. Locally owned banks seem to play a key role for many of the companies interviewed.

Workforce and Training
Companies involved in agriculture equipment manufacturing require a wide variety of skills that are in short supply. Various production skills, including welding, tool and die skills, and metal fabrication skills, are difficult to find. Some companies need other specialized skills, such as plastic-working. Middle management professional skills in areas such as marketing, engineering, and computer programming are also needed.

Another major difficulty of the labor shortage is retaining skilled employees. Several companies have hired employees with lower skill levels and invested in training them. However, companies expressed a concern that many employees left the company for larger companies that were able to pay higher wages and offer more comprehensive benefits such as Tyler Industries. This phenomenon made some companies less enthusiastic about investing in on the job training.

Small companies are often unable to compete with larger companies on the basis of wages and benefits. They are, however, able to compete on the basis of non-financial incentives such as the quality of the work environment. Keltgen Tires, a smaller firm, has relatively less

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2 "Global Positioning System (GIS) is a method used in surveying that uses a constellation of satellites orbiting the earth at very high altitudes. GPS technology allows accurate geodetic surveys by using specially designed receivers that, when positioned at a point on the earth, measure the distance from that point to three or more orbiting satellites. Through the geometric calculations of triangulation, the coordinates of the point on the surface of the earth are determined." In Huxhold, William. An Introduction to Urban Geographic Information Systems, 1991.
competition, so it is able to offer a competitive salary. However, the work environment is the real key to retention.

Jay-Dee Industries takes the advantages of small companies in providing a quality work environment a step further. The company makes and effort to provide employees with a diverse work environment including the opportunity to operate a variety of machines in various stages of the production process. At larger companies, employees often work on only one machine. This variation in the work assigned to employees mitigates the tedium often associated with production work and thus enhances the quality of the work environment. Jay-Dee Industries also organizes its employees into teams. This structure was primarily implemented in order to increase productivity but has the additional benefit of creating a positive work environment which increases employee retention.

Companies, both large and small, have attempted a range of programs to attract, train, and retain new employees. For example, Ag-Chem has implemented a cross-training program intended to provide a quality workplace environment. Cross training has the additional benefit of making it more possible for Ag-Chem's workforce to respond quickly to market conditions. Jay-Dee Industries runs an apprenticeship program and helps to pay for the apprentice's schooling and buys the apprentice necessary tools. If the apprentice stays with the company for six months after graduation from technical school, s/he may keep the tools.

One example of the willingness of firms in the industry to invest in the workforce is over 25 years old. In the 1970's, Lorenz Manufacturing trained thirty women, who were not current employees, to weld simply because they were interested in learning. After the training sessions were over, the company hired over half of the women, several of whom are still with the company.

Employers are often willing to accommodate the needs of prospective employees. They are also willing to provide training, either on-site or at technical schools. Several company representatives stated that many students in the region may be unaware of the quality opportunities that are available within the region. Many of these representatives said that there is a need for high school counselors to present technical training as either a viable alternative or as a complement to liberal arts college education.

**Demand Conditions**

- Most companies sell some portion of their output in the region.
- Regional (five-state region) farmers are among the most sophisticated consumers of farm equipment worldwide.

Community members responding to a local need started many companies located in Southwestern Minnesota. Many of the entrepreneurs were formerly or continue to be farmers. Often these entrepreneurs were responding to their own need for innovation. These businesses began with and continue to be sophisticated consumers of farm equipment, which provides a home demand advantage over other areas.

KRP Enterprises responded to the need to cut down on grain dust which is linked to a condition known as farmer's lung. Farmer's lung results from the inhalation of crop dust. This problem motivated KRP Enterprises to invent a solution to curtail excessive crop dust.
Jay-Dee Industries was founded under similar circumstances. Jack Frost/Gold'n Plump, located in Saint Cloud, needed some specialized poultry equipment, namely an automated chicken nest. The company worked with Jay-Dee to invent the product. Jay-Dee continues to produce the nest, and Jack Frost/Gold’n Plump continues to be a major customer. Close physical proximity to customers promotes quick responses to changing customer needs and desires.

The farming background of many business owners and managers also provides distinct advantages. Loftness Manufacturing uses its neighbors’ farms as an ideal testing ground for new products and ideas. Some entrepreneurs with a farming background co-sponsor research farms with other major companies. For example, Custom Ag Products operates a research farm in conjunction with Monsanto, a national chemical company. These testing sites provide many opportunities to improve products and service.

Overall, demand locally, regionally, and nationally is relatively well established. Companies may lose or gain small shares of the market, but losses and gains are not substantial. Many companies interviewed anticipated expansion future into international markets. Custom Ag Products is beginning to see an increase in demand for its products in Latin American markets. This new source of demand, however, is hampered by prohibitive import duties imposed by foreign governments. As tariffs against trade are lowered worldwide, this industry will face significant opportunities for expansion, as the labor market allows.

**Related and Supporting Industries**

- Many firms produce components necessary for other companies’ production processes. Primary inputs come almost exclusively from other regions and countries. A significant proportion of secondary inputs (components) are produced locally. Some companies contract out specific work to local contractors as well.
- The community networks and personal relationships that build up over time are often cited by businesses as strengths of the region. Many of these businesses would be substantial risks financially. However, they have often obtained financing through personal relationships and friendships with bankers.
- Many of the companies interviewed exhibit quite a spirit of entrepreneurship locally.

Many company representatives first said that there is little interaction between businesses within the region. For example, there are not core industries, such as steel, located within the industry. Although many companies do not acquire primary inputs from within the region, several companies interviewed said that they acquire components of their products from other firms in the region. Some companies contracted work to nearby firms when the workload is heavy.

Ag-Chem acquires some components for its chemical fertilizer applications from Lor-Al. Lor-Al is a subsidiary of Ag-Chem, but it also has its own product line and is independent in many ways. Several other companies receive a significant proportion of their secondary inputs from within the region.
When workloads are heavy, some companies contract out work to meet production run deadlines. Frequently GVL, Inc. outsources work to a nearby company that helped the company get its start. Such linkages allow the industry to be more flexible and to respond to market conditions.

Entrepreneurship seems to play a critical role in the development of this cluster. The chairman, president, and CEO of Ag-Chem Equipment Co., Inc., Al McQuinn, was named Entrepreneur of the Year in the master category for Minnesota and the Dakotas in June 1997. Many business leaders in the industry share mutual attachment to rural areas. They play a leadership role and serve as a catalyst for rural development. Many company representatives with strong local roots consciously pursue their businesses as an attempt to aid in rural development.

A primary reason that most of the companies are located in Southwestern Minnesota is that the people that started the business are from the area. During the farm crisis of the 1980’s, areas particularly dependent upon agriculture (like this region) were especially hard hit. Many of the companies interviewed had their genesis during this time as farmers left the farm or sought to supplement their income through a small business.

Custom Ag Products was founded by Steve Clausen during the farm crisis of the 1980’s, when he was having trouble making ends meet on the farm. Custom Ag Products’ success allowed him to leave farming. In this case, a selective disadvantage facing regions heavily involved in agricultural production may have provided a stimulus to strengthen a cluster that previously had a smaller number of firms.

Firm Strategy, Structure, and Rivalry

- Most companies face strong competition. Depending upon product niche and specialization, however, it can vary from approaching oligopoly in a few cases to near perfect competition in most cases.
- In some products, it seems that this region has "cornered the market," albeit among multiple firms.
- Overall, competition forces these companies to innovate, but allows them surpluses for reinvestment.

There are several companies that face less competition now than previously because of increased product niche specialization. For example, increased specialization of the products sold by Keltgen Tires allows the company the opportunity to offer higher wages to its employees because of decreased competitive pressures. Companies such as Service Systems Engineer and Custom Ag Products had been competitors in the past. However, specialization into different product lines had limited such competition.

There are also some companies that have faced relatively steady competition, forcing companies to maintain efficiency and keep costs down. The market for chemical fertilizer equipment has a relatively large number of firms. A significant proportion of these firms is concentrated within the region, particularly in and around Benson, Jackson, and Willmar. This is not true in all cases however. Jay-Dee Industries once faced less competition, but competition has increased over time.
The region has captured a significant market share in several lines of equipment, most notably in fertilizer application equipment. For example, close to half of all brush shredders are produced within 300 miles of Hector, where Loftness Manufacturing is located.

The precision agriculture movement has spawned new products for some companies. Ag-Chem develops and markets its own software to map field terrain. RDI Technologies has also developed software for agricultural purposes. RDI Technologies has accounting software for agricultural applications as well as mapping software.

**Government**
- Government also plays a key role in developing agricultural regulations of which businesses must be aware. Firms that do not anticipate upcoming regulations may be left behind. Those that plan ahead and are prepared reap the benefits.
- Many businesses interviewed cited the state tax environment as a hindrance. Many representatives said that it prevents new business from coming to the region and makes businesses already in the area consider relocation.
- Industry representatives view government as both a hindrance and an aid.
- Local governments and economic development organizations often provide financial packages that make it feasible for firms to remain in the region.

