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ENTREPRENEURIAL OPPORTUNITIES IN THE WHOLESALE SECTOR: A PREDICTIVE MODEL

JOHN C. PALMER
Sangamon State University

DAVID A. BAUCUS
University of Kentucky

DONALD GUDMUNDSON
University of Wisconsin-Oshkosh

ABSTRACT

Wholesaling plays a crucial role in the success or failure of small businesses and the location decision is perhaps the most critical strategy decision to be made by wholesalers. Yet, there is little in the way of analytical tools to help prospective wholesalers with this decision. This paper presents an empirically tested model, based on a conceptual foundation, that is intended to help entrepreneurs predict wholesaling opportunities.

Wholesaling trade has a major entrepreneurial component. The Department of Commerce reports that there are over 26,500 wholesaling startups annually in the United States (7). The average size of U.S. wholesale firms in 1985 was 15 employees and average sales were about $3.8 million. In addition, the viability of wholesale firms is important for other small businesses in that accessible, independent wholesaling is a necessary channel for small retailers and manufacturers who compete with larger firms. Small manufacturers and retailers cannot achieve the scale of operations necessary to perform their own channel functions. They depend on independent merchant wholesalers to achieve the time and place utility that larger competitors obtain through vertical integration. Thus, there should be strong interest among small business owners in the success of wholesalers.

Wholesaling has oftentimes been viewed as a benign competitive arena for businesses, populated by captive firms and maintained through close personal connections. For example, in a textbook characterization, Van Voorhis stated that "wholesale trade represents a somewhat stable link in the trade channel ... competition is stable and predictable" (15: 127). Yet, according to Dun and Bradstreet's *Business Failure Record* and the *Statistical Abstract for the United States*,

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wholesale failure rates are similar to those of other business sectors, both in terms of causes, numbers, and ages at failure (7, 8). If, as Van Voorhis suggested, these failures represent losses of greater investment than retail trade, wholesaling might be more risky than generally thought; the factors affecting investment and entrepreneurial risk are not so benign.

Indeed, changes in the demographics of the U.S., including regional shifts in population, manufacturing, and retailing, suggest that wholesale industries are going through important changes. These changes are, however, particularly difficult for small business managers (or potential small business managers) to identify because of the low public visibility of wholesaling. For both small business managers and researchers, " ... unobservable business and the physical transfer of goods along different geographical linkages from abstract paper transactions make the nature of wholesaling difficult to record and analyze." (9: 207).

Too, researchers have provided insufficient normative theory and empirical tests of theory to assist small business managers in making wholesaling location choices. The work in this area has been done by economic geographers (e.g. 2, 9, 11, 16). While providing useful information on urban/regional economies for public policy, the purposes, scale, and unit of analysis of this research provide little in the way of directly usable information for strategic wholesaling decisions. Thus, in the face of increasingly complex situations, small business managers are left to make strategy decisions rather myopically, based on intuition, personal contacts, or rumors.

The purpose of this paper is to build a model which, rather than explaining underlying dynamics, can be used to predict geographic areas of wholesaling opportunity for small businesses. In the following section the relationships between merchant wholesalers, retailers, and manufacturers are described. Then the strategic significance of location decisions is discussed, and the factors that prior researchers suggest may be used to predict wholesaling opportunities are identified. While the predictive model is based on conceptual logic, it is also empirically tested using readily available secondary data. This paper concludes with a discussion of the results, limitations, and application of this model by small business consultants and managers.

CONCEPTUAL LOGIC FOR A PREDICTIVE MODEL

Wholesalers are described as intermediaries between raw material suppliers and manufacturers, between manufacturers and retailers, etc. They include local merchant wholesalers who actually take title and physical possession to goods that require warehousing. Alternatively, they may be manufacturers' branch offices or independent brokers who work for either seller or buyer; these wholesalers often do not own or physically possess the product (11). Since the purpose of this paper is to predict entrepreneurial opportunities in wholesaling, the following analysis focuses on independent merchant wholesalers. Also, while it is an oversimplification (the census of wholesale trade describes eighteen kinds of business at the three-digit SIC level), the functions served by merchant wholesalers are illustrated in the backward linkages for retailers and the forward linkages for manufacturers.

