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TRADE ANALYSIS OF RETAIL AND SERVICE INDUSTRIES IN NORTH DAKOTA FOR PLANNING LOCAL ECONOMIC DEVELOPMENT

Sanjib Bhuyan

Quentin Burdick Center for Cooperatives * Department of Agricultural Economics North Dakota State University * Fargo, ND 58105-5636

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ABSTRACT

Trade analysis of retail and service sectors allows economic development practioners to evaluate the performance of these sectors in their respective communities. Estimation of market potential identifies specific business categories (e.g., computer stores) that have potential for further growth. Trade analysis of retail and service sectors in North Dakota shows that except in a few urban counties, such as Cass, Grand Forks, or Burleigh, these sectors were inefficient in retaining and attracting customer dollars. Market potential estimation of over 130 specific business categories showed that a considerable number of business categories have potential for further growth, e.g., computer and software stores, used merchandise stores, and heavy construction equipment rental and leasing services.

Key words: trade analysis, market potential, economic development

PREFACE

Preparation of this report was funded by cooperative research agreement FMHA-94-57 between the Rural Business and Cooperative Development Service, Rural Economic and Community Development, USDA, and the North Dakota State University Agricultural Experiment Station. Dr. Randall Torgerson of the RBCS/RECD/USDA, served as liaison; and Dr. David Cobia was the principal investigator. This report also contributes to NDSU Agricultural Experiment Station project 1394, titled "Strategies for Rural Cooperative Development."

The study is based on secondary data collected from public domain sources. The author is grateful to David Cobia, Larry Stearns, Dean Bangsund, Jay Leitch, Vidya Satyanarayana, and Cole Gustafson for their comments on an earlier draft. However, any remaining errors are the sole responsibility of the author. Ms. Donna Adam is appreciated for her assistance in preparing the printer-ready copy of this report.

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ABSTRACT

Trade analysis of retail and service sectors allows economic development practioners to evaluate the performance of these sectors in their respective communities. Estimation of market potential identifies specific business categories (e.g., computer stores) that have potential for further growth. Trade analysis of retail and service sectors in North Dakota shows that except in a few urban counties, such as Cass, Grand Forks, or Burleigh, these sectors were inefficient in retaining and attracting customer dollars. Market potential estimation of over 130 specific business categories showed that a considerable number of business categories have potential for further growth, e.g., computer and software stores, used merchandise stores, and heavy construction equipment rental and leasing services.

Key words: trade analysis, market potential, economic development

HIGHLIGHTS

This study evaluates the performance of retail and service sectors in 53 North Dakota counties and analyzes the availability and market potential of over 130 retail and service sector businesses in the state. The analyses are conducted using central place theory-based regional economics models and secondary data.

Trade analysis is an inexpensive and relatively simple way to assess the performance of local retail and service sector activities in terms of attracting customer dollars, market size, or growth potential of businesses. Knowledge of such information has proven useful in building awareness and support for local economic development activities (Harris and Shonkwiler, 1996). Trade analysis provides answers to questions such as "what is the level of goods and services currently provided locally and what goods and services are imported from elsewhere?" Or "what is the market size, in terms of sales dollars in a specific line of business?" And "given the existing demand and competition, does his/her line of business have market or business potential?"

Over the years, both the population and businesses have declined gradually in nearly all counties in North Dakota--the exceptions are the relatively urban counties of Cass, Grand Forks, Burleigh, Ward, and Stutsman. The U.S. Small Business Administration (1995) reported that during 1991-92 business failure in the state was 16.4% compared to the national average of 9.9%. In terms of population, while the U.S. population rose by 9.8% during 1980-92, population in North Dakota fell by 2.1%. A recent report by the U.S. Small Business Administration (SBA, 1995) shows that retail sales in North Dakota (adjusted for inflation) fell about 20 percent from 1980 to 1988. Such shrinkage in population and economic activity was substantially more severe in outlying rural areas and towns than in areas with relatively higher population such as Cass County, which includes the City of Fargo.

The purpose of this paper is to (1) analyze the effectiveness of retail and service sectors in North Dakota counties in attracting potential consumer purchases and (2) to examine which kinds of retail and service businesses have the potential for future growth in the state. Evaluation of retail and service sector performances in North Dakota shows that for most counties these two sectors were less successful in retaining and attracting customer purchases. Moreover, the situation has deteriorated over the last decade for most rural counties in the state. Given such an outcome, the past or ongoing economic development programs and strategies to improve business environment and attract customers may not have been as desired. However, it is more than likely that the situation would have been worse had no economic development programs been undertaken in these communities. Reevaluation of on-going economic development programs and strategies may be required to improve the performance of retail and service trades in those communities that did not perform well. Active cooperation among private businesses, potential entrepreneurs, or economic development agencies may also contribute towards improving retail and service sectors performances in North Dakota.

Analysis of market potential of specific businesses in retail and service sectors has shown that among the 130-plus business categories selected for this study, the following have higher market potential in their respective sectors: in the service sector -- computer rent/lease and maintenance services; public golf courses; and heavy construction equipment rental and leasing services retail sector -- computer and software stores; catalog and mail-order houses; and used merchandise stores. These are some of the businesses that may be targeted by potential entrepreneurs in North Dakota for opening new business ventures. However, before deciding to open a new business venture, an entrepreneur must conduct a thorough feasibility study as a part of his/her business plan. For those interested in starting a new business in North Dakota, contact the Department of Economic Development and Finance at (701) 221-5320 for information and assistance or regional economic development commissions for further information.

TRADE ANALYSIS OF RETAIL AND SERVICE INDUSTRIES IN NORTH DAKOTA FOR PLANNING LOCAL ECONOMIC DEVELOPMENT

Sanjib Bhuyan*

BACKGROUND

It is common for economists and development planners to conduct applied research and extension education programs to help local economic development practioners evaluate the performance of their local business sectors, e.g., retail sector. It is essential for the economic development practioners to know how effective the retail or service sectors in their community are in attracting potential consumer purchases. This information is important, because if these sectors are not performing well, local business and community leaders will need to reevaluate their on-going programs and strategies and start new ones to improve the performance of various local businesses. Conversely, communities where these sectors are doing well may intensify their existing economic development strategy. Bringing such performance evaluations to a group of citizens or decision-makers concerned with the economic future of a community has proven useful in building awareness and support for local economic development activities (Harris and Shonkwiler, 1996).