Minnesota has received a reputation (whether justified or not) as a state with high taxes in general and high taxes on business in particular. Company representatives that admitted that management had contemplated moving cited excessive taxes as a major motivator. Government regulations (or over-regulation as several companies see it) are another hindrance to the region’s business environment.

For instance, Lorenz Manufacturing spends a significant amount of time filling out paperwork and making other preparations to comply with federal and state regulations. Jay-Dee Industries is not able to compete on the basis of price because a competitor in Georgia pays lower wages and lower levels of worker’s compensation. As a result, Jay-Dee Industries competes on the basis of better service rather than lower prices.

Government can also be an aid to business. Local government agencies and economic development projects can provide assistance in starting or expanding a business. The Small Business Administration helps entrepreneurs start firms where it might not be possible otherwise. Government agencies play a key role in defining the local business environment, through policy making and regulation.

There are cases in which government has acted to create success stories. For example, Balzer Manufacturing was sold to its current owners in 1995. The company would have likely been sold to an out-of-state buyer if the state did not step in. Rather than allow a Minnesota business to pack up and leave, the state opted to provide low-cost financing to local purchasers. As a result, the company has remained in Mountain Lake. The company has also flourished. Since the purchase in 1995, employment has increased from 33 to 95. Employment is expected to increase further to 120 in upcoming months.

There is also a flip side to government aid to businesses -- the businesses who are left out. Several companies stated that economic development agencies need to concentrate on local
business, rather than luring new firms to the region. They say that newly attracted companies are likely to pick up and leave when the going gets tough. For example, Ag Systems is a medium-sized enterprise. As such, it does not qualify for small business assistance. However, it is still too small for government to take notice of its needs. As a result, Ag Systems faces a situation similar to Jay-Dee Industries in which incentives are offered to “outsider” firms that are not offered to local firms.

Government regulations have created an interesting situation. Several companies interviewed exhibited a strong willingness to work with government agencies to develop new regulations. It is understandable that businesses with a stake in the development of new regulations would wish to have input. However, the process of developing regulations seems to become an opportunity in which lagging competitors are cut out of a market altogether.

Environmental regulations loom heavily in agriculture equipment manufacturing. Fertilizers, both chemical and animal waste, need to decrease runoff and water source pollution. As a result, Balzer has begun to use site-specific techniques to create environmental products for waste handling with less environmental impact. Balzer has been involved in the development of environmental regulations while several of the company’s major competitors have not been anticipating changing environmental regulations. As a result, much of the competition is being left behind.

Ag-Chem has also been anticipating government regulations. However, less environmental impact does not come without a price tag. As a result, Ag-Chem is holding back its capacity until either customers are willing to pay for less environmental impact or the government mandates it.
B. DAIRY PROCESSING

Industry Profile
- Dairy processing is an historical industry to the region, although there is some innovation and change.
- Dairy production, has been a strength of the region, but today faces an uncertain future because of inflexibility.
- The future presents both opportunities and severe challenges.
- The major constraint facing the industry is securing a cost-effective supply of milk.

Dairy processing requires a wide range of activities. All take raw milk and add value in some way. However, the products vary from cheese, nonfat dry milk, and butter to lactose products used as sugar substitutes, protein products used in animal feeds and baked goods, and sauces and puddings. Also included are whey products and skim milk.

Recent U.S. Department of Agriculture (USDA) reports suggest that there are significant economies of scale at all levels in dairy-related industries. Many of the opportunities for dairy producers and processors are the result of potentially increased scale. Over time, in fact, there has been a tendency toward consolidation and increased operation size, both in production and in processing.

However, producers have shown a tendency to be risk averse, favoring instead traditionally popular products. The processors note that producers are unwilling to adopt new technologies. Without these technologies, increases in size of operation are bounded. As a result, the milk supply does not grow as quickly as the capacity of processors. Processors are prevented from fully exploiting economies of scale.

Factor Conditions
- Most companies said that they recruit primarily unskilled labor and then send employees to technical schools or seminars in areas such as food handling, computers, and cheese science.
- Many processors said that training institutions met the needs of their companies. Several companies said that they wished more students would take advantage of the technical training that is available, particularly computer training.
- The region faces significant cost disadvantages relative to other “growth” regions of dairy production. This disadvantage has brought about some innovations in areas such as aseptic packaging.

Workforce and Training
The workforce shortage is less of a concern in the dairy processing industry than in other industries. Often, it is a lower priority than securing a cost-effective supply of milk. Thus, workforce issues become, at best, a number two priority.

However, this is not to say that there are not workforce issues for this industry. For example, Dairy Farmers of America tends to not be particularly attractive to workers because it requires

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night and weekend work. The firm loses employees to lower wage employers because the other company only runs a first shift. In this case, the labor shortage could be amplified.

There are also examples at the opposite end of the spectrum as well. Land O’ Lakes in Luverne has had to lay off employees at its facility because of slow business. The plant is in the process of a transition to animal feeds production.

Another business that has faced serious workforce issues is First District Association. First District has had a reputation for not laying off employees. In February 1998, workers at the Litchfield cheese plant went on strike. In the process of the strike, First District began to contract out all trucking services. As a result, 31 company trucking jobs were lost. Despite a labor shortage region wide, First District Association had its first layoff in over 20 years.

Cost Disadvantage
Recent USDA reports concerning the structure of dairy markets have shown that dairy processors in Minnesota face significant cost disadvantages in purchasing milk to be processed. In both 1995 and 1996, the mailbox price (the net pay price received by dairy producers marketing to handlers under the regulated pricing system) was nearly a dollar per counterweight (100 pounds) higher in the Upper Midwest Federal Milk Marketing Order (F.M.M.O.), which includes Minnesota, than in F.M.M.O.’s in budding dairy regions such as California, Idaho, New Mexico, and the Pacific Northwest.4

Often, such disadvantages spurn firms to innovate to keep up with the market. In some cases, this is true for dairy processors in Southwestern Minnesota. For example, North Central AMPI has been working with aseptic packaging for sauces since about 1987. Glencoe Butter and Produce Association which was founded in 1894 is in the process of transitioning production into specialty cheeses. These innovations may have come about in attempt to provide a different, specialized product in order to overcome the cost disadvantage because of the price of raw milk.

Demand Conditions
- Home demand is a relatively small portion of the total.
- It is not differentiated from general demand.
- Thus it provides no advantage.

Historically, dairy processors in Southwestern Minnesota had a substantial market in which to sell their products. Most of the study participants worked for large cooperatives. Several facilities were actually started due to local need. First District Association established a plant in Litchfield because of the need to prepare “waste” skim milk from other dairy processors into a consumable product that had an available local market.

According to a USDA report, Southwestern Minnesota has facilities owned by three of the ten largest cooperatives in the country.5 In the past, there were large numbers of producers who marketed small amounts of milk to these cooperatives. Over time, the scale of dairy production

4 Manchester and Blayney, 8 and 48.
5 Manchester and Blayney, 12.
has increased. Markets have dwindled with the rural population. Most firms now must transport their products around the country.

Schwan’s Sales Enterprises is often included in this industry for historical reasons rather than on the basis of current products. The company, headquartered in Marshall, started by delivering bottled milk and homemade ice cream in gallon containers to isolated rural residents. However, the company’s line of business has evolved away from dairy processing over time. It now includes the delivery of frozen pizzas and other frozen foods to homes, hospitals, and schools.

**Related and Supporting Industries**

- The region does well in industries with similar production processes such as animal feeds and other forms of food processing.
- Minnesota is historically a leading producer of milk nationally. Abundant supply of milk allowed the development of dairy processing in Southwestern Minnesota.
- The supply of milk is becoming less local. Many companies said that they must obtain milk further from production plants, adding to production costs. Inputs for production process are major constraint.
- Many companies said that dairy producers are too reluctant to adopt new technologies, allowing them to increase supply more cost effectively. The investment necessary is high.

Farmers involved in dairy production are the most important supplying industry for dairy processors. Recent USDA reports state that the average size of dairy operation is increasing. In 1975, the average size was only 19 cows. By 1994, it had risen to 64 cows. In 1996, the average size of a dairy operation was 74 cows. In 1950, an operation with 100 cows was large. Now, there are many facilities with over 5,000 cows, especially in the budding dairy regions of the West.

Another USDA report found in its statistical analysis that incentives exist for huge dairy farms. In areas with the largest amount of structural change (typically, the West), costs are minimized for farms of over 4,000 cows. In areas with less structural change (which would include Minnesota), there are still incentives for increasing the scale of dairy production. For these areas, costs are statistically minimized for farms with around 1500 cows. These reports indicate that there are potential economies of scale that are not being exploited.

Minnesota’s role in dairy production seems to be diminishing somewhat. The state fell from fourth to fifth in terms of its production as a percent of the U.S. total. In 1975, Minnesota produced 7.8% of U.S. milk. By 1995, despite real increases in gross dairy production, the state produced only 6.1% of U.S. milk. This relative decline increases the difficulty for dairy processors in Southwestern Minnesota of finding cost effective supplies of milk relative to other regions. For example, Glencoe Butter and Produce Association points out that all of his firm’s

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6 Manchester and Blayney, 4.
8 Manchester and Blayney, 3.
milk supply came from within 25 miles of Glencoe twenty years ago. Now, however, the company goes as far out as 100 miles to purchase milk.

