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TRADE AREA ANALYSIS EXTENSION PROGRAM:
A CATALYST FOR COMMUNITY DEVELOPMENT

by

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Abstract

The development of a town's retail sector should be an integral part of the community development process. However, few states have well-defined development programs aimed at the retail sector. This paper presents a methodology for an effective extension program that serves to bring together and motivate those individuals involved in the development process.

The development of a town's retail sector should be an integral part of the community development process. A strong business district helps ensure that money earned in the industrial and service sectors is turned over in the community to achieve the maximum multiplier effect. However, few states have well-defined development programs aimed at the retail sector. Part of the reason for this may be the difficulty in assessing the status of business districts and in gaining entrance into the retail community. This paper describes a program used in Iowa to determine the economic health of a community and to encourage the development of a retail strategy.

Trade Area Analysis - What is it?

A trade area analysis is an evaluation of the status of a town's retail sector and is analogous to a physical examination for a person. The trend of the town's sales over a period of years is established and graphically compared to those of surrounding towns. The town's actual sales are compared with norms for similar size towns to determine if the town is experiencing net outflows ("leakages") or net inflows ("surpluses"). This can be done for each merchandise group to determine

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CONCLUSIONS

marketing voids or opportunities. Demographic information is also included to assist merchants in precisely defining their market segments.

What Data is Needed?

Reliable sources of information are needed for town and county retail sales, population and income. The retail sales information is most crucial to the analysis and is usually also the most difficult to obtain. The ideal source of sales data is state retail sales tax reports. However, not many states publish sales tax data, despite the fact that most collect it. Population and income data are usually easy to obtain, both from governmental and commercial sources. In addition to state sales tax reports, the following data sources may provide some or all of the information needed for a trade area analysis.

U.S. Census of Population - provides population information for towns and counties. Published every 10 years.

U.S. Census of Business, Retail Trade - provides retail sales by merchandise group for towns and counties. Published every five years.

Sales and Marketing Management, Survey of Buying Power - provides retail sales data (by merchandise group), population and income figures for all counties and for Standard Metropolitan Statistical Areas (SMSAs). However, no information is available for smaller towns. Published annually in July.

Editor and Publisher, Market Guide - provides retail sales data (by merchandise group), population and income data for all counties and for SMSAs. Provides some data for smaller towns with daily newspapers with subscriptions above a certain minimum. Published annually.

Standard Rate and Data Service - provides some data on retail sales, population and income for counties and SMSAs. Published annually.

How is it Done?

Maximum effectiveness is achieved from a trade area analysis when it includes both a pictorial history and a thorough analysis of the current situation. This can only be done when a complete data base exists.

Historical Analysis. The historical analysis consists of a series of graphs depicting the recent history of retail sales for the town and the surrounding towns. The following graphs are normally included.

Total Retail Sales-in Current Dollars. Typically total retail sales for the last 10 years are plotted on a chart for the subject town and its competing towns. Current dollar sales are not adjusted for inflation and represent the format that most merchants are familiar with.

Total Retail Sales-in Constant Dollars. This chart compares the same towns, but the sales figures have been adjusted for inflation. Our analyses use the Consumer Price Index as the deflator, however others could be used. In effect this chart portrays "real sales" or the actual volume of goods and services sold. Many merchants are surprised to find that even though their town showed increases in current-dollar sales, sometimes their real sales are significantly down.

Per Capita Sales. This chart divides each town's total sales by the town population to arrive at per capita sales. This is a better indicator than the previous charts for showing the true performance of a town's retail sector. In other words, the towns are compared on a more equitable basis.

Pull Factor. This is a proxy measure for the average size of the trade area. It is derived by dividing town per capita sales by average state per capita retail sales. For example, 7,500 divided by 5,000 = 1.5. The interpretation is that the town's trade area included the equivalent of 150 percent of the town's population in full-time customer equivalents. When carried to two decimal places, the pull factor is a very sensitive indicator of the vitality of the town's retail sector and is especially useful in showing the trend of the town's trade area size.

Current Analysis. The current analysis examines the status of the town's retail sector by merchandise group. Potential sales are calculated for several merchandise groups such as building materials, general merchandise, apparel, food, services and others. These potential sales are then compared with the town's actual sales to determine the areas of leakage or surplus. Typically these are done for the past two years to determine if any recent changes have occurred. The surpluses and/or leakages are presented in terms of dollars, percent of potential sales and full-time customers gained or lost. Another table compares the subject town's performance by merchandise group to other towns of a similar size from other parts of the state. The towns are ranked from first to last according to their performance within each merchandise group.

Demographic data are also presented. Population is delineated by age group so that merchants can see both the numbers and percents within several categories. Income is also delineated to show the numbers and percentages of families within several income brackets. Total retail sales surplus or leakage by county is shown.