RELATIONSHIPS WITH RETAILERS AND MANUFACTURERS

Wholesalers offer several advantages to retailers as a backward link with manufacturers. Among these, wholesalers act as purchasing agents. They maintain stock at convenient points, make prompt deliveries when goods are needed, and collect materials for re-use, re-cycling, etc. (11).

They may supply information on products, circulate advertising material, and sometimes maintain service departments. Wholesalers may even extend credit and finance inventories for small manufacturers and retailers, enabling small clients to balance cash flows and carry inventories during times of slow sales (14).

In addition to the services provided, wholesalers offer cost advantages to retailers. First, by purchasing in large quantity and breaking bulk to meet the needs of small individual businesses, wholesalers offer substantial unit cost and transportation cost savings to customers. Second, outlays for storage facilities may also be minimized through wholesalers assuming the bulk of long term storage obligations. Such savings may enable small retailers to purchase inputs at costs similar to those of their larger counterparts. Small firms are thereby able to maintain a competitive market position despite the potentially substantial economies of scale realized by larger counterparts.

Forward wholesaler linkages also offer several advantages to small manufacturers such as distribution planning, maintaining communications with retailers and other customers, providing a field sales force, monitoring trends in demand, and providing storage facilities for finished goods. The producer is also able to carry fewer accounts on the books, sell in larger quantities per transaction, and assume less credit risk by dealing with a few intermediaries rather than all the individual retailers, manufacturers, and institutions who purchase their manufactured goods (1).

LOCATION DECISIONS

To provide these service and cost advantages to retailers and manufacturers, wholesalers must be appropriately located (12). In fact, in the wholesaling literature, location has been chief among the factors explaining the success of strong wholesaling centers (i.e. cities and Standard Metropolitan Statistical Areas) (2, 9, 16). Also, researchers have argued that location can be a source of competitive advantages for both cities and firms (11, 12).

For example, it has been argued that unraveling points and gateway cities emerge in transportation networks (2, 16). Unraveling points are defined as locations which represent the last point common in the distribution of goods. They are wholesaling centers that serve as break-of-bulk points or nodes in transportation networks (16). Similarly, gateway cities are defined as locations which are in command of trade, connections between tributary areas and the outside world, and as developing between areas of differing intensities or types of production (near economic shear lines) (2). Both of these definitions emphasize the importance of the location of cities and firms in becoming major wholesaling centers.

The concepts of unraveling points and gateway cities have been an important focus of research (9, 11). For instance, the gateway or unraveling role of Edmonton in the distribution of products to Northwest Canadian markets was investigated. Empirical evidence indicated that the bulk of purchases of Northwest wholesalers and users are still in Edmonton and that no new wholesaling centers have developed in the North to challenge Edmonton's supremacy. Thus, Edmonton remains a gateway city and an unraveling point for northwest Canada (9).

In an investigation of the 40 largest **Standard Metropolitan Statistical Areas** in the U.S., researchers concluded that changes are taking place in the rank and status of major wholesale trade centers (11). Results indicated that cities such as Philadelphia, Boston, St. Louis, Pittsburgh, Baltimore, and Milwaukee have suffered precipitous declines in their ranked volume of wholesale trade. Also, New York, while still the largest wholesale trade center, has experienced a decline in

its share of U.S. wholesale trade from 20.3% in 1948 to 11.3% in 1977. On the other hand, Dallas-Ft. Worth, Houston, Atlanta, and Denver have increased their rank among major wholesale trade centers. The importance of early gateway cities is declining, and new gateway cities are emerging. "Many early centers which functioned as important collectors of agricultural products [Des Moines, Omaha, Kansas City, and Minneapolis-St. Paul] have suffered this fate. Houston's recent growth has been tied to petroleum and mineral wholesaling, while Dallas-Ft. Worth has assumed the role as a major Southwest distribution center for a variety of products" (11: 57). At a lower level of analysis, location can be a competitive advantage for firms (12). In the wholesaling of fresh vegetables "... food marketing systems have resisted abandonment of traditional practices, and their distribution procedures are archaic and inefficient. This is particularly true in wholesaling; among food products the fresh vegetable industry is probably the worst of the lot in that assembly and distribution often account for 80% of retail selling prices" (12: 387). Chain store organizations have been able to capture major shares of the retail outlets once served by nonchain firms in large measure because the chains realized economies in distribution processes.