Trade analysis is a commonly used procedure to provide local economic development planners and decision makers with information about current local retail and service sector activities (Shaffer, 1989; Ariyaratne and Darling, 1995). Trade analysis is an inexpensive and relatively simple way to obtain information such as relative performance of different communities in attracting customer dollars, market size, or performance of specific business categories. Economic development practioners face questions such as what is the level of goods and services currently provided locally and what goods and services are imported from elsewhere? A crucial question faced by any entrepreneur is what is the market size, in terms of sales dollars, in his/her line of business? And given the existing demand and competition, does his/her line of business have market or business potential? Trade analysis tries to provide answers to such questions.

Over the years, both population and businesses are declining gradually in nearly all counties in North Dakota--the exceptions are the relatively urban counties of Cass, Grand Forks, Burleigh, Ward, and Stutsman. Declining population and businesses put financial stress on these communities to provide and maintain services such as local credit, health services, garbage disposal, grocery stores, and other retail and service related outlets. For instance, on average North Dakota residents drive 68 miles to and from the closest hospital (Hamm *et al.*, 1993). The U.S. Small Business Administration (1995) reported that during 1991-92 business failure in the state was 16.4% compared to the national average of 9.9%. In terms of population, while the

^{*}Research Associate, Quentin Burdick Center for Cooperatives, North Dakota State University, Fargo.

U.S. population rose by 9.8% during 1980-92, population in North Dakota fell by 2.1%. A recent report by the U.S. Small Business Administration (SBA, 1995) shows that retail sales in North Dakota (adjusted for inflation) fell about 20% from 1980 to 1988. Such shrinkage in population and economic activity was substantially more severe in outlying rural areas and towns than in areas with relatively higher population such as Cass County, which includes the City of Fargo.

Economic development efforts in North Dakota are carried out by organizations such as local and regional economic development agencies (e.g., Traill County Economic Development Commission), by state government agencies (e.g., Department of Economic Development and Finance), and trade associations (e.g., North Dakota Association of Rural Electric Cooperatives). In some rural communities, cooperatives have taken direct action by entering into new ventures to keep small town businesses alive and well. For example, Farmers Union Oil Company in Lidgerwood had taken over a lumber store and a grocery store which were closing, and recently reported a profit of over \$12,000 in each operation (Miller, 1996).

Irrespective of the measures or strategies used by economic development planners and practioners to retain local customers and attract outside customers, some communities may not be able to make much progress. These communities may not be able to make strategic investment in commercial development, often a common way of attracting customers, since many small communities are usually unable to garner the financial strength necessary to make such investments. In some circumstances, those communities with poorly performing retail and/or service sectors may cooperate with adjacent communities with similar characteristics to provide combined and stronger retail and service sectors offerings to their residents and outside consumers.

Another way of retaining local customer dollars is to provide locally the goods and services that are in demand. Residents in Bonaparte, Iowa (population: 465) cooperated to invest \$2,000 each to become partners in the local stores to save this hamlet from economic ruin. With similar concerted efforts, some rural communities in North Dakota may also be able to make their economies more healthy. Potential entrepreneurs who may not have the financial strength necessary to open a new business may cooperate to open a new business venture as a cooperative. To survive in a competitive business environment, similar kinds of businesses in adjacent rural communities may cooperate to combine resources to capture benefits a single business enterprise may not realize if the tasks were undertaken individually (Bhuyan, 1996).

While the purpose of this paper is not to analyze customers' shopping patterns or finding ways to retain customer dollars locally, an attempt is made (1) to analyze the effectiveness of retail and service sectors in North Dakota counties in attracting potential consumer purchases and (2) to examine which kinds of retail and service businesses have the potential for future growth in the state. Most of the past trade analysis for North Dakota focused on evaluating the performance of the retail sector (Bangsund *et al.*, 1991; Leistritz and Wanzek, 1993). A few others went further to evaluate trade performance of specific business categories, such as eating

and drinking places, automotive dealers, and drug stores (Bangsund *et al.*, 1995). This study is broader in scope as it estimates market potentials of over 130 retail and service business categories in addition to evaluating the trade performance of retail and service sectors in North Dakota.

RETAIL AND SERVICE SECTOR PERFORMANCE

Evaluation of retail and service sectors performance at the county level is carried out using County Trade Pull Factors (CTPF) and Trade Area Captures (TAC) for North Dakota counties in 1992. The CTPF is a measure of relative performance of retail or service activities in a county compared to the respective state averages. It is computed by dividing the per capita county sales by per capita North Dakota sales for each sector, i.e., CTPF is the per capita retail or service sales in each county relative to that of the state for the retail or service sector. Data sources were the 1990 Census of Population and Housing and the 1992 Economic Census, both published by the U.S. Department of Commerce. Obviously, the pull factors for both retail and service sectors at the state level are equal to 1.00. If a county has a CTPF value less than 1.00 in, for example, retail trade, then its retail trade is losing customers to other counties or communities; conversely, a CTPF value greater than 1.00 implies that the county attracts customers from other communities or counties.

The purpose of estimating TAC is to measure how many customers are drawn to a particular community to shop for specific products or services. TAC is one way of measuring market capture by existing establishments in retail or service sectors in a community/county. It is computed by multiplying the community/county population by its CTPF. Both CTPF and TAC values are used to evaluate the performance of retail and service sectors in each county.

There were over 4,700 retail and 4,200 service establishments in North Dakota in 1992 which grossed over \$4.6 billion and \$1.5 billion in sales, respectively (Table 1). Only 4 counties crossed the half-billion dollar mark in retail sales (Cass, Grand Forks, Burleigh, and Ward counties) and only one county reached this mark in service revenue (Cass County). Among 53 counties, Slope County (population: 907) had the lowest retail sales, which amounted to \$222,000, or a per capita yearly sale of only \$244.76. Data on service revenue was not available for Billings, Sioux, and Slope counties. Over 45% of retail and over 57% of service establishments were concentrated in the counties which have the major population centers in North Dakota: Cass, Grand Forks, Burleigh, Ward, and Stutsman. Each of the following counties reported less than 10 establishments in either retail or service sectors: Billings, Burke, Oliver, Sheridan, Sioux, and Slope.