The Land O’ Lakes facility in Luverne bought milk from as far away as 200 miles in order to secure an adequate supply for the plant’s capacity. However, dairy processing ultimately proved too costly for this facility. It is more cost-effective to process milk into cheese. Land O’ Lakes already has a cheese plant in Volga, South Dakota. As a result, the Luverne facility is in the process of transitioning to the production of animal feeds.

**Firm Strategy, Structure, and Rivalry**

- The industry has progressed from many small firms to a few large firms. Many companies have simply dropped out of the industry, while others have been consolidated or purchased by other companies.
- Competition is cutthroat for input supply (local milk).
- The market is competitive for these firms’ products (there are some attempts at product differentiation).

A recent USDA report on the structure of dairy markets states that there are significant economies of scale at every level in the dairy industry. As firms adjust to market conditions, one would expect significant changes. Dairy processing has developed into an industry with a few large firms from an industry of a large number of small firms. This process continues in the region today. Earlier this year, AMPI split into two cooperatives. AMPI’s North Central Region is now known as North Central AMPI, while the Southern Region voted to merge with Dairy Farmers of America.

In an industry with relatively undifferentiated products, some firms have attempted to secure niche markets to lessen competitive pressures. The specialty cheese of Glencoe Butter and Produce Association and aseptic packaging of cheese products by North Central AMPI are prime examples.

Despite cutthroat competition for milk and tight competition for final products, firms occasionally have opportunities for collaboration in order to cut costs. North Central AMPI, for example, works with other regional dairy processors to cut down on transportation costs of milk. If a company’s supplier networks overlap, these firms may pick up milk from their competitors producers. These potential cuts in milk truck miles allow for cost reduction and increase the competitiveness of these firms overall.
Government

- Subsidies to dairy farmers are lower in Minnesota and other traditional dairy states than in budding dairy regions, such as California, Idaho, and New Mexico.

- Changes in regulations as a result of the 1996 farm bill offer potential opportunities. Removal of price supports could make dairy production, and thus, dairy processing in traditional dairy states, more competitive.

- Despite these opportunities, the removal of price supports makes price fluctuations more likely. Income variability could make dairy producers risk averse. They may be even less likely to adopt new technologies that require large investments.

In 1996, the federal government passed the Federal Agriculture Improvement and Reform Act. This act has significant implications for dairy processors because of its impact on overall dairy production. The Act reduces price supports to dairy producers annually for three years. In the year 2000, a low-cost loan program will replace price supports. After 2000, no further supports will exist. This bill came in response to the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). The U.S., in the Uruguay round, agreed to open the U.S. dairy market to greater access from abroad.

This act eliminates price supports that have been in effect for years. The system of supports provided subsidies based on a Minnesota-Wisconsin basic formula price plus some differential (subsidy). However, this is only a price floor that prevents prices from going below a certain level. Basically, these subsidies favored production outside of the traditional “dairy belt” of Minnesota and Wisconsin. Over time, this disparity led to the erosion of dairy production in Southwestern Minnesota, creating higher raw milk prices because of smaller supplies of milk relative to other regions. From this perspective, the elimination of price supports provides an opportunity for regional dairy producers to compete on a level playing field for the first time in decades. Dairy production potentially has an opportunity in this regard.

However, obstacles may outweigh opportunities for dairy producers in the region. Most company representatives stated that regional dairy producers are unwilling to adapt to market conditions and technologies. It seems that these dairy farmers are already relatively risk averse. The elimination of price supports increases the risk to producers because of increased price volatility. Farmers who were already unwilling to adopt new technologies even with price supports are even less likely to adopt new technologies without such insurance. As a result, the proportion of U.S. milk produced in Minnesota may continue to decline, with dairy processors caught in the middle.

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Manchester and Blayney, 5-7.
C. VALUE-ADDED AGRICULTURAL COOPERATIVES

Industry Overview
- Southwest Minnesota is familiar with the management, organization, and structure of value-added cooperatives.
- Changes in farm policies and the agricultural market motivate farmers to innovate.
- New cooperatives are starting up in Southwestern Minnesota; the industry is growing.

Farmer cooperatives have been a part of the American agricultural landscape since the mid 19th century. Cooperatives provide farmers with a means of getting a “better deal” in the market. The value-added agricultural cooperatives have allowed farmers more power in the market while at the same time adding value to the commodity they produce. These cooperatives allow the farms and farmers in the region to remain competitive and profitable and help rural communities remain intact and sustainable.

The rate at which value-added cooperatives are starting up in Southwest Minnesota is impressive. The diversity of these cooperatives and the products they produce demonstrates a keen eye toward innovation in the region. The farm crisis of the 1980’s was a prime motivating factor in the development of value-added cooperatives. The federal phasing out of certain farm subsidies in the 1990’s has also pushed farmers to innovate new methods of adding value.

Southwest Minnesota has been a hot bed of cooperative activity for some time. Some of the largest cooperatives in the region, Southern Minnesota Sugar Beet Cooperative and Minnesota Corn Processors started in 1975 and 1980 respectively. These co-ops have provided a reference point in the region for the development of further value-added cooperatives. The Southwestern Minnesota region is far more familiar with value-added cooperative management and financing than many other agricultural regions. This familiarity with the process of cooperative production and processing is certainly part of the reason cooperatives have begun to incorporate at such an impressive rate.

Factor Conditions

Workforce and Labor Shortage
- The statewide labor shortage impacts industry.
- Specialized processing requires “medium-skilled” employees.

Value-added cooperatives are often less dramatically affected by the workforce shortage than other manufacturing industries. This is not true for all the cooperatives, particularly the larger employers. However, many of the value-added cooperatives need a minimal number of workers. The three recent corn processing plants: Minnesota Energy, Chippewa Valley Ethanol Cooperative (CVEC), and Corn-er Stone all employ less than thirty people. This is, in part, a function of the size of the processing operations but also a function of the advancing technological innovations in processing.

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10 Value-added cooperatives are operations in which the farmer gets revenue from the commodity farmed and the processed product.
11 Nadeau and Thompson, Cooperation Works!
Southern Minnesota Sugar Beet Cooperative employs over 600 people and, as a larger employer, is affected by the workforce shortage. This is also true for other larger employers in the region. In particular, there seems to be shortage of medium skilled employees with specialized production skills. Certified boiler operators and lab technicians are two positions in particular that have been difficult for employers to fill.

Training and Education

- Firms anticipate training employees “on-the-job.”
- The presence of other processing facilities in the region provides a growing pool of experienced, specialized employees.
- Many firms are concerned about the lack of “soft-skills,” particularly among younger employees.

Most cooperatives expect to do a good deal of training “on-the-job.” A recent regional survey reports that half of the employers surveyed train employees “on-the-job.” Many of the tasks involved in specialized processing are unlikely to be acquired outside of work in the industry. This factor pertains to ethanol production in particular. However, the increase of corn processing facilities in the region has begun to establish a pool of experienced workers who are familiar with the processing technology. CVEC has been able to hire a number of experienced people for its facility in Benson as a result.

For cooperatives that are less directly affected by the workforce shortage, the primary workforce concern is “soft skills.” “Soft-skills” refer to an employee’s ability to communicate well with coworkers and supervisors, understand tasks and directions, and resolve questions and conflicts in a timely and appropriate manner. Most employers indicated that the “on the job” training that they engage in is successful if the employee possesses these soft skills at the outset. Soft skills are a particular concern for employers with younger employees.

There is communication and cooperation between the industry and the education programs in the area. For example, MinAqua (a tilapia fish-farming cooperative) finds many of its aquaculturists through Alexandria Tech because they have an aquaculture program. There is also evidence that the firms in the region are reaching out to the local school system to offer field trips, have employees give job talks at high schools, and have internship programs (either formal or informal). The recent survey of Southwest Minnesota employers reports that about a third of regional employers speak at local/area schools and participate in internship programs.

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10 January 1998 Employer Needs Survey for SW Minnesota
Infrastructure

- Proximity to raw commodities is of primary importance.
- Affordable housing remains a regional concern and is particularly problematic in light of the workforce shortage.
- Water pollution and water shortages in parts of the region are concerns for communities and processors with high water demands.
- Telecommunications and transportation are adequate for the existing industry although improvements may be needed as the industry grows.

The key infrastructure issue for the value-added cooperatives is the proximity to raw commodities (ex. corn, sugar beets, soybeans, etc...). It is unlikely that the industry would even exist in the region if it were not for the presence of the raw commodities. The transportation infrastructure appears to be sufficient for the industry as is the telecommunications capabilities of the region. With increased growth, however, it is reasonable to assume that these infrastructure factors would need improvement.