As these examples illustrate, location decisions are strategically important in wholesaling industries. Yet, simply identifying location as a strategic decision is insufficient; it is also necessary to provide small business managers with guidance for making location choices. We now turn to identifying the factors that may predict wholesaling opportunities.

FACTORS PREDICTING WHOLESALING OPPORTUNITY

Researchers suggest that shifts in wholesale trade activity are a function of changes in: 1) population density, 2) consumer retail markets, and 3) manufacturing activity, As population densities shift, retail sales rise or fall, and as manufacturers relocate, patterns of wholesale trade are profoundly impacted, particularly if change reflects the entry or exit of smaller manufacturing and retail firms who depend on independent merchant wholesalers.

Population Density. Two demographic trends, geographic shifts and suburbanization, illustrate the impact of changes in population density on wholesale trade. When researchers regressed the rate of growth of wholesale trade on population growth for the forty largest SMSAs in the U.S., they reported a correlation of .87 with a coefficient of determination value of .75 (11). "Some of the growth of wholesaling in the Sunbelt SMSAs such as Dallas-Ft. Worth, Houston, and Atlanta can be explained simply as a function of population growth. All three cities experienced population growth rates in excess of 70% and a more than five-fold increase in wholesale trade volume. By comparision ... New York and Buffalo experienced a decline in population and were two of the three slowest growing SMSAs in wholesale trade" (11: 58). Hence, geographic shifts in population may predict wholesaling opportunities.

Also, accompanying the suburbanization trends of the population has been a shift of wholesaling activity away from central city locations (3) such that in New York City, Philadelphia, San Francisco, and Washington, D.C., suburban wholesale trade employment figures now exceed those of their central city (10). Transporting goods inward from the fringes of metropolitan areas often results in lower marginal transportation costs than originating all hauls at central city locations where traffic congestion problems are likely to be more prevalent. Lower land rents and the availability of single story warehouse space also make suburban locations more attractive than central areas. It appears likely that wholesale trade firms will continue to favor suburban to central city locations.

As these examples illustrate, shifts in population density associated with geographic relocation or suburbanization impact patterns of wholesale trade. Yet, wholesalers experience shifts in population density indirectly through the growth or decline of retail trade. Population and retail sales are closely related and indicate the attractiveness of wholesaling markets.

Retail Trade. Prior research suggests that wholesale/retail trade ratios may be key variables for predicting wholesaling opportunities. Significant differences in wholesale/retail trade ratios across cities, counties, SMSAs and states have been reported (13). Also, county or urban levels of analysis have been identified as most important in explaining patterns of wholesale trade. "Patterns of wholesale/retail sales ratios ... take on their characteristics mainly in relation to the county and urban bases; and accordingly, state patterns merely result from the various patterns originating from these smaller geographical units" (13: 24).

Manufacturing. Manufacturing changes (changes in product mix) have also influenced wholesale trade in the 40 largest SMSAs between 1948 and 1977 (11). SMSAs have a considerable degree of specialization. For example, nearly 63% of the wholesale trade flowing through Houston is comprised of minerals, petroleum, chemicals, and machinery. The specialization of SMSAs can be attributed to their proximity to manufacturing or agriculture. "Both Wilmington and Charlote are among the top ten wholesaling centers for chemicals. Wilmington's proximity to the major chemical manufacturing area is doubt the reason for its large sales volume, whereas Charlotte's position is tied strongly to its central location within the textile region of the Carolina Piedmont." (11: 58).

In sum, previous researchers suggest that shifts in population densities, changes in retail volume, and variations in manufacturing volume may have profound impacts on patterns of wholesale trade. These variables may also predict wholesaling opportunities.

A PREDICTIVE MODEL

The ability of population density, retail sales, and manufacturing volume to predict wholesaling opportunities was empirically tested. In addition, the amount of wholesaling activity (or inactivity) was investigated as an indicator of the fundamental attractiveness of areas to new wholesalers. In this study, change in the number of wholesaling firms was regressed on two predictor variables that were constructed to capture shifts in population density, changes in retail sales, existing wholesale volume, and existing volume of manufacturing. These predictor variables represent conditions which may make locations amenable to wholesale trade.