Table 1. Trade Performance of Retail and Service Sectors in North Dakota by County, 1992

																															contd/-
	sector	Rank	;	56	13	39	NA	16	21	49	7	1	22	25	36	31	42	29	20	43	8	40	41	37	4	38	45	46	30	27	
TAC	Service sector	AV	638,800	1,719	5,296	608	NA	2,921	2,280	253	107,705	233,070	2,004	1,786	1,032	1,327	657	1,395	2,400	643	81,072	770	770	1,015	620	1,002	572	266	1,331	1,606	
L		Rank	:	23	11	4	51	15	26	38	8	1	18	21	35	32	48	30	25	56	7	39	47	42	46	37	43	34	27	31	
	Retail sector	AV	638,800	3,119	10,450	1,147	166	5,805	2,864	1,603	81,240	148,878	4,539	4,067	1,649	1,916	897	2,156	2,998	2,285	94,646	379	1,010	1,250	1,085	1,606	1,161	1,702	2,712	2,045	
	Service sector	Rank	;	15	17	47	NA	20	10	49	2	1	24	31	21	22	38	32	13	28	33	39	37	30	42	43	40	48	23	36	
F	Servic	AV	I.00	0.54	0.42	0.11	NA	0.36	0.63	0.08	1.79	2.27	0.33	0.29	0.36	0.33	0.22	0.29	09.0	0.31	1.15	0.22	0.23	0.29	0.19	0.19	0.20	0.09	0.33	0.25	
CTPF	Retail sector	Rank	;	10	14	50	51	18	15	28	7	1	17	22	26	31	44	34	16	7	33	36	43	39	41	46	35	47	21	42	
	Retail	AV	I.00	0.98	0.83	0.16	0.15	0.72	0.80	0.53	1.35	1.45	0.75	0.67	0.57	0.48	0.30	0.45	0.75	1.08	1.34	0.39	0.31	0.36	0.33	0.30	0.41	0.26	0.67	0.32	Ì
o. of establishments	Service	sector	4,221	23	72	10	2	40	34	∞	551	924	34	36	20	18	13	23	31	15	412	15	15	14	13	22	13	17	23	27	
No. of ea	Retail	sector	4,790	33	86	25	7	79	37	29	459	929	58	57	32	27	18	45	38	22	476	28	21	21	15	41	24	40	46	44	
Total revenue ('000 \$)	Service	sector	1,575,711	4,240	13,064	1,995	0	7,204	5,625	624	265,672	574,908	4,942	4,406	2,546	3,274	1,621	3,442	5,920	1,587	199,978	1,900	1,899	2,504	1,530	2,471	1,412	1,397	3,282	3,961	
Total reve	Retail	sector	4,696,871	22,936	76,832	8,430	1,224	42,682	21,058	11,785	597,326	1,094,647	33,376	29,905	12,126	14,084	6,597	15,850	22,045	16,800	695,895	10,137	7,423	9,192	7,980	11,806	8,540	12,511	19,942	15,039	
		County	North Dakota	Adams	Barnes	Benson	Billings	Bottineau	Bowman	Burke	Burleigh	Cass	Cavalier	Dickey	Divide	Dunn	Eddy	Emmons	Foster	Golden Valley	Grand Forks	Grant	Griggs	Hettinger	Kidder	LaMoure	Logan	McHenry	McIntosh	McKenzie	

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	Total reve	Total revenue ('000 $\$$)	$\frac{1}{1}$ No. of es	No. of establishments		CTP	[I]			H	$\overline{ ext{TAC}}$	
	Retail	Service	Retail	Service	Retail	Retail sector	Servic	Service sector	Retail sector	sector	Servic	Service sector
County	sector	sector	sector	sector	AV	Rank	AV	Rank	AV	Rank	AV	Rank
McLean	26,650	6,942	70	54	0.35	40	0.27	35	3,625	22	2,814	17
Mercer	42,623	6,735	69	50	0.59	24	0.28	33	5,797	16	2,730	18
Morton	154,064	36,148	145	116	0.88	12	0.62	12	20,954	∞	14,655	∞
Mountrail	32,639	2,998	92	30	0.63	23	0.17	44	4,439	19	1,215	34
Nelson	12,057	3,586	37	19	0.37	37	0.33	25	1,640	36	1,454	28
Oliver	1,076	708	7	8	90.0	52	0.12	46	146	52	287	48
Pembina	61,500	19,172	103	48	0.91	11	0.84	7	8,364	13	7,772	11
Pierce	32,040	7,829	42	31	98.0	13	0.63	11	4,358	20	3,174	15
Ramsey	121,587	23,101	126	95	1.30	4	0.74	6	16,536	6	9,365	10
Ransom	19,710	4,755	47	36	0.45	33	0.33	26	2,681	28	1,928	23
Renville	12,617	3,179	28	13	0.54	27	0.41	18	1,716	33	1,289	32
Richland	96,344	25,221	116	103	0.72	19	0.56	14	13,103	10	10,225	6
Rolette	47,124	6,197	89	36	0.50	30	0.20	41	6,409	14	2,512	19
Sargent	9,986	3,111	34	21	0.30	45	0.28	34	1,358	40	1,261	33
Sheridan	3,859	175	12	4	0.24	48	0.03	50	525	20	71	50
Sioux	5,849	0	15	2	0.21	49	NA	NA	795	49	NA	NA
Slope	222	0	33	3	0.03	53	NA	NA	30	53	NA	NA
Stark	196,884	47,844	200	180	1.17	9	0.85	9	26,777	S	19,396	9
Steele	8,269	884	15	13	0.46	32	0.15	45	1,125	45	358	47
Stutsman	168,237	42,543	173	127	1.03	~	0.78	∞	22,881	9	17,247	7
Towner	6,880	2,656	34	13	0.37	38	0.30	29	1,344	41	1,077	35
Traill	37,950	8,231	79	59	0.59	25	0.38	19	5,161	17	3,337	14
Walsh	71,459	14,928	126	96	0.70	20	0.44	16	9,719	12	6,052	12
Ward	520,534	133,663	422	408	1.22	S	0.94	4	70,795	4	54,188	4
Wells	22,858	4,501	59	40	0.53	56	0.31	27	3,109	24	1,825	24
Williams	154,685	48,745	188	191	1.00	6	0.94	5	21,038	7	19,761	5

Note: AV= absolute value; NA= not available; CTPF= county trade pull factor; TAC= trade area capture; CTPF Ranking= 1 implies businesses are most efficient in attracting shoppers relative to other counties; TAC ranking=1 implies its businesses received maximum patronage from shoppers relative to other counties.