The two primary infrastructure concerns for the region are water and affordable housing. The issues of water pollution, particularly in the Minnesota River, and the availability of water in sufficient amounts for some of the large processing facilities are critical concerns. While there are several efforts underway which directly or indirectly address the agricultural run off pollution in the Minnesota River, the problem of additional water for processing remains largely unaddressed and problematic. The increase in alfalfa production in the region as a result of the Minnesota Valley Alfalfa Producers (MNVAP) cooperative would help create a buffer crop for the river and reduce the use of fertilizers and other chemicals.\(^\text{13}\)

The problem of affordable housing is a long-standing issue. Like many other rural regions of Minnesota, the lack of affordable housing constrains the ability of new workers to move to the region. The modest (though competitive) wages in the industry tend to preclude home ownership for semi-skilled and unskilled labor. At the same time, there are limited rental opportunities, particularly in the smaller communities.

Home Demand

- Home demand for feed products is highly competitive.
- Demand for feed products is largely regional and is affected by the decline of the dairy industry and the number of animal feedlots in the area.
- Trends toward extrusion and other methods for popularizing animal based protein sources affect the demand for processed feeds.
- Demand for many of the products processed in the region is national or even international.

Demand for feed products in the region is quite competitive and creates a home demand situation for processing facilities, which produce animal feeds as co-products or by-products. This demand is determined by the number of feed lots and animal operations in the region. For example, CVEC has a direct relationship with the turkey processors in Willmar providing dried distillers grains as a feed for turkeys. However, the decline of the dairy industry and the recent

\(^{13}\) Alfalfa is a nitrogen fixer and requires less fertilizer than corn and beans and adds nitrogen to the soil, which reduces the fertilizer requirements for the corn or soybean crops to follow.
closure of the Iowa Beef Processors facility in Rock County reduces the regional home demand for animal feed products.

The recent trend toward extrusion also threatens home demand for these animal feed products produced by agricultural processing. The current discussion in Renville County over the extrusion permit granted to Golden Oval highlights controversy surrounding the trend toward using animals as a source of protein for chickens rather than non-animal feeds. While this practice of feeding animal products to animals is controversial in the community from a health standpoint, it also decreases the demand for vegetable-based feeds produced by agricultural processing facilities.

The demand for many products processed in the region is national or even international in scope. The MinAqua cooperative expects to sell the majority of its tilapia fish in Toronto, Canada. The demand for ethanol and other alcohol products is statewide and/or national. Currently the statewide demand for ethanol exceeds that produced by the industry in the state. However, demand is influenced by legislation requiring an ethanol mix in gasoline sold within the state.

Related and Supporting Industries
- Cooperatives are outgrowths of farming.
- Marketing cooperatives and marking partnerships support the industry.
- Lobbying efforts by particular industries preserve beneficial government policies.
- Successful cooperative track record influences investors and financing.

The primary related industry for value-added cooperatives is farming. The industry itself is the direct outgrowth of the farm industry and the efforts by farmers and community members to capture the revenues from processing in the region. While the proximity to the commodity makes the industry efficient, it also makes it possible.

The familiarity of the community in the region with cooperatives and cooperative structure and management has an impact on shareholders' willingness to participate in cooperatives and mitigates their risk aversion. Further this successful track record of cooperatives in the region positively influences lending institutions. These factors give support to the start up of cooperatives.

The marketing structures for many of the cooperatives in Southwestern Minnesota involve either cooperation among processors in the region or participation in a larger marketing organization. MinAqua markets through the North American Fish Farmers Cooperative, Southern Minnesota Sugar Beet Cooperative markets with Minn-Dak Farmers Cooperative and American Crystal Sugars through United Sugars, and CVEC cooperates with two other corn processors in marketing. There is an effort underway for more of the corn processing facilities to cooperate in marketing.

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14 Extrusion is a process which uses dead chickens, in addition to other ingredients, in chicken feed.
15 United Sugars Corp. is the 4th largest sugar supplier in the nation and delivers 15% of the U.S. Domestic sugar supply.
For the firms in the industry who are heavily influenced by governmental policies and subsidies, there are extensive lobbying organizations which advocate for the industry on a state and national level. This is particularly true for sugar and ethanol production, which are assisted by government policy.

**Firm Strategy, Structure and Rivalry**

- Cooperatives in the region are characterized by innovation.
- Cooperatives produce diversified products to combat market fluctuations.
- Farmers form cooperatives to accumulate enough capital to build processing facilities and minimize risk.

The value added agricultural cooperatives in Southwest Minnesota are innovative and diversified. The emergence of "indirect" cooperatives such as MinAqua, a fish farming cooperative and Golden Oval, an egg production and processing cooperative, is illustrative of this innovation. Perhaps the most innovative example in the region is the MNVAP project, which is an alfalfa growers cooperative which plans to separate the alfalfa leaf from the alfalfa stem at several processing facilities in the region. The leaf meal will be processed into a high protein feed product while the alfalfa stem will serve as the biomass fuel for a 75-megawatt power plant in Granite Falls. This project, in particular, is on the cutting edge of sustainable agricultural development.

The trend toward diversified production continues to spread. While originally many processors only produced one or two products, many now produce several and continue to investigate ways in which to diversify further. Perhaps the best example of this is the variety of products that Minnesota Corn Processors produces. Primarily MCP produces high fructose corn syrup, however, the list of varieties and other products is long — sweetener 55, supersweet 90, crystalline fructose, syrups, starches, feeds, ethanol, and ICE BAN (a "non-corrosive, non-toxic, biodegradable roadway anti-icing/deicing agent"). The diversification of products processed from a single input (eg. corn) makes firms less susceptible to market fluctuations for ethanol or corn syrup. CVEC, a facility that started in 1995, has already begun a pilot program for producing industrial alcohol as well as ethanol and feed.

**Government**

- Sugar and ethanol policies currently determine the success of these industries in the region.
- Removal of government subsides for agriculture push communities to innovate.
- State and local feed lot regulations impact regional feed producers.
- State and local support for cooperatives sometimes creates negative impacts on single owner producers.

Government plays a critical role in the value-added agricultural cooperatives' future just as it does with most of agriculture. Government regulations, subsidies, and policies largely determine the demand for many commodities both in terms of quantity and price. For example, government sugar policies and import restrictions are essential for maintaining the price of processed sugar. It is reasonable to assume that sugar policies will remain in place for some time, though it is critical to remember how much such policies define the market. Ethanol policies also are largely responsible for the current demand for ethanol, the price of ethanol, and for the increasing acceptance of ethanol by the public and by car manufacturers.
Governmental support of ethanol production has also allowed the industry to make significant technological innovations including developing facilities that produce no liquid waste.

Government support for the Minnesota Agri-Power project has been particularly critical. Without state, federal, and local support for MNVAP and the MAP project, it is unlikely that such an innovative and progressive renewable energy project would have developed. Government support for renewable energy projects is largely due to its potential for sustainable rural development.

State and local regulations regarding feed lots and the number of animals in an operation have an impact on feed processors in the region. The move toward regulating feed lots because of environmental concerns is likely to affect the competitiveness of operations in the region. As animal processing operations become larger and more corporatized, it becomes exceedingly difficult for smaller producers to compete with those economies of scale. As a result, these regulations directly affect the viability of animal operations in the region and thus the regional market for processed feeds.

The removal of subsidies for corn and beans has begun to motivate farmers and community members in the region to investigate value-added options in anticipation of that loss of income. The recent increase in the number of start up cooperatives may be attributed, at least in part, to this change in policy.

While cooperatives are clearly a great advantage to the region, there continue to be single owner operations in the region, which remain competitive in the market. The growing market for organic and hydroponic farm produce provides a niche market in which individual producers are able to operate successfully. State and local government assistance to cooperatives in terms of site preparation and financing climate puts smaller operations at a disadvantage. Lori’s Fine Herbs, for example, a family owned hydroponics farm, will soon find itself in direct competition with the tomato hothouse planned in Renville to take advantage of the “waste heat” from the Southern Minnesota Sugar Beet Cooperative.
D. COMPUTER AND ELECTRICAL COMPONENTS

Industry Overview

Firms compete internationally based on a highly specialized product that demands a well-trained workforce.
Some firms have been in the area for over 25 years.
Firms employ a proportionally large number of people in the region.

Control Data was the first computer firm to locate in the region over twenty-five years ago because of lower labor costs and the availability of people. Since then, computer and electrical components firms in Southwestern Minnesota were often founded by individual entrepreneurs originally from the region. For example, Hutchinson Technology was founded in 1965 by Jeff Green and John Geiss who met in the Twin Cities. Hutchinson Technology originally produced components for the aerospace industry but later converted to producing suspension assemblies for disk drives. John Geiss, who is from Litchfield, went on to form Litchfield Precision Components in 1975, which is now owned by the Twin Cities based Innovex and produces flexible circuitry and chemically machined parts. Communication Systems Inc., which is located in Hector, was founded in 1970 by Curt Sampson, a Hector native. The Artesyn Technologies facility was originally a Control Data facility, which was part of the supercomputers industry in Minnesota. The company remained in Redwood Falls and converted from magnetics to power supplies in 1984 and has grown steadily since.