Determining Potential Sales. The most difficult task associated with a trade area analysis is the determination of potential sales. There are probably several ways of arriving at what a town's potential sales should be. We have developed a relatively simple method that seems to give satisfactory results in most cases. Essentially the same procedure can be used for counties and towns.

County Potential Sales. The equation for determining potential county sales is:

$$PS = CP \times PE \times II$$

where:

PS = Potential sales for the county

CP = County population

PE = Per capita expenditure (state average) for retail goods and services

II = Index of income (the average county income as a percent of the average state income)

The following example should illustrate the procedure. Assume the following:

$$CP = 20,000$$

$$PE = \$5,000$$

$$II = 0.90$$

Then $PS = 20,000 \times \$5,000 \times 0.90 = \$90,000,000$. The interpretation of this result is that the residents of the county are expected to spend approximately \$90 million on retail sales during the year.

Town Potential Sales. A simple method for determining potential retail sales for towns is nearly identical to the procedure used for counties, with one addition to the equation. The addition, called "pull factor," takes into consideration the trade area size for the community. The equation is:

$$PS = TP \times PE \times II \times PF$$

where:

PS = Potential retail sales for the town

TP = Town population

PE = Per capita expenditure (state average) for retail goods and services

II = Index of income (the average county income as a percent of average state income)

PF = Pull factor (a proxy measure for the average size of trade area)

Another example should demonstrate the use of this procedure. Assume the following:

$$TP = 5,000$$

$$PE = \$5,500$$

$$II = 0.95$$

$$PF = 1.4$$

Then $PS = 5,000 \times \$5,500 \times 0.95 \times 1.4 = \$36,575,000$. The interpretation of this is that the average town of this size with this income level would be expected to have total annual retail sales of approximately \$36.6 million.

How is it Presented?

To achieve maximum impact, the results of a trade area analysis should be presented at a public meeting including a good representation of merchants, developers, city officials, media people and any other interested citizens. Typically, the stage is set by relating the regional trends for retail trade migration. An overhead projector is then used to show the historical patterns for the town. By using the graphic aids a large amount of information can be assimilated in a relatively short time by most audiences. The presentation is made in an informal manner so that questions can be answered as they occur.

The overhead projector is also used to illustrate the current situation. The potential sales are compared to actual sales for each of approximately 12 merchandise groups. This is usually the highlight of the presentation, since this is where surpluses or leakages are first revealed. The presentation concludes with the comparison with other towns of a similar size and the ranking of each town within each merchandise group. A handout including all the presented material is then given to each interested audience member.

What are the Results?

In most towns, the results of the trade area analysis become the lead story for that day's news. Quite often this catches the attention of the community-at-large and of potential developers, especially if significant leakages are shown. Many community leaders report that the handout material is carried to various coffee shops, committee meetings, and other places where townspeople meet, and is one of the main topics of conversation for several days afterward.

More recently, entrepreneurs and developers both from in-state and out of state are requesting this data to assist them in their evaluations of locations in various towns. Several town officials have reported that these reports have been the basis for expansions and new businesses in their towns.

Usually results do not occur overnight. There seems to be a germination period of one to three years before the information is acted upon and brought to fruition. However, as word of the results spreads and as the reliability is accepted, the germination period seems to be shortening.

For those communities with genuine desire to attempt to better their situation, a strategies program has been developed. The program assists town leaders in developing a long-range plan for strengthening the retail sector. Assistance is given in more precisely identifying weaknesses and

needs. Programs are developed to help strengthen customer relations, promotions, financial management, personnel management and other areas.

How Does One Create Interest in This?

Initially, it is necessary to thoroughly promote the trade area analysis programs. Potential audiences need to be completely aware of the nature of the program and the significance of its future uses. After a few programs are presented, less and less promotional efforts are needed. In fact, after awhile the majority of the requests will come unsolicited from various community leaders. Often they have heard or read about a program being conducted in a neighboring community. Some communities prefer to have an analysis conducted annually as a method of holding interest and checking progress.

Repeat programs for communities are relatively easy to prepare since the bulk of the work was done in the initial preparation. Also, local Extension personnel often feel comfortable in presenting the follow-up or repeat programs.

Advanced Methodologies

There are some cases where counties and towns are significantly different from the averages used in computing potential sales. Because of this, we have conducted studies using regression analysis to determine the effects of several variables on retail sales. For example, we have a county model that shows the impact of income, age, unemployment, shopping malls and other variables on county sales.