In terms of CTPF for the retail sector, 8 counties out of 53 had pull factors greater than 1.00: Burleigh (1.35), Cass (1.45), Golden Valley (1.08), Grand Forks (1.34), Ramsey (1.30), Stark (1.17), Stutsman (1.03), and Ward (1.22). Williams County had a pull factor equal to 1.00, closely followed by Adams County (0.98). The remaining 43 counties had retail pull factors less than 1.00. The counties that showed lowest retail pull factors include Benson (0.16), Billings (0.15), McHenry (0.26), Oliver (0.06), Sheridan (0.24), Sioux (0.21), and Slope (0.03). In a previous study where CTPF for retail sectors in North Dakota counties were computed for 1980 and 1990, Bangsund et al. (1995) found that 13 counties out of 53 had CTPF values greater than 1.00 in 1980 while that count dropped to 10 in 1990. The only counties that had a retail CTPF of greater than 1.00 in 1980, 1990, and 1992 were Burleigh, Cass, Golden Valley, Grand Forks, Ramsey, Stark, Stutsman, and Ward. Among these, Burleigh, Cass, and Grand Forks counties were able to improve their ability to attract customers, i.e., they showed an increase in the retail CTPF value. For example, the CTPF increased from 1.10 in 1990 to 1.35 in 1992 for Burleigh County and from 1.20 to 1.45 for Cass County during the same period. Therefore, the trend of urban counties pulling more and more dollars from non-urban counties is continuing. On the other hand, Golden Valley, Stark, and Stutsman counties showed a slight decline in CTPF value from 1990, and Ramsey County's retail CTPF value remained unchanged. Economic development agencies and public policy makers may want to examine the factors responsible for declining business performance in the concerned North Dakota counties/communities.

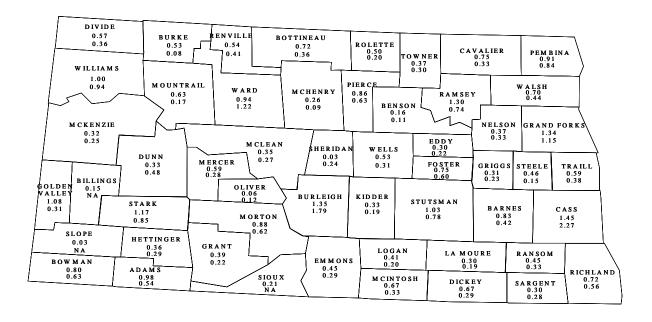


Figure 1: County Trade Pull Factors (CTPF) of Retail and Service Sectors, North Dakota, 1992 (CTPF values at top and bottom refer to the retail and the service sectors, respectively. NA = not available)

When it comes to the service industry, most North Dakota counties did not perform well.

Only 3 counties had a service sector CTPF greater than 1.00: Cass (2.27), Burleigh (1.79), and Grand Forks (1.15). Figure 1 shows the retail and service sector CTPF (and TAC values) for all 53 counties in North Dakota. Counties with strong trade pull factors, whether retail or service related, have large urban or metro areas which include a dominant city, e.g., Fargo in Cass County or Grand Forks in Grand Forks County. Each of these cities has a well established and well organized business community and generally caters to 20,000 or more residents. Such characteristics may have contributed toward these counties' ability to attract more customers to their retail and service establishments compared to other counties in the state. Not surprisingly, mostly rural counties with low population had lower pull factors in both retail and service sectors, e.g., Sheridan County's (pop. 2,148 in 1990) retail pull factor was 0.24 and service pull factor was 0.03.

The TAC estimates show the relative level of patronage received by business establishments (retail or service) in a community. Retail and service business establishments in Cass County were the most efficient in capturing their potential customer base and thus received the maximum patronage among 53 counties (Table 1). The continued growth of retail and service businesses in the Fargo-Moorhead area is an indication of the continued ability of the retail and service sectors in that area to attract customers from other communities. In terms of TAC values, Cass County was most efficient in attracting customer dollars, followed by Burleigh, Grand Forks, Ward, and Stark counties. On the other hand, the retail sector businesses in Slope, Oliver, Billings, Sheridan, and Sioux counties were the least efficient in attracting potential customers, while similar inefficiency was shown by the service sector businesses in Burke, Sheridan, Oliver, Steele, and McHenry counties.

MARKET POTENTIAL OF RETAIL AND SERVICE SECTOR INDUSTRIES

To analyze the growth potential of individual business categories (e.g., beauty and barber shops) two measures are used: market potential and location quotient. The analysis is conducted at the 3- and 4-digit Standard Industrial Classification (SIC) levels for 48 retail business categories (e.g., grocery stores) and 88 service business categories (e.g., beauty and barber shops). Data on sales, number of establishments, and employment in individual business categories were obtained from the 1992 Economic Census. Data on per capita income were obtained from the Statistical Abstract of the United States, 1994, while population and sectoral employment data came from the 1990 Census of Population and Housing.

Many of these 48 retail and 88 service business categories identified here are not available in most North Dakota counties. Therefore, when estimating market potential for specific retail and service business categories, this study assumes uniformity in terms of distribution of population and business establishments in the state, i.e., estimates are state averages. In reality, a majority of the retail and service businesses in North Dakota are located in the urban counties of Burleigh, Cass, Grand Forks, Stutsman, and Ward. For this reason, overestimation of market potentials for some business categories, particularly those that are urban oriented, is possible. In addition, the out-of-state demands for retail and service related

goods and services from North Dakota establishments are assumed negligible relative to in-state demands. Although a detailed feasibility study of a specific business is an effective counter measure against such potential defects, it is beyond the scope of this study. Conducting such a detailed feasibility study would be a next step for a potential entrepreneur who is considering opening a new business venture in a category that has business potential.

Market potential is the expected total sales of a commodity, a group of commodities, or a service in a market for all firms (U.S. Department of Commerce, 1979). This definition is slightly modified to suit the needs of this study where the interest is to identify businesses that have potential for further growth.

To identify businesses with market potential, the following steps are taken:

Step 1: Expected total sales (ETS) of business category x (e.g., gasoline service stations) in North Dakota in 1992 is estimated by

$$ETS_x = Per\ capita\ sales_x * Total\ population_{ND} * \frac{per\ capita\ income\ in\ North\ Dakota(ND)}{National\ per\ capita\ income}$$
 . (1)

Per capita sales is the national average per capita sales in category *x* and is obtained by dividing the total national revenue in business *x* by total U.S. population. *ETS* is a demand related concept. Although this measure ignores differences in state consumption patterns except for adjusting the level by relative state income, it does provide a readily calculated estimate of market size (Shaffer, 1989).