The computer and electrical components industry is a high employment industry. The Hutchinson Technology facility in Hutchinson employs over 3300 people and the Artesyn Technologies facility in Redwood Falls employs approximately 600. Schott Corporation employs over 380 people in facilities in Wayzata, Marshall, Minneota, and Canby. Litchfield Precision Components employees 225 people. The available and well-trained workforce in Southwestern Minnesota was certainly an asset to these new businesses and influenced location in the region and subsequent expansions.

Factor Conditions

Workforce and Labor Shortages

- The workforce shortage is a primary concern of employers in the region.
- It is difficult to recruit skilled employees to the region.
- Computer and electrical engineers are in short supply.

Many of the firms in the regions are concerned about the current statewide workforce shortage. The regional workforce shortage is compounded by the difficulty in attracting people to a rural region where affordable and available housing is scarce. The companies in the region also face competition for skilled workers from Twin Cities based firms which are often able to offer a higher wage. This is a particular concern with computer and/or electrical engineers who are in demand in the Twin Cities as well.

Within the region some of smaller firms, like Micro-Dynamics, face stiff competition from larger firms like Hutchinson Technology for the same workers. Hutchinson Technology has begun recruiting in the five-state area for employees. The larger firms are generally better able to offer incentives such as higher wages, benefit plans, and signing bonuses which the smaller
companies cannot. Artesyn Technologies has a benefits package which adds 40% to salaries. Micro-Dynamics has implemented an innovative management program, which has increased productivity and improved employee morale.

This workforce shortage has caused firms in the region to carefully consider expansion plans. Hutchinson Technology was predicting 25% growth in 1997, as was Micro-Dynamics. The difficulty lies in recruiting those additional workers. Hutchinson Technology is expanding its other plants at a greater rate than the Hutchinson plant and Arteysn Technologies is not considering expansion largely because of the difficulty (if not impossibility) of finding additional workers.

Training and Education
- Firms expect to invest in “on-the-job” training.
- Employers expressed a willingness to pay for employees’ additional training.
- Support for innovative internship and apprenticeship programs needed.

The workforce shortage is also highlighting the training and education issues in the industry. The need for skilled labor is of particular concern. Jeff Kirchoff of Hutchinson Technology pointed out; “Our business is highly capitalized. Even production workers are required to provide technical support. It takes a fair level of knowledge to support a $4 million production line and keep it running at high efficiency.” The majority of companies interviewed expected to train people “on-the-job” in order to instill the specialized skills necessary for specialized production. This finding concurs with a recent survey of employers in the region, which found that 50% of employers train employees on the job. Companies are also using “shadowing” and internship programs to work with young people who have interest in the industry. Micro-Dynamics and Arteysn Technologies in particular use such programs.

The willingness to pay for additional education and training for employees also seemed to be pervasive in the industry. Hutchinson Technology, Arteysn Technologies, and Micro-Dynamics all compensate employees for additional training and education (either through formal policy or informally on a case-by-case basis). The primary concern of employers was that employees be “trainable” when they arrive at the workplace. This reference to “soft-skills” highlights the desire of employers to have employees with good communication and cooperation skills who are willing and able to learn and work productively with others.

Infrastructure
- Transportation and shipping are critical to the industry but are currently satisfactory.
- Telecommunications infrastructure should grow with the industry.

Transportation problems were not foremost in the interviews or discussions with firms. However, the industry relies heavily on trucking and shipping to receive supplies and deliver products. Micro-Dynamics uses UPS as an integral part of its distribution system. Artesyn Technologies uses trucking as its primary method of transporting products.

16 Jan. 1998 Employer Needs Survey
As in most areas, telecommunications infrastructure is necessary for the long-range growth of the industry. Currently transportation systems and telecommunications infrastructure seemed to meet the needs of the industry.

Home Demand
- Demand for computer and electrical components made in the region is national and international.

Home demand is not a large part of the demand for computer and electrical components in Southwest Minnesota. Although there were connections between the supercomputer industry and some firms in the region, the current home demand is minimal. The major customers for the components produced in Southwest Minnesota are national and international computer and electronics producers. For example, Arteysn Technologies produces power supplies for Cisco, Cabletron, Compaq, SUN, DEC, IBM, and Bay Networks. Just as the computer and electrical components industry has become globalized, so has the demand for the intermediate components produced in Southwest Minnesota. Hutchinson Technology estimates that 5% of its demand is national while 95% is international.

Related and Supporting Industries
The suppliers for most of the firms in the region are located outside the region. Hutchinson Technology reported that its suppliers are located nationally and internationally.

Firm Strategy, Structure, and Rivalry
- Firms have diversified their market (most do not rely on one customer).
- Diversification of the product line is a priority in research and development.
- Firms often have multiple locations.
- Firms are willing to take on smaller specialized orders.

The firms in the region generally do not compete directly with their international and national counterparts through high output, low cost production. The firms in the region tend to have specialized yet diversified production lines. For example, Hutchinson Technology produces 400 versions of the same component while Artesyn Technologies runs 80 versions of the power supply they produce. Micro-Dynamics and Schott also engage in made-to-order production. This willingness to run specialized lines for customers makes these companies fundamentally different than those which only take on large orders of a single component.

Many firms also have a solid and significant share of their industry. For example, Hutchinson Technology estimates it has a 65-70% share of its industry. Artesyn Technologies, a result of a merger in December 1997 between Zytec Corporation and Computer Products, Inc., now operates in seven countries and seven states. Artesyn Technologies is now the second largest power supply firm in the world. Hutchinson Technology operates production facilities in Plymouth, Minnesota, Sioux Falls, South Dakota, and Eau Claire, Wisconsin in addition to Hutchinson. Micro-Dynamics has increased sales by 70% in the last three years. Schott Corporation is estimated to have 80% of the world market for the computer magnets it manufactures for disk drives and has production facilities in Minnesota, Marshall, and Canby.
Another key example of innovation in this industry is the open book management plan implemented by Micro-Dynamics at its Montevideo production facility. There is also a significant trend in the region of firms re-investing in efficient and innovative production. Hutchinson Technology has recently completed extensive research and development into new products.

**Competitive Factors**
- Most competition in the industry is national or international.
- There is some regional competition for specific markets.
- Firms are willing to design and produce specialized components for individual companies.

The firms in the region compete nationally and internationally. There is regional competition for the electro-mechanical components used in the computer hard drives industry between Litchfield Precision Components and Hutchinson Technology. The remainder of the competition is with other companies, either national or international, which produce similar components. For example, Communication Systems Inc. competes with Lucent Technology and AMP Inc. Hutchinson Technology reported that it had one regional competitor (Litchfield Precision Components), one national competitor, and four international competitors. The industry is largely successful because it produces specialized components. The industry generally is not in direct competition with international producers who produce mass numbers of low cost components extremely cheaply (using cheaper labor) because those companies are not producing specialized products.

**Government**
- Differences in the tax structure between South Dakota and Minnesota influence industry choices.
- State and local agencies can help the industry with workforce development and recruitment.
- The housing shortage effects the industry's ability to recruit new employees to the region.

While established firms in the industry such as Micro-Dynamics, Hutchinson Technology, and Artesyn Technologies are doing well and expanding, the arrival of new firms to the region is minimal. The influx of computer and electronics firms to Sioux Falls, in part due to South Dakota's attractive business climate, leaves Southwestern Minnesota largely overlooked. State and local government does play a role in developing incentive packages for existing businesses and in supporting expansion plans. For example, a recent expansion grant to Schott Corporation is predicted to help create 63 new jobs in Marshall.

The primary role of government in the minds of many firms is to assist in the workforce development and recruitment dilemma which is facing the region. Many firms have found difficulty in recruiting new employees and have begun to devote significant resources to recruitment and training. Many would like to see government assist in this effort. In some regions, local government is assisting firms with School-to-Work initiatives. However, broader scale recruitment and training may be needed to address the workforce shortage in the future.

The shortage of affordable and appropriate housing in Southwestern Minnesota continues to be a problem that is interwoven with the workforce recruitment problem. As firms attempt to recruit employees from outside the region, it becomes apparent that a lack of affordable housing

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housing is deterring some potential employees from working in the region. This issue is particularly acute in the Redwood Falls area.
V. METHODOLOGY

A. INDUSTRY CLUSTERS IN MINNESOTA

Porter maintains that all four components of his diamond of advantage model are responsible for the continuous innovation that allows industries to compete in the global economy. However, after conducting cluster analyses on 17 different industries in four regions of Minnesota, SLPP researchers are concluding that all four components do not have to be located within geographic proximity to make feedback mechanisms among firms effective.

Porter conducted his research in the late 1980s and utilized agglomeration theories developed within the field of geography two to three decades earlier. Since that time, advances in transportation and telecommunications mean that firms within an industry do not necessarily need to be in close physical proximity to one another. Demand does not have to be “home demand,” and related and supporting industries do not have to be in proximity to offer effective supplies and services. Companies can keep in touch with customers via fax, communicate complex machinery specifications to suppliers via the internet, and deliver goods just-in-time via overnight express service. Linkages among an industry’s firms are still important, but those feedback mechanisms have evolved into a different form since Porter’s research.