Recently, a linear regression model was developed to estimate the effects of several variables on town retail sales. Cross sectional data for 90 Iowa towns and cities with populations between 2,500 and 20,000 were collected for the 1981 state fiscal year. The general form of the model was:

$$\begin{aligned} \text{TOTL}_i = & B_0 + B_1\text{CITY}_i + B_2\text{MALL}_i + B_3\text{MEDO}_i + \\ & B_4\text{UEMP}_i + B_5\text{USHI}_i + B_6\text{RIVR}^i + B_7\text{SEAT}_i + \\ & B_8\text{MICM}_i + B_9\text{PROX}_i + B_{10}\text{INTR}_i + E_i \end{aligned}$$

Where: i = The i th town

TOTL = Total retail sales (in thousands of dollars) for 1981

CITY = The town population (in thousands)

- MALL = Total square feet (in thousands) of mall space within the town
- MEDO = Total square feet (in thousands) of mall space within a twenty-five mile radius of the town excluding the mall space within the town
- UEMP = County unemployment rate (in percent)
- USHI = Dummy variable
 USHI = 1 for towns located on a U.S. highway
 USHI = 0 for towns not located on a U.S. highway
- RIVR = Dummy variable
 RIVR = 1 for towns located on a state boundary river (Missouri or Mississippi river)
 RIVR = 0 for towns not located on a river
- SEAT = Dummy variable
 SEAT = 1 if town is a county seat town
 SEAT = 0 if town is not a county seat town
- MICM = County median income (in dollars)
- PROX = Measure of town proximity to the closest major town (population of nearest major town divided by distance squared)
- INTR = Dummy variable
 INTR = 1 for towns located on an interstate highway
 INTR = 0 for towns not located on an interstate highway
- E = Disturbance term

Table 1 lists the coefficients and statistical measures for the town model.

Table 1. Retail Sales Coefficients for the Town Model, 1981.

Variable	Constant	CITY	MALL	MEDO	UEMP	USHI	RIVR	SEAT	MICM	PROX	INTR	R ²
Town sales	-3,149* (13,129)	4,710 (438)	70.55 (19.82)	-3.12 (.855)	-354* (688)	4,674 (3,209)	-9,502 (7,449)	3,330* (3,209)	.851 (.675)	-2.96 (1.27)	-2,952* (4,361)	.74

* Not significant at the 80% level

Note: Values in parentheses are standard errors. The F Ratio (F = 22.7) is significant at the 99% level.

The simplified explanation of the regression results in terms of average annual sales (all other factors remaining constant) is:

- Each additional person added to the city population increases total sales by \$4,710.
- When a mall is introduced into a community, total retail sales for the city will increase by \$70.55 for each additional square foot of mall space.
- When a mall outside the town is within 25 miles of the town, town retail sales decrease by \$3.12 for each additional square foot of mall space.
- Each percentage point increase in unemployment will decrease total city sales by \$354,000.
- If a city is located on a U.S. Highway, total retail sales should be increased by \$4,674,000.
- Cities located on a state boundary river will suffer a \$9,502,000 decrease in retail sales.
- If a city is the home of the county seat, city sales should be increased by \$3,330,000.
- For every dollar increase in county median income, total city sales will increase by \$851.
- The general interpretation of the PROX variable is that large nearby towns will capture sales from the smaller towns.
- When an interstate highway runs near a town of less than 20,000 population, \$2,952,000 will be lost from town sales.

The retail sales coefficients for the town model shown in Table 1 provide additional information that can be incorporated in the potential sales calculation. These results give some useful insight into the effects of several variables such as shopping malls, income, age, location, and unemployment on town retail sales.

The results obtained from this study were for Iowa, a very homogeneous agricultural state. A similar model can be developed for other states and used to estimate the effects of these and other variables on town retail sales.

Future Trends

As the general populace becomes more aware of the extent of retail sales migration, the interest in knowing the status of their own towns will probably heighten. Community development workers in states where no retail sales tax reports are published may wish to take steps to

encourage their Departments of Revenue to publish such data. The marginal costs in publishing this information appears to be minimal, while the benefits can be great.

It appears that the patterns of retail sales migrating from the rural areas to the metropolitan areas is likely to continue in the midwest. With some exceptions, it is probable that towns below 1,000 population face bleak futures with respect to their business districts. Most likely they will retain some form of agricultural sales and service facilities. However, many will lose grocery stores, apparel stores, hardware stores, automobile dealers, banks, service stations, etc. Mini general stores or convenience stores may fill the voids left along main street.

It is likely that county seat towns will retain some degree of viability, depending on the size of the town. The smaller of these towns will likely suffer considerable leakage of sales in the shopper's goods categories to the larger shopping centers in the area.

One can only guess at the impact that futuristic marketing devices such as shopping via cable TV and electronic mail order might have on retailing. However, it could be that even the suburban shopping malls, so popular today, could face a decline if people find suitable alternative methods of shopping.

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