Estimation of *ETS* is demonstrated using the gasoline service stations category. The necessary data to compute *ETS* are total U.S. revenue (1992) \$134,705,359,000; total U.S. population (1990) 249,908,000; North Dakota population (1990) 638,800; per capita income in North Dakota and the United States (1992) \$15,688 and \$18,177, respectively. Then, the *ETS* for gasoline service stations for 1992 is (rounded),

$$ETS_{gas. \ serv. \ stn.} = \frac{134,705,359}{249,908,000} * 638,800 * \frac{15,688}{18,177}$$

$$= 0.53902 * 638,800 * 0.86307$$

$$= 297,177 (000\$).$$
(2)

Step 2: The share of actual revenue to the expected total sales in 1992 is estimated for business x. This share is termed "sales goal achieved," and defined as

Sales goal achieved_x =
$$\frac{Actual \ total \ sales \ in \ 1992_x}{ETS_x \ in \ 1992}$$
, (3)

and expressed in percentage terms. Continuing the demonstration, using (3), it can be shown that gasoline service station category exceeded expected sales in 1992, i.e.,

Sales goal achieved_{gas. serv. stn.} =
$$\frac{297,177 (000\$)}{439,968(000\$)} * 100 = 148.05\%$$
. (4)

Step 3: All business categories are ranked in terms of their respective sales goal achieved in ascending order, i.e., 1 being the business with the least amount of sales goal achieved. Based on sales goal achieved in 1992, the gasoline service stations category is ranked 39th out of the 46 ranked retail trade categories in North Dakota.

Those businesses that either did or did not achieve their total sales potential in 1992 are identified in Step 3. To identify the businesses that may have potential for further growth it is assumed that those businesses that have achieved 70% or more of their expected total sales have reached market saturation and, thus, have no further growth potential. On the other hand, those businesses that have yet to reach at least 70% of their expected sales have unfulfilled demand and, thus, have potential for growth. A ranking of 1 in Step 3 thus implies a market potential ranking of 1, indicating the business category that has the highest market potential.

Location quotient is an additional measure used to supplement the above procedure for determining market potential. A common question faced by communities in both rural and urban areas is what is the level of goods and services currently provided locally and what goods and services are imported from elsewhere--location quotient (LQ) provides an answer to such questions. LQ thus is a measure of self-sufficiency of goods or services in a community (Shaffer, 1989). Location quotient is a commonly used tool to identify non-manufacturing industries for industrial recruitment, which is a popular economic development strategy. For example, Doescher $et\ al.$ (1986) used this tool to identify non-manufacturing industries for industrial recruitment in Oklahoma.

Location quotient is defined as the ratio of the share of state employment in a particular business category (x) to the share of national employment in that category:

$$LQ ext{ for } x = \frac{Percent of North Dakota employment in } x}{Percent of U.S. employment in } x}. ext{(5)}$$

A location quotient of 1 (LQ = 1) means that local consumption demand is met through local production of specified good or service (Shaffer, 1989). Similarly, a location quotient of less than one (LQ < 1) means lack of self-sufficiency in good or service x, i.e., what is produced or available is not sufficient to meet the local demand. A location quotient greater than 1(LQ > 1) means that the concerned state or community has a larger proportion of its employment in industry x than does the nation or whatever economic aggregate is used as the denominator in equation (5).

Continuing the demonstration, using (5), LQs for the gasoline service stations category are estimated as follows: total persons employed in North Dakota and the United States in the gasoline service stations category, respectively were 2,590 and 675,080 (1992); total retail sector employment in North Dakota and the United States in 1990 were 53,309 and 19,485,666, respectively. Thus, using (5), the LQ for gasoline service stations category is

$$LQ_{gas. serv. stm.} = \frac{2,590 / 53,309}{675,080 / 19,485,666} = 1.40.$$
 (6)

Although location quotient has such shortcomings as assuming identical state and national demand and supply functions and similar tastes and preferences and income levels, it is a reliable measure of local self-sufficiency (Shaffer, 1989). To reduce the problem of misinterpretation of estimated LQs, a disaggregated 4-digit SIC level data is used in this study and a lower threshold point is selected to determine self-sufficiency. It is assumed that an estimated LQ in the range 0.75 - 1.25 suggests self-sufficiency while those below 0.75 suggest lack of self-sufficiency, and LQ>1.25 suggests abundance of that business or service. While lack of self-sufficiency implies potential for new business or possible expansion of existing ones, an abundance of business or services implies market saturation if export is not a principal activity in that particular business or service category.

Retail Trade Industries

Retail sector was the second largest provider of employment in North Dakota in 1990 (19% of total employment). A list of 48 available retail trades in North Dakota presented in Table 2 shows the number of establishments, sales, average population served, location quotient, and sales goal achieved for each retail business category. Among the retail business categories, the eating places category (for SIC numbers, see Table 2) had the highest number of establishments in North Dakota, while the maximum revenue (almost \$1 billion) was earned by the new and used car dealers. On average, existing eating places in North Dakota served 643 persons while some other categories catered to several thousand people per establishment, e.g., mobile home dealers serving over 37,000 people per establishment.

Table 2. Market Potential and Other Related Information on Retail Industries in North Dakota, 1992