With the advent of improved telecommunications and transportation, Porter’s factor conditions of a sophisticated labor pool, relevant training, and sufficient infrastructure have become the most crucial elements of an industry’s ability to thrive in the knowledge based economy. In 16 of the 17 industries studied by SLPP, factor conditions of workforce and training were their primary concern.

As companies and the employees that work within an industry physically congregate, two dynamics may occur that lend to the vitality of the entire industry. Employees may be encouraged to specialize in their skills, thereby forming a highly qualified labor pool. Depending upon the culture of the industry, workers may move from firm to firm and thereby lead to a cross pollination of ideas. For example, in Silicon Valley of California, the length of time an employee will work for one firm averages 18 months. Such rapid turnover can play havoc for human resource departments, but the cross pollination of ideas among companies makes the entire industry more vibrant.

Long term education and shorter term continuous training are also key to an industry’s ability to remain innovative. Industries previously studied stress the importance of a solid K-12 education coupled with post-secondary experience. Many companies spoke of the need for “just-in-time” training on specific topics particular to their operations or industry. Most companies have designed in-house training or have turned to outside consultants for short and medium term training. Almost every industry across the state expresses concerns about their local K-12 education system and few feel completely satisfied with the post-secondary and public training options.
B. HOW THE INDUSTRY CLUSTERS WERE IDENTIFIED

By definition, an industry cluster consists of a group of local industries that are closely linked by local supply networks, local customer networks, common labor markets, and access to technical expertise. The initial portion of the project was devoted to selecting four of the most competitive and successful industry clusters in southwestern Minnesota. Focusing on industry clusters that give southwestern Minnesota a competitive advantage will help economic development professionals better understand the strengths and challenges of the local economy and better focus on economic development factors that may foster continued growth for the region. An advisory board made up of professionals in the region and researchers from the Humphrey Institute collaborated to identify the top six highly concentrated and competitive industries.

Data Sources and Definitions
The Department of Economic Security (DES) provided ES202 employment and wage data at one and two digit Standard Industrialization Code (SIC) level. The ES202 data is developed from information collected from state employers covered under the Minnesota Reemployment Compensation Law. Results cover an 18 county area (Regions 8, 6W and 6E).

The location quotient is an important indicator of regional specialization. It is a ratio of the industry’s local share of employment to its national share of employment. If a region’s location quotient in a particular SIC code is equal to one, the region’s industrial output equals national production and is assumed to be just satisfying local demand. If the location quotient is less than one, the regional industry produces less than the national average and indicates a regional lack of self-sufficiency. Finally, if a region’s location quotient is greater than one, the regional industry produces at a level greater than the national average. Location quotients greater than one generally indicate the area exports a particular good or service and most likely serves a market beyond the immediate region.

This study focused on industries within southwestern Minnesota with high location quotients and location quotients which increased over time. To identify industries with high levels of regional concentration, industries were ranked by both the 1995 location quotient and the change in location quotient from 1990 to 1995. If the 1995 location quotient surpassed the 1990 location quotient, the industry grew in regional concentration and was deemed as having growth potential.

While the location quotient is a quick and effective method to measure industry concentrations, it has its limitations. Location quotients are relatively easy to calculate from ES202 data. But location quotients reflect only a point-in-time picture of the past and do not convey information beyond the local-national relationship. Reliance on employment data has limitations because it can give a misleading picture of competitiveness. Employment data readily exists for certain industries while other industries (such as agriculture or value-added cooperatives) offer scarce or nonexistent labor counts. Average wages provide another dimension of an industry’s income generating activity and offer a rough indication of how employers value workers’ skills, education, and experience. But since average wage calculations combine full and part time

17 Definition from Mary Jo Waits, Morrison Institute for Public Policy, Arizona State University. Report to be Published.
labor, wage differentials may reflect differences in the number of hours worked rather than
differences in wage rates.

The Center for Economic Development at the University of Minnesota Duluth conducted the
Minnesota Regional Manufacturing/Technology Opportunity Assessment: Southwest Region research
project in 1996. Dr. Richard W. Lichty and his research team analyzed the economic base of six
regions in the state of Minnesota for Minnesota Technology, Inc. Some of the data from the
University of Minnesota Duluth are included in the appendix.

Dr. Lichty used employment data covered by social security taken from the detailed
Department of Commerce, County Business Patterns series. Current state regulations
concerning data privacy restrict the Department of Economic Security from providing
employment and location quotient information beyond the three digit level for counties and
even regions. To deal with such limitations, Dr. Lichty filled in disclosure omissions through
an estimation procedure developed at the University of Nebraska. This estimation procedure
creates location quotient and employment information for specific four digit SIC code industry
subsectors. Subsector data provides researchers, businesses, and economic development
practitioners more detailed information to target those industries experiencing competitive
advantage losses or gains.

Initial Industry List
Using location quotient calculations to evaluate growth and concentration, the team of
individuals from the Department of Economic Security, the Department of Trade and Economic
Development, and the Humphrey Institute identified six industries as being the most successful
and competitive industries in the region. The initial six industries selected were:

  Farm and garden machinery
  Electrical equipment, electronics, and industrial manufacturing
  Food processing
  Computers
  Wood building and mobile homes
  Paper products

From this initial list, the advisory council decided upon the final four industries to be analyzed.
After the Humphrey Institute research team presented the six statistically strong industries, the
advisory council used their regional knowledge and expertise to narrow the initial six
industries down to four. The final four industry clusters are:

  precision agricultural manufacturing (including software)
  computer and electrical component manufacturing (excluding agricultural applications)
  dairy processing
  value-added agricultural cooperatives
C. INDUSTRY CLUSTERS STUDY PROCESS

Identify Industries and Firms (June 1997 – October 1997)
1. Acquire Location Quotients (LQ’s) from DES
2. Analyze LQ’s at SLPP using additional information from Dr. Lichty’s study
3. Construct a regional advisory council for the study (including people from state and local development agencies, educational professionals, and other organizations in the region with a development focus)
4. Collaborate with agencies on Southwest Minnesota Employer Needs Survey
5. Present LQ data and analysis to the advisory council in September
6. Advisory Council selects the four industries for the region
7. Research assistants begin to identify firms in the industry using the recommendations of the advisory council and available data and statistics

Gathering the Data (October 1997 – May 1998)
8. Begin to accumulate the qualitative information from the firms (focus groups, interviews, site visits)
9. Analyze information; identify trends in the industry
10. Present findings to the advisory council and elicit policy recommendations
11. Incorporate advisory council feedback and recommendations
12. Researchers write industry summaries
13. Solicit feedback from study participants on the industry summaries and incorporate feedback

Presenting Conclusions (May – June 1998)
14. Assemble full industry clusters report
15. Present findings to groups and organizations

D. ANALYSIS OF THE FOUR INDUSTRY CLUSTERS

Company leaders of area industries were invited to participate in focus groups, individual interviews, or site visits. Because of low focus group participation rates in some industries, the research assistants conducted phone and in-person interviews with company representatives. The two types of interviews produced different but equally valuable insights into the industries. While the focus groups helped stimulate discussion among leaders, individual interviews allowed for greater depth into the particular concerns of a company.

For the precision agricultural manufacturing and computer and electrical components industries, focus group sessions were conducted in November of 1997 with supplementary interviews conducted the following months. Research on the dairy processing and value-added agricultural cooperatives relied on individual interviews and site visits.
QUALITATIVE RESEARCH
The industry clusters study used a combination of qualitative research approaches including focus groups, individual interviews, and site visits. Focus groups are a particularly successful method for gathering information on an industry. Because focus groups are defined in a variety of ways, the following is an explanation of the ways in which the method was used in the industry clusters study.

USING THE FOCUS GROUP APPROACH
There exist many different definitions of what focus groups consist of.\textsuperscript{18} The following definitions contain the core elements of a focus group and how they were utilized in this study:

- The group is an informal assembly of target persons whose points of view are requested to address a selected topic.
- The group is small, usually 6-12 members, and are relatively homogenous.
- A trained moderator(s) with prepared questions and probes sets the stage and induces participants' responses.
- The goals of a focus group is to elicit perceptions, feelings, attitudes, and ideas of the participants about a selected topic.
- Focus groups do not generate quantitative information that can be projected to a larger population.

The Industry Cluster Study selected the focus group/individual interview approach because focus groups provide a planned and structured environment while still allowing for a flexible environment that encourages interaction among participants on certain topics. Focus groups add synergism and stimulation by creating excitement about a topic. They can create a chain reaction to data gathering as responses elicit additional comments and responses from others. Focus groups further provide a feeling of security because they often create a comfortable surrounding which encourages candid responses. Finally, focus groups create an atmosphere of spontaneity because participants are not required to answer every question so their responses are usually genuine (Hess, 1968).

Focus group interviews are also compatible with the key assumptions of the qualitative paradigm (Vaughn, 1996).