Counties were selected as the unit of analysis since activity within counties or cities is most important in explaining patterns of wholesale trade (13). Data for 1977, 1982, and 1987 were collected for four states (California, Kentucky, Louisiana, and Pennsylvania) from the *Census of Wholesale Trade*, *County Business Patterns*, and *County-City Data Books* (4, 5, 6).

The dependent variable for the model, the measure of wholesaling opportunity, was the change in the number of wholesale firms at the county level over a five year period. This measure was calculated as the number of wholesale firms in 1982 minus the number of wholesale firms in existence in 1977 (equation 1).

(1) ENTREPRENEURIAL OPPORTUNITIES IN WHOLESALING = NUMBER OF WHOLESALE FIRMS IN 1982 - NUMBER OF WHOLESALE FIRMS IN 1977

PREDICTOR VARIABLES

Two predictor variables were constructed. First, **(RETAIL MARKET CHANGE)** captures variations in retail activity (and underlying changes in population density). Changes in retail volume may reflect the attractiveness of wholesale markets. Yet this variable may not adequately predict wholesaling opportunities if volume increases are accounted for by existing retailers and wholesalers; volume increases may even encourage backward integration and decrease the number of wholesaling firms. On the other hand, if increased retail sales are accounted for and accompanied by increases in the number of retail firms, there is a greater likelihood that the new firms will be smaller and will increase the importance and opportunity for local wholesalers. Therefore, we predicted that increases in the number of retail firms combined with higher volume of retail sales will prompt new wholesale firms to enter local wholesale markets.

RETAIL MARKET CHANGE was operationalized using equation 2, which captures both changes in the volume of local retail sales relative to national sales and shifts in population (since population is related to retail sales). In this equation, the difference in local retail sales volume in years 1977 and 1982 (divided by national sales volume in each year) was multiplied by the difference in the number of local retailers over the same time period. By including the change in the number of local retail firms, this variable accounts for the impact of large retail firms with national wholesaling operations that may reduce wholesaling opportunities.

(2)

$$\text{RETAIL MARKET CHANGE} = (\text{NUMBER OF RETAILERS IN 1982} - \text{NUMBER OF RETAILERS IN 1977}) \times \left(\frac{\text{LOCAL RETAIL VOLUME IN 1982}}{\text{NATIONAL RETAIL VOLUME IN 1982}} - \frac{\text{LOCAL RETAIL VOLUME IN 1977}}{\text{NATIONAL RETAIL VOLUME IN 1977}}\right)$$

The second predictor variable **(WHOLESALING AND MANUFACTURING)** represents manufacturing and wholesaling concentration in the county in 1977. We are attempting to predict growth in wholesaling between 1977 and 1982 as a measure of the wholesaling opportunities that existed during this time period. The amount of wholesaling activity (or inactivity) in each county at the beginning of this period in 1977 relative to that of the economy as a whole, may be an indicator of the attractiveness of an area to new wholesalers. Consistent with the "gateway cities" and "unraveling point" concepts, however, more wholesaling activity is considered better than less; the area is, or is not, an established wholesaling center and has, or does not have, the infrastructure to support wholesaling. In the same way, changes in the numbers of wholesale firms should be related to the amount of manufacturing activity that existed in 1977.

WHOLESALING AND MANUFACTURING was calculated using equation 3, in which local wholesale sales volume per capita (divided by the national per capita wholesale volume) was multiplied by the volume of local manufacturing, relative to the volume of national manufacturing activity. All of these variables were measured for the year 1977. By including the per capita wholesale volume relative to the national per capita wholesale volume and the intensity of manufacturing, this variable represents conditions which make locations amenable to wholesale trade.

(3)

$$\text{WHOLESALING AND MANUFACTURING} = \frac{\text{LOCAL WHOLESALE SALES IN 1977}}{\text{LOCAL POPULATION IN 1977}} \Big/ \frac{\text{NATIONAL WHOLESALE SALES IN 1977}}{\text{NATIONAL POPULATION IN 1977}} \times \frac{\text{LOCAL MANUFACTURING VOLUME IN 1977}}{\text{NATIONAL MANUFACTURING VOLUME IN 1977}}$$

RESULTS

As indicated earlier, the predictive ability of this model was empirically tested on counties from four states: California, Kentucky, Louisiana, and Pennsylvania. These states were chosen for their geographic and economic diversity. Changes in the number of wholesaling firms (**ENTREPRENEURIAL OPPORTUNITIES IN WHOLESALING**) were regressed on the two predictor variables, **RETAIL MARKET CHANGE** and **WHOLESALING AND MANUFACTURING**, for each of the four states. The empirical results are shown in Table 1.