		1																														I	,
Market Potential	Rank	37	43	38	36	41	40	21	33	27	19	12	7	35	15	30	42	39	31	25	6	18	3	28	22	13	∞	_	16	45	20	46	
Sales goal achieved	(% of expected sale)	138.97	155.55	139.81	134.01	148.86	148.55	88.07	119.12	75.76	85.95	68.85	45.48	131.34	84.01	110.76	154.48	148.05	112.32	95.88	52.93	85.12	33.64	88.66	88.52	70.17	46.29	26.19	84.19	206.55	86.13	301.49	
Quotient		33	41	14	39	NA	37	28	42	27	23	17	11	36	13	25	35	40	34	29	9	16	4	32	12	20	∞	B	15	43	24	45	
ocat	AV Rank	1.13	1.44	0.74	1.36	NA	1.25	96.0	1.56	0.95	0.89	0.79	0.63	1.23	0.74	0.94	1.23	1.40	1.14	0.98	0.52	0.78	0.40	1.11	0.73	0.82	0.58	0.34	0.76	2.03	0.93	2.61	
Average pop	served (persons)	3,872	5,460	18,788	37,576	15,580	15,580	14,518	15,580	1,779	20,606	14,196	18,251	5,236	14,518	6,796	12,285	1,514	13,308	3,529	11,01	7,178	22,814	6,724	8,517	19,963	16,379	70,978	31,940	42,587	643	1,510	
Revenue *	se (\$ 000,)	228,405	42,177	19,518	16,888	626,536	610,945	17,597	131,007	758,886	9,558	8,182	6,233	967,217	29,712	69,797	57,083	439,968	24,812	73,846	38,283	33,582	4,540	67,024	38,565	12,625	20,212	3,785	10,884	12,234	352,867	73,921	
Number of	establishments *	165	117	34	17	41	41	44	41	359	31	45	35	122	44	94	52	422	48	181	58	68	28	95	75	32	39	6	20	15	993	423	
	Industry	Building materials and supply stores	Hardware stores	Retail nurseries, lawn & garden supply	Manufactured (mobile) home dealers	Department stores (incl. leased depts.)	Department stores (excl. leased depts.)	Variety stores	Miscellaneous general merchandise store	Grocery stores	Meat and fish markets	Retail bakeries	Other food stores ^a	New and used car dealers	Used car dealers	Auto and home supply stores	Miscellaneous automotive dealers ^b	Gasoline service stations	Men's and boys' clothing and accessory	Women's clothing and specialty stores	Family clothing stores	Shoe stores	Other apparel and accessory stores	Furniture stores	Home furnishings stores ^c	Household appliance stores	Radio, TV, and electronics stores	Computer and software stores	Record and prerecorded tape stores	Musical instrument stores	Eating places ^d	Drinking places	
	SIC	521,3	525	526	527	5311	5315	533	5391	5411	542	5461	543	551	552	5531	555	554	561	562,3	265	999	564,9	5712	5713	572	5731	5734	5735	5736	5812	5813	

Table 2	Table 2. continued.							
SIC	Industry	Number of stablishments *	Revenue * ('000 \$)	Averagepop. served (persons)	Location Quotient AV Rank	<u>iotient</u> ık	Sales goal achieved (% of expected sale)	<u>Market Potential</u> Rank
5911	Drug and proprietary stores	176	152,951	3,630	0.89	21	89.47	23
592	Liquor stores	137	78,018	4,663	2.10	44	174.04	44
593	Used merchandise stores	46	5,028	13,887	0.62	6	40.33	4
594	Miscellaneous shopping goods stores	335	140,761	1,907	1.03	31	96.42	26
5942	Book stores	25	10,095	25,552	0.56	7	57.09	11
5944	Jewelry stores	89	28,450	9,394	0.89	21	92.10	24
5943	Other misc shopping goods stores ^f	179	47,710	3,569	0.94	26	72.82	14
5961	Catalog and mail-order houses	25	25,036	25,552	0.42	5	32.82	2
5965	Automatic merchandising machine operator	11	5,991	58,073	0.24	1	42.90	9
5963	Direct selling establishments [®]	41	27,849	15,580	1.01	30	124.12	34
298	Fuel dealers	42	30,995	15,210	0.80	18	101.26	29
5992	Florists	68	14,349	7,178	1.26	38	113.72	32
5993	Tobacco stores and stands	1	D	638,800	NA	NA	NA	NA
5994	News dealers and newsstands	8	634	212,938	NA	7	40.80	5
5665	Optical goods store	30	8,970	21,293	0.80	19	84.60	17
5999a	Pet shops	12	3,283	53,233	0.63	10	55.57	10
5999b	Art dealers	2	D	319,400	NA	NA	NA	NA

Note: (i) a= includes fruit and vegetable markets, candy and confectionery vendors, dairy product stores, and misc. food stores; b= includes boat dealers, and motorcycle dealers; c= includes SIC 5713 (floor covering stores), and 5719 (misc. home furnishing stores), d= includes restaurants, cafeterias, refreshment places, and other eating places; e= includes sporting goods store and bicycle shops; f= includes stores dealing with stationery, hobby, toy and game, gift, novelty and souvenir, luggage and leather goods, and sewing and needlework; g= includes furnishing mobile food service, books and stationery and only of their includes furnishing and needlework; g= includes furniture, home furnishing mobile food service, books and stationery and only of their inclusives. Those ranked 15 or higher are self-sufficient (i.e., LQ> 0.75); (iii) Market potential ranking= 1 implies highest market potential given current number of establishments. Those ranked higher than 12 achieved 70 percent or more of their market potential; (iii) * = data from 1992 Economic Census CD ROM, Bureau of Census, U.S. Dept. of Commerce; (iv) AV= absolute value, NA= information not available to provide a value, D= not disclosed.

Location quotient or self-sufficiency estimation of retail business categories in North Dakota ranged from 0.24 in the automatic merchandising machine operators category to 2.61 in the drinking places category. Among the 48 retail business categories, the state is self-sufficient in those ranked 15 or higher, i.e., their estimated location quotient is greater than 0.75. The following businesses are ranked among the ten least self-sufficient businesses in North Dakota: news dealers and newsstands; computer and software stores; apparel and accessory stores; catalog and mail-order houses; family clothing stores; book stores; radio, TV, and electronics stores; used merchandise stores; and pet shops. The existing business establishments in these retail business categories were unable to fulfill the local/state demand for their respective service or merchandise. This also implies that to fulfill the local/state demand, these goods and services were imported from out-of-state sources; customers of these businesses shopped away from the local stores.

In terms of the extent of sales goal achieved by the existing establishments and consequent evaluation of market potential of individual business categories, those retail categories ranked 12 or higher in Table 2 are considered lacking potential for further growth because they already achieved 70% or more of their sales goal. For those business categories for which market potential could not be estimated, a potential entrepreneur may conduct more desegregated market research (e.g., city level) to study their respective business potential. Market potential rankings of retail businesses show that computer and software stores category have the highest market potential in North Dakota, followed by catalog and mail-order houses. It is likely that the ranking of the catalog and mail-order businesses could be either over- or underestimated because this business caters to both out-of-state and in-state customers. Other retail businesses among the top 10 categories with high potential for future growth are apparel and accessory stores; used merchandise stores; news dealers and newsstands; automatic merchandising machine operators; food stores (other than grocery stores, meat and fish markets, and retail bakeries); radio, TV, and electronics stores; family clothing stores; and pet shops.