- In the “nature of reality” multiple views of reality can exist. This is a foundational aspect of the focus group process, in fact, in educational research, multiple opinions and perspectives are desired. The interaction between the moderator and the respondents as well as between the respondents themselves are recognized for having the potential to add depth and dimension to the knowledge gained.
- The nature of truth statements is such that truth is influenced by perspective. The focus group interviews attempt to gather a deeper understanding of perceptions, beliefs, attitudes, and experiences from multiple points of view and to document the context from which those perceptions and so forth were derived.

Researchers in this study found that focus groups and interviews enabled the collection of substantial information about participants’ thoughts and feelings on the particular topic of

interest. Focus groups further assume that people are valuable sources of information. Researchers gain insights into the topic by listening to participants’ words and expressions to communicate their experiences. Some researchers have even provided evidence that focus groups can yield more accurate information about what participants really think than other research methods.

For the purpose of this study, the focus group/interview method was used to identify key concerns of key stakeholders, and validate those concerns against the everyday experiences (Vaughn, 1996).

E. CRAFTING POLICY RECOMMENDATIONS

Policy recommendations were solicited from the industry representatives during the focus groups, site visits, and interviews. These recommendations were then presented to the advisory council in conjunction with the research findings. The advisory council made the policy recommendations that were synthesized into specific categories by the researchers at the State and Local Policy Program.
VI. POLICY RECOMMENDATIONS

1. Develop closer linkages between businesses, communities, and educational institutions to address workforce issues.

Although a number of firms in the region are independently developing job shadowing, internship, and apprenticeship programs, it is important for more businesses to start and continue such programs in the future. These training programs can serve to make young people aware of the job opportunities available in their community and also prepare them for those positions. Such programs provide a starting point for developing linkages between businesses, schools, and the community.

Representatives of many of the industries surveyed commented that schools are not providing students with the skills most needed by companies in the region. For manufacturing industries, the primary needs are for employees who possess technical skills and for workers with leadership skills who can be moved into management positions. A primary need is for employees with "soft skills," which include communication, decision-making skills, human relations, organizing, work ethic, self-esteem, and teamwork.

There are a number of ways in which schools could provide students with better preparation in these areas. Primary and secondary schools could integrate technical, leadership, and "soft skills" training into their curricula, with particular emphasis on developing students' work ethic, self-esteem, and communication skills at a very young age. In addition, schools could expand their partnerships with businesses in the region by developing mentoring and apprenticeship programs for teenagers and by bringing industry representatives into the classroom to teach students about opportunities in their fields. These efforts may encourage students to stay in the region after high school graduation. At the post-secondary level, universities and community colleges can expand their technical course offerings and can invite more professionals into the classroom to lecture about their work.

Continue to promote innovation and entrepreneurship in the region.

Innovation in creating and operating businesses is a necessity for rural regions that do not have high hopes of attracting large, already existing firms to the area. Because of this, it is essential to promote homegrown enterprises and entrepreneurship among the population of the region. There are many ways to proceed and there are already strong examples in the region.

A report from The Aspen Institute Rural Economic Policy Program sites five "tools and resources that entrepreneurs need." They include:

- The widespread availability of capital in the hands of investors and financiers who know what they are doing with it.
- A support structure of private-sector service providers such as accountants and lawyers who are sophisticated enough to meet the needs of forward-thinking clients.

An environment that encourages spin-offs from established businesses and research institutions.

An educational system, from elementary school through the post-secondary system, that stimulates and prepares entrepreneurs.

A ‘culture’ that values and celebrates entrepreneurship.

These steps would go a long way in promoting new growth in the region to create quality jobs that people are interested in holding. It must also be stressed that entrepreneurs are not only dealing in high technology industries, but in products and services that are innovative and find new niches in existing markets. This needs to be a public process that ripples through the entire economy of the region. The precision agricultural manufacturing equipment industry is a case study for the region in entrepreneurial development.

3. **Increase the affordable housing stock in the region.**

One major constraint of regional development is the workforce shortage. Lack of affordable housing prevents an expansion of the regional workforce. Communities should continue to work with organizations that specialize in housing development. The implementation of tax incentives for development of affordable housing in the region may help encourage expansion of the regional housing stock.

4. **Focus attention on livable wage issues and the needs of low wage workers.**

There are several levels of production positions that do not provide a sufficient income to adequately support a family. Some of these problems can be alleviated by exploring statewide issues of earned income tax credit programs, childcare availability, training, and transportation. These ideas, along with focusing on increasing compensation, may help retain good young people in the region who have promise to develop in the work atmosphere.\(^\text{20}\)

5. **Investments in transportation, water, and telecommunications infrastructure should continue.**

Infrastructure is extremely important in rural areas, such as Southwestern Minnesota. Roads, bridges, utilities, and adequate supplies of water continue to play a key role in the development process. Many firms are far removed from customers and advanced telecommunications systems allow firms to be competitive outside of the immediate region.

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\(^{20}\) *State and Local Policy Program Study: Southeast Minnesota Industrial Cluster Study.* September, 1996.
VII. APPENDICES

A. ACKNOWLEDGMENTS:

Core Team, State and Local Policy Program, The Humphrey Institute of Public Affairs
Jennifer J. Clark (Value-Added Agricultural Cooperatives and Computer and Electrical Components Industries)
Neal J. Young (Agriculture Equipment Manufacturing and Dairy Processing Industries)
Margaret M. Bau, Research Fellow
Lee W. Munnich, Jr., Senior Fellow and Director

University of Minnesota Extension Service
Annette Patel

Additional State and Local Policy Program Contributors (previous and current studies):
Libby Starling, Twin Cities and Financial Services Cluster Studies (former Research Assistant)
Audrey Moore, Education as an Industry Study
Laurie Berkwitz, Southeastern Minnesota Industry Clusters Study (former Research Assistant)
Russ Devlin, Twin Cities Industry Clusters Study (former Research Assistant)
Rebecca Skelton, Northwestern Minnesota Industry Clusters Study
Joshua Warner, Northwestern Minnesota Industry Clusters Study

University of Minnesota-Duluth
Dr. Richard Lichty

Minnesota Department of Economic Security
Ryan Pulkrabek
Michelle Ellison
Ed Valencia

Minnesota Department of Trade and Economic Development
Eugene E. Goddard
B. SOUTHWEST INDUSTRY CLUSTERS ADVISORY COUNCIL

Shirley Anderson-Poulsen, University of Minnesota Extension Service, Marshall
Russ Bjorhus, Meeker County Development Corporation, Litchfield
Wilt Croonquist, Kandiyohi County Economic Development, Willmar
John Cunningham, University of Minnesota Extension Service, Ortonville
Carol Dombek, Southwest Minnesota Private Industry Council, Montevideo
Steve Dusek, Prairieland Economic Development Commission, Slayton
Joel Egge, Meeker County Development Corporation, Litchfield
Michelle Ellison, MN Department of Economic Security, Willmar
Don Fleming, MN West Community and Technical College, Worthington
David Freiborg, Southwest/West Central Service Cooperative, Marshall
Terry Gere, Minnwest Bank, Ortonville
Eugene Goddard, MN Department of Trade and Economic Development, St. Paul
Marilyn Grantham, University of Minnesota Extension Service, St. Paul
Loren Hawker, Dawson-Boyd School District, Dawson
Glen Herfurth, Economic Development, Montevideo
Eugene Hippe, Mid-Minnesota Regional Development Commission, Willmar
Richard Lichty, Center for Economic Development, Univ. of MN, Duluth
Mark Lindquist, Southwest Regional Development Commission, Slayton
Kurt Linde, MN Department of Economic Security, Worthington
Jim Marshall, Minnesota Technology, Inc., Redwood Falls
David Nelson, Renville County Economic Development, Olivia
Les Nelson, Mid-Minnesota Regional Development Commission, Willmar
Annette Patel, University of Minnesota Extension Service, Clarksfield
Ann Peterson, Southwest Regional Development Commission, Slayton
Sue Pirsig, Swift County GROW, Benson
Ryan Pulkrabek, MN Department of Economic Security, Mankato
Rachel Quenemoen, MN Department of Children, Families, and Learning, Dawson
Carol Rikke, Minnesota West Community and Technical College, Granite Falls
Dorothy Rosemeier, University of Minnesota Extension Service, Benson
Ranee Shields, Southwest Minnesota Foundation, Granite Falls
Lynn Steinh, McKnight Welfare-to-Work Partnership Project, Benson
Rebecca Stoen, Mid-Minnesota Development Commission, Willmar
Sandy Thompson, Benson Chamber of Commerce, Benson
C. STUDY PARTICIPANTS

Dairy Processing
Rick Johnson, North Central AMPI, Dawson
Gaile Bjerke, North Central AMPI, New Ulm
Dave Lenzmeier, Glencoe Butter and Produce Association, Glencoe
Dean Grabow, First District Association, Litchfield
Bernie Heikes, Land O' Lakes, Inc., Luverne
Don Berg, Land O' Lakes, Inc., Minneapolis
Harold Metzger, Mid-America Dairymen, Inc., Winsted