The model produced statistically significant relationships in all four states, with the best performance in California (R square = .95) and Kentucky (R square = .83). The coefficient of determination values (R square) for Louisiana and Pennsylvania were (.56) and (.52), respectively. Coefficents for both independent variables were positive and statistically significant, in all states except for the measure of **WHOLESALING AND MANUFACTURING** in Louisiana. Also, the F-statistics were all statistically significant, which suggests that the model is a good fit with the data from these four states.

To further test the model, we analyzed data for 1982 and 1987. Results were remarkably consistent with the earlier period; coefficients of determination for California and Kentucky were (.98) and (.84). Data for Louisiana and Pennsylvania produced R squares of (.71) and (.73), respectively. Coefficients for **WHOLESALING AND MANUFACTURING** were positive for all states. The combination of decreasing numbers of retailers and increasing retail sales, however, produced negative coefficients for **RETAIL MARKET CHANGE** in three states: California, Kentucky, and Louisiana. A complete presentation of these results is available from the authors.

DISCUSSION

Our results support the conceptual logic underlying the model. There seem to be significant positive relationships between wholesaling starts and the attractiveness of retail markets as indicated by changes in retail sales volume and the number of retail outlets. Also, the fit of the model

Table 1
Regression For California, Kentucky, Louisiana, And Pennsylvania (1977-1982)

CALIFORNIA	BETAS	F	R-SQUARE	F-STATISTIC	N-SIZE
RETAIL MARKET CHANGE	429.	16.44***	.95	433.59***	52
WHOLESALING & MANUFACTURING	22867.	21.38***			
KENTUCKY	BETAS	F	R-SQUARE	F-STATISTIC	N-SIZE
RETAIL MARKET CHANGE	3242.	5.57***	.83	181.65***	76
WHOLESALING & MANUFACTURING	26818.	8.70***			
LOUISIANA	BETAS	F	R-SQUARE	F-STATISTIC	N-SIZE
RETAIL MARKET CHANGE	1116.	5.05***	.56	26.52***	44
WHOLESALING & MANUFACTURING	6609.	.53			
PENNSYLVANIA	BETAS	F	R-SQUARE	F-STATISTIC	N-SIZE
RETAIL MARKET CHANGE	221.	7.70***	.52	29.72***	59
WHOLESALING & MANUFACTURING	9877.	2.92**			

** p is less than .005 *** p is less than .0001

was improved by considering the existing volume of wholesale trade and the existing volume of manufacturing activity relative to national levels. The model appears to show promise as a heuristic for predicting wholesaling opportunities at a relatively fine geographic level of analysis. The model fit very well with the data from California and Kentucky and explained greater than 50% of the variance in wholesaling starts in Pennsylvania and Louisiana.

While this sample was comprised of counties from only four states, these states were chosen for their geographic and economic diversity to support the generalizability of results. The model should predict wholesaling opportunities in other samples. Also, while the sample was arguably

small, in light of the paucity of quantitative models available to small business managers for making location decisions in the wholesale sector, this should be viewed as a good first step. Additional states should be analyzed; indeed, the explanation for why this model explained less variance in wholesaling in Pennsylvania and Louisiana may lie in examining other states. Differences in the composition of manufacturing, the health of state economies, standards of living, the structure of wholesale networks, or the legal environment of wholesaling may impact the predictive ability of the model.

APPLICATION OF THE MODEL

The results of this model suggest that entrepreneurs who are contemplating entering wholesaling industries (or extending operations into new geographic markets) should consult readily available secondary data sources concerning 1) population changes, 2) retail sales volume, 3) retail startups, 4) local wholesaling volume relative to national levels, and 5) local manufacturing volume relative to national levels to make location decisions. The procedure by which small business managers and consultants can use this model to assess the market potential for various wholesale goods is outlined below.