Service Sector Industries

The service sector was the largest employer in North Dakota in 1990 (35% of total employment), reflecting a pattern similar to the national average. A list of 88 service categories available in North Dakota is presented in Table 3. Among the service categories, the maximum number of establishments was reported by the beauty and barber shop category (total 369) followed closely by the automotive repair shops (total 360). In terms of earnings, the maximum earning was reported by offices and clinics of doctors of medicine (over \$420 million). As in the retail sector, those ranked 38 and higher are considered self-sufficient because their location quotient was 0.75 or higher. Self-sufficiency rankings show that computer rent/lease and maintenance services were the least self-sufficient service category in North Dakota in 1992. This kind of service was imported from out-of-state sources to satisfy local or in-state demand. Other services that were identified as lacking self-sufficiency are camps and recreational vehicle parks; personal supply services such as employment agencies; theatrical production; heavy

construction equipment rental and leasing services; interior designing; watch, clock, and jewelry repair services; commercial photography, art, and graphics services; photocopying and duplicating services; and advertising services.

In Table 3, businesses ranked 37 or higher achieved 70% or more of their market potential and are considered lacking further growth potential. Among the service businesses for which market potential rankings were obtained, computer lease/rent and maintenance services tops the ranking, indicating it has the highest potential for further growth. Other business categories with higher market potentials are public golf courses; heavy construction equipment rental and leasing; personnel supply services; photocopying and duplicating services; advertising; commercial photography, art and graphic services; computer programming and data processing services; mailing, copying, photography, and steno services; and management and public relations services.

Table 3. Market Potential and Other Related Information on Service Industries in North Dakota, 1992

		MIM Der OT						
SIC	Industry	establishments *	(,000\$)	served (persons)	AV	AV Rank	(% of expected sale)	Rank
7011a	Hotels	69	64,508	9,258	0.86	49	52.73	32
7011b	Motels, motor hotels, and tourist courts	160	59,712	3,993	2.62	65	230.60	99
702	Rooming and boarding houses	4	344	159,700	0.74	37	52.93	33
703	Camps and recreational vehicle parks	12	1,071	53,233	0.15	2	28.28	16
721	Laundry, cleaning, and garment services		29,635	5,368	0.76	39	78.37	45
722	Photographic studios, portrait	52	8,153	12,285	0.75	38	115.81	57
723,4	Beauty and barber shops	369	33,270	1,731	1.40	59	145.75	09
725	Shoe repair shops and shoe shine parlor		857	63,880	1.64	62	140.86	59
726	Funeral service and crematories	89	23,208	9,394	1.07	55	147.23	62
7291	Tax return preparation services	44	3,059	14,518	0.79	43	107.04	54
7299	Miscellaneous personal services, n.e.c. ^a	35	5,370	18,251	0.61	29	62.65	37
7299a	Diet and weight reducing services	16	2,880	39,925	0.91	52	86.34	46
731	Advertising agencies & services (all types)	les) 28	8,096	22,814	0.31	10	18.86	7
732	Adjustment, collection, credit agencies	31	9,944	20,606	0.87	51	73.28	42
733	Mailing, copying, photography, steno. serv	erv. 43	9,005	14,856	0.32	12	22.26	10
7331	Direct mail advertising services	5	D	127,760	NA	NA	NA	NA
7334	Photocopying and duplicating services	5	1,392	127,760	0.24	6	18.21	9
7335	Commercial photography, art, and graphics	hics 16	2,910	39,925	0.23	∞	20.32	∞
7338	Secretarial and court reporting services	17	D	37,576	NA	NA	NA	NA
7342	Disinfecting and pest control services	3	О	212,933	NA	NA	NA	NA
7349	Building cleaning and maintenance services	ices 129	О	4,952	NA	NA	NA	NA
7352	Medical equipment rental and leasing	6	7,357	70,978	1.19	57	107.23	55
7353	Heavy construction equip rental and leasing	sing 4	1,298	159,700	0.22	S	15.17	4
7359	Equipment rental and leasing, n.e.c	41	23,842	15,580	0.63	30	73.07	41
736	Personnel supply services (emp. agen., etc.)	etc.) 26	14,997	24,569	0.15	33	17.81	5
737	Computer program, data process, other	57	48,370	11,207	0.32	11	21.69	6
7377	Computer rent/lease, maintenance, n.e.c. ^b	;b 14	3,496	45,629	0.11	_	10.40	2
738	Miscellaneous business services ^c	134	48,359	4,767	0.41	22	43.04	28
7383	News syndicate	2	О	319,400	NA	NA	NA	NA
7384	Photo finishing laboratories	21	16,770	30,419	1.31	28	172.19	63
7389a	Sign painting shops	7	1,693	91,257	1.58	61	146.53	61

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SIC	Industry	establishments *	(,000 \$)	served (persons)	AV	Rank	(% of expected sale)	Rank
7389b	Interior designing	9	1,395	106,467	0.22	9	27.11	15
7389c	Telephone answering services	8	О	212,933	NA	NA	NA	NA
7389d	Other business services ^d	71	21,365	8,997	0.43	23	33.41	18
751	Automotive rent and lease, without drivers	rs 29	16,503	22,028	0.40	20	36.36	21
7514,5	Passenger car rental and leasing	16	7,455	39,925	0.40	21	26.33	14
752	Automobile parking	16	2,023	39,925	0.37	17	25.01	12
753	Automotive repair shops	360	85,690	1,774	0.82	46	97.73	53
7538	General automotive repair shops	161	35,921	3,968	0.78	41	91.62	51
7533	Other automotive repair shops ^e	73	20,765	8,751	0.82	45	96.93	52
754	Automotive services, except repair	49	9,626	13,037	0.78	42	72.16	40
762	Electrical repair shops	47	16,850	13,591	0.76	40	71.60	39
763	Watch, clock, and jewelry repair	æ	215	212,933	0.22	7	35.48	20
764	Re-upholstery and furniture repair	18	887	35,489	0.53	25	41.01	26
692	Miscellaneous repair and related servicesh	sh 159	37,377	4,018	0.84	48	90.07	49
783	Motion picture theaters (includes drive-ins)	ns) 36	11,366	17,744	1.04	54	88.58	48
784	Video tape rental	43	8,578	14,856	0.68	33	76.61	43
792	Theatrical prod(ex mot.pic, incl. bands, orch.etc)	orch.etc)	7	572	91,257	0.16	4	3. 0 1
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793	Bowling centers	51	11,701	12,525	2.13	49	186.42	64
794	Commercial sports (incl. pro sports clubs)		О	212,933	NA	NA	NA	NA
7948	Racing, including track operation	2	О	319,400	NA	NA	NA	NA
791	Dance studios, schools, and halls	7	О	319,400	NA	NA	NA	NA
7991	Physical fitness facilities	26	2,842	24,569	0.69	35	33.69	19
7992	Public golf courses	3	555	212,933	NA	NA	NA	3
7997	Membership sports and recreation clubs		4,113	23,659	0.34	15	37.15	22
7999	Amuse and rec serv, incl museums,n.e.c.		D	6,026	NA	NA	NA	NA
801	Offices and clinics of doctors of medicine	e 243	422,058	2,629	1.41	09	135.27	58
802	Offices and clinics of dentists	250	70,632	2,555	0.84	28	90.13	50
803	Offes/clines of does of osteopathics	2	О	319,400	NA	NA	NA	NA
8041	Offices and clinics of chiropractors	06	14,992	7,098	1.02	53	114.83	56

Table 3. continued.