Agriculture Equipment Manufacturing
Steve Claussen, Custom Ag Products, Benson
Elaine Mitteness, Tyler Industries, Benson
Mary Jetland, Ag-Chem Equipment, Jackson
Wayne Powell, Balzer Manufacturing, Mountain Lake
Debbie Becker, RDI Technologies, Inc., Spicer
Don Haug, Haug Implement, Willmar
Dick Kvols, University of Minnesota Extension Services
Donn Lorenz, Lorenz Manufacturing, Benson
Randy Wischmann, Jay-Dee Industries, Inc., Dassel
Robert Peterson, KRP Enterprises, Granite Falls
Galen Elwood, Falcon Industries, Hector
Dave Nelson, Loftness Farm Equipment, Inc., Hector
Craig Lenz, Ag Systems, Inc., Hutchinson
Stan Shearer, Service Systems Engineer, Jackson
Ken Morton, GVL Inc., Litchfield
Mike Keltgen, Keltgen Tires, Olivia
Glen Francis, Nasby Agri-Systems, Windom

Computer and Electrical Components Industry
Paul Otto, Artesyn Technologies, Redwood Falls
Win Wood, Micro-Dynamics, Eden Prairie
Shelley Loose, Micro-Dynamics, Montevideo
Jeff Kirchoff, Hutchinson Technology, Hutchinson
Ryan Pulkrabek, Department of Economic Security
STUDY PARTICIPANTS, CONTINUED

Value-Added Agricultural Cooperatives
Bill Lee, Chippewa Valley Ethanol Cooperative, Benson
Mel Stocks, MinAqua, Renville
Marie Staley, Golden Oval, Renville
Dan Torkelson, Lori’s Fine Herbs, Avoca
Harold Tilstra, Corner Stone Farmers Cooperative, Luverne
Eileen Koeberl, Minnesota Energy, Buffalo Lake
Chris Hanson, University of Minnesota and Minnesota Agri-Power Project (MNVAP), Granite Falls
David Nelson, Renville County Economic Development

ADDITIONAL INDUSTRY INFORMATION

Dairy Processing
Schwan’s Sales Enterprises

Computer and Electrical Components
Computer Systems Inc., Hector
Litchfield Precision Components, Litchfield
Innovex, Montevideo
Hutchinson Technology Inc., Hutchinson
Artesyn Technologies, Redwood Falls
Schott Corporation

Value-Added Agricultural Cooperatives
Minnesota Corn Processors, Marshall
Southern Minnesota Sugar Beet Cooperative, Renville
Minnesota Agri-Power Project, Granite Falls (Priam)
United Sugars Corporation
United Ethanol Sales
Minnesota Corn Growers Association
D. FOCUS GROUP/INTERVIEW QUESTIONS

INDUSTRY CULTURE AND FIRM STRATEGIES

When and where was your company founded? What were their initial products or services? Why did your firm initially locate in the region? What keeps your firm in the region? What part of your firm is located in the area? (Headquarters? R&D? Manufacturing? Sales?)

WORKFORCE

What workforce skills are crucial to the success of your firm? Where do most of your workers come from (professional, semi-skilled, unskilled)? What workforce skills are plentiful in the region? What skills are in short supply? What is your firm doing to overcome workforce shortages or employee skill gaps?

TRAINING

Where do your workers acquire their initial training? Where do you turn for continuing training? Are local educational and training institutions fulfilling your workforce development needs? What are their strengths and weaknesses? How much interaction occurs between your firm and the local K-12 school system, technical colleges, and four year colleges (curriculum design input, mentoring, internships)?

TELECOMMUNICATIONS

What telecommunications technologies are important to your business and industry? (i.e. do you use e-mail, networks, the Internet, electronic commerce applications?) How do you think these technologies might change the way you do business? If you are interested in using telecommunication technology to a greater extent, what are barriers to making that happen (i.e. infrastructure, security, skill of your workforce, management trust issues)?

SUPPLY, DEMAND, COMPETITION, INFRASTRUCTURE

Are your suppliers located locally, regionally, nationally, or internationally? About what percent of your demand is local, regional, national, and international? Where are your competitors located? (local, regional, national, international) What types of infrastructure (roads, rail, air, utilities) are important to your business and industry? How is your relationship to local and state government agencies? (From your company or industry perspective) What one piece of advice would you give to the education and economic development community?)
E. POLICY RECOMMENDATIONS FROM INDUSTRY REPRESENTATIVES

Agriculture Equipment Manufacturing
Most recommendations from study participants in the industry were directed towards two major areas. First, young people need to be adequately prepared for the world of work. Second, economic development needs to maintain a dialogue with business to adequately assess the development needs of the region.

- Link education to the realities of the working world. The curriculum needs to include career skills, interpersonal skills, personal motivation, and discipline. There also needs to be a focus on working with school counselors.
- Provide some protection for the investment that firms make in training their workers. One idea was to create a new training fund in which the only way funds are rebated to firms is as reimbursement for continuing training for workers.
- It is important to provide information on what is available in rural Minnesota versus the Twin Cities, both locally and in the Twin Cities. Along with this, there could be incentives to come to the region, in the form of loan forgiveness or available, affordable housing.
- Incorporate the reality of two-income families in workforce development plans.
- Help local buyers with resources necessary to purchase firms to prevent purchase by out-of-state bidders that may consider relocation. Concentrate development efforts on business that is already located in the region, rather than attracting new businesses. Tax incentives to finance growth of medium-sized enterprises would also strengthen this cluster.
- Streamline government regulations to help level the playing field with firms in other regions and countries. It would also lower the compliance costs to business.

Dairy Processing
The policy recommendations mentioned most frequently by study participants focused on making dairy production more profitable and making dairy producers less risk averse. Workforce issues came in second to these other, more imminent needs.

- Ensure that K-12 graduates acquire basic skills (3 R’s and “soft” skills). Educational system also needs to link the classroom to the realities of the working world (School to Work).
- Provide incentives or some type of aid to help producers and processors to invest in more efficient production processes.
- Lower the cost disadvantage in the price of milk (involves lowering price floors and providing support to the industry during the transition).
- Enable companies to cooperate to cut costs.
- Develop the housing stock so that the labor market can expand.
POLICY RECOMMENDATIONS FROM STUDY PARTICIPANTS CONT.

Value-Added Agricultural Cooperatives

Create economic incentives for the South Dakota border counties.
Depart from the “one size fits all” model of K-12 education.
Coordination between the regional two and four year educational institutions and the industries in the region is needed.
Rural development funding regulations are too complicated.
Economic development funding should be directed toward innovative projects with a possibility of success.

Computer and Electrical Components Manufacturing

- Affordable housing must be developed to attract workforce.
- Coordination efforts with state and local agencies to attract workers to the region should be organized.
- Promote internship and apprenticeship programs.
- Work with public schools to make students aware of employment opportunities in the region.
- Coordinate with Twin Cities higher education institutions to make graduating students aware of job opportunities in Southwest Minnesota.
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<td>$573.28</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>animal and marine fats and oils</td>
<td>10</td>
<td></td>
<td></td>
<td>2077</td>
<td></td>
<td></td>
</tr>
<tr>
<td>soybean oil mills</td>
<td>9.64</td>
<td></td>
<td></td>
<td>2075</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cash grains</td>
<td>13.54</td>
<td>33%</td>
<td>$372.42</td>
<td>326</td>
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<tr>
<td>field crops except cash grains</td>
<td>3.4</td>
<td>234%</td>
<td>$254.46</td>
<td>277</td>
<td></td>
<td></td>
</tr>
<tr>
<td>farm product raw materials</td>
<td>12.42</td>
<td>-14%</td>
<td>$450.97</td>
<td>1,402</td>
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<tr>
<td>grain and field beans</td>
<td>21.66</td>
<td></td>
<td></td>
<td>5153</td>
<td></td>
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<tr>
<td>livestock</td>
<td>0.08</td>
<td></td>
<td></td>
<td>5154</td>
<td></td>
<td></td>
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<tr>
<td>grain mill products</td>
<td>4.63</td>
<td>52%</td>
<td>$566.00</td>
<td>602</td>
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<tr>
<td>wet corn milling</td>
<td>29.27</td>
<td></td>
<td></td>
<td>2046</td>
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</tr>
<tr>
<td>dog and cat food</td>
<td>2.65</td>
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<td>2047</td>
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<tr>
<td>prepared feeds</td>
<td>9.37</td>
<td></td>
<td></td>
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<tr>
<td>sugar and confectionery products</td>
<td>4.03</td>
<td>7%</td>
<td>$558.67</td>
<td>408</td>
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<tr>
<td>beet sugar</td>
<td>51.88</td>
<td></td>
<td></td>
<td>2063</td>
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Notes:
Material in italics is 1993 data from the University of Minnesota-Duluth report to MN Technology, Inc. All other data prepared by Ed Valencia and Ryan Pulkrabek of the MN Department of Economic Security from 1995 ES202 sources.
Average regional wage in 1995 was $19, 338 or $372 per week.
Percent change in Location Quotient is from 1990 to 1995.
Wage listed is average weekly wage in 1995.