Designing the Study

Level of Analysis. While our analysis focused on counties, the same procedure can be used to predict wholesaling market potential at city, SMSA, multiple county, state, or multiple-state regional levels of analysis. Previous research suggests, however, that county or urban levels of analysis are most important in explaining patterns of wholesale trade. Patterns of wholesale/ retail sales ratios at the state level, or above, merely result from various patterns originating from smaller geographical units (13). Thus, we recommend a fine geographic level of analysis and focus on predicting entrepreneurial opportunities in wholesaling at the county level in the following discussion.

Sampling. In this study, retail trade, wholesale trade, and manufacturing activity were broadly defined and measured using dollar volume and numbers of firms. This analysis did not capture changes in product mix that may impact wholesale trade; greater predictive ability may be gained by targeting specific industries or specific products flowing from manufacturing, through wholesaling channels, and into retail markets.

Predictor Variables. While our model was constructed to test theoretical arguments related to wholesaling location decisions, potential entrepreneurs should experiment with additional variables that may indicate growth or decline in local economic activity. Expenditures on nonresidential construction within counties may predict wholesaling opportunities. Construction spending data are available in the U.S. Bureau of Census' *County-City Data.*

Time Period. Since the purpose for this analysis is to predict wholesaling opportunities in the future, recent data are preferable to data from the more distant past. Wholesaling, retailing, and manufacturing firms may change the composition of their product lines, change business strategies, or alter their organization structures (creating branch offices). Yet, while potential entrepreneurs may desire to use data for the current year, the time period may be dictated by the availability of data. The Bureau of the Census publishes *County Business Patterns* annually and the *Census of Wholesale Trade* every five years; the most recent volumes available are for the years 1988 and 1987 respectively. The most recent *County City Data Book* contains data for 1986.

Adjustments for Inflation. It is not necessary to adjust for inflation in multiple regression analyses. Any adjustments using the Consumer Price Index, Producer Price Index, or the Gross National Product (**GNP**) deflator cancel out in all equations. Adjustments for inflation, however, should be included in any nonstatistical, informal analyses of the data.

Data Analysis: Formal and Informal Methods

The results of this analysis suggest that there are significant relationships between wholesaling starts, the attractiveness of retail markets (changes in retail sales and numbers of retailers), existing wholesale volume, and the amount of manufacturing activity relative to national levels. Small business managers and consultants have two avenues for using this information. They can duplicate the statistical analysis for other states by following our instructions. Changes in the number of wholesaling establishments (**ENTREPRENEURIAL OPPORTUNITIES IN WHOLESALING**) is regressed on the **RETAIL MARKET CHANGE** and **WHOLESALING AND MANUFACTURING** variables. This regression equation describes the relationships (regression coefficients) between changes in retail markets, the wholesaling and manufacturing context, and changes in the number of wholesaling firms across each state over the relevant time period. New wholesaling opportunities can then be identified by: 1) calculating the predicted growth or decline in the number of wholesaling establishments in each county (multiplying the values for **RETAIL MARKET CHANGE** and **WHOLESALING AND MANUFACTURING** by their respective regression coefficients, then summing these products and the constant), and 2) comparing these values with actual changes that took place in each county. Opportunities may exist in counties for which actual growth in wholesaling is less than predicted levels.

Alternatively, small business managers and consultants can use informal methods to incorporate information about changes in retail markets (local population), local wholesaling volume, and local manufacturing volume into wholesaling location decisions. Small business managers' and consultants' intuition regarding potential wholesaling opportunities can be improved by incorporating changes in retail sales volume and the number of retail establishments as indicators of the attractiveness of wholesale markets. Also, the concentrations of wholesaling and manufacturing in each county (relative to that of the state or national economy) may indicate the fundamental attractiveness of the area as a wholesaling center. Growth in wholesaling in future periods may be a function of the level of wholesaling activity or inactivity in each county at the present time. In the same manner, new wholesaling start-ups should be related to the level of manufacturing activity that currently exists.

Whether formal or informal methods are used to incorporate this model into wholesaling location decisions, the model should not be viewed as a substitute for small business managers' intuition, but as a complementing tool. Our model is unable to assess the quality of wholesaling services provided to retailers and manufacturers; opportunities may exist for new firms if retailers and