į	,	Number of	enn	Average pop.	cati	otient	/ed	Market Potential
SIC	Industry	establishments *	('000 \$) serv	served (persons)	AV Rank		(% of expected sale)	Rank
8042	Offices and clinics of optometrists	64	21,635	9,981	1.82	63	198.54	65
8043	Offices and clinics of podiatrists	7	1,382	91,257	0.37	16	32.63	17
8049	Office/clinic of health practitioner	31	6,543	20,606	0.57	27	48.24	29
8051	Skilled nursing care facilities	6	D	70,978	NA	NA	NA	NA
8052a	Intermediate care facilities	16	D	39,925	NA	NA	NA	NA
8052b	Nursing and personal care facilities	3	D	212,933	NA	NA	NA	NA
8062	General medical and surgical hospitals	als 1	D	638,800	NA	NA	NA	NA
807	Medical and dental laboratories	28	27,795	22,814	0.65	32	87.13	47
808	Home health care services	15	8,612	42,587	0.45	24	37.49	23
800	Misc health and allied services, n.e.c.	c. ^j 16	D	39,925	NA	NA	NA	NA
81	Legal services	335	91,586	1,907	0.58	28	41.06	27
823	Libraries (part of educational services)	es) 1	D	638,800	NA	NA	NA	NA
824	Vocational schools (incl. data proc. sch.)	sch.) 5	О	127,760	NA	NA	NA	NA
8244	Business and secretarial schools	4	D	159,700	NA	NA	NA	NA
832	Child day care services	146	9,012	4,375	0.87	50	77.51	44
7 832	Individual and family social services	s 18	2,091	35,489	0.79	4	55.95	35
833	Job training, vocational rehabilitation	8 uc	1,228	79,850	0.40	19	38.00	25
836	Residential care	21	4,900	30,419	0.65	31	50.96	31
839	Social services, n.e.c.	10	602	63,880	3.71	99	48.53	30
8711	Engineering services	65	36,708	9,828	0.33	13	25.50	13
8712	Architectural services	34	13,179	18,788	0.53	26	53.13	34
8713	Surveying services	12	1,908	53,233	0.40	18	37.93	24
872	Accounting, auditing, and bookkeeping	ing 191	46,579	3,345	89.0	34	62.03	36
8731	Commercial physical/biological research	earch 7	О	91,257	NA	NA	NA	NA
8732	Commercial econ, socio, educ. research	arch 3	О	212,933	NA	NA	NA	NA
8734	Testing laboratories	20	6,695	31,940	0.73	36	63.71	38
874	Management and public relations service	rvices 92	30,880	6,943	0.33	14	24.42	11

Note: (i) a=includes SIC 7299a; b= includes computer rental and leasing, maintenance and repair, and computer related services; c=includes detective agencies and protection services, armored car services, and security system services; d= includes following services: packaging and labeling, water softening and conditioning, trading stamp, convention and trade show, and private mail carrier; e= includes body repair, tire retreading and repair, automotive glass replacement, transmission repair, radiator repair, brake, front end repair and wheel alignment, carburetor repair, automotive electrical repair shops; f=includes carwashes, lubrication shops, towing, etc.; g= includes radio and TV repair, refrigeration services; i=i includes museums, art galleries, botan/zoological gardens, roller skating rinks, ice skating rinks; j=i includes kidney dialysis centers and specialty outpatient facilities. (ii) Location quotient or self-sufficient yanking = 1 being the least self-sufficient industry/business. Those ranked 38 or higher are self-sufficient (i.e., LQ>0.75); (iii) Market potential ranking = 1 implies the highest given current number of establishments. Those industries ranked higher than 37 achieved 70 percent or more of their market potential; (iv) *= data from 1992 Economic Census CD ROM, Bureau of Census, U.S. Dept of Commerce; (v) AV= absolute value, NA = information not available to provide a value, D= not and AC repair, and electrical/electronic repair shops; h= includes welding repair, armature rewinding, farm machinery & equipment repair, lawn mower/other small engine repair, sewer and septic tank cleaning service, and other related disclosed.

CONCLUSIONS

Evaluation of retail and service sector performances in North Dakota shows that for most counties these two sectors were less successful in retaining and attracting customer purchases. Moreover, the situation has deteriorated over the last decade for most rural counties in the state. Given such an outcome, the past or on-going economic development programs and strategies to improve business environment and attract customers may not have been as desired. However, it is more than likely that the situation would have been worse had no economic development programs been undertaken in these communities. Nonetheless, finding the cause of inefficient retail and service sector performance and incorporating countervailing strategies should be a priority in any new economic development plans in most communities in North Dakota.

Reevaluation of on-going economic development programs and strategies may be required to improve the performance of retail and service trades in those communities that did not perform well. Active cooperation among private businesses, potential entrepreneurs, or economic development agencies may also contribute towards improving retail and service sectors performances in North Dakota. Conversely, business leaders and economic development planners in those counties where these two sectors are performing well may strengthen their existing economic development strategies to improve their competitive advantage.

Analysis of market potential of specific businesses in retail and service sectors has shown there is considerable number of businesses in North Dakota with substantial potential for future growth. For example, among the 130-plus business categories, the following are found to have higher market potential in their respective sectors: in the service sector -- computer rent/lease and maintenance services; public golf courses; and heavy construction equipment rental and leasing; in the retail sector -- computer and software stores; catalog and mail-order houses; and used merchandise stores. Those businesses that are identified as having market potential may be targeted by potential entrepreneurs in North Dakota for opening new business ventures. However, before deciding to open a new business venture, an entrepreneur must conduct a thorough feasibility study as a part of his/her business plan. For those interested in starting new business in North Dakota, contact the Department of Economic Development and Finance at (701) 221-5320 for information and assistance or regional economic development commissions for further information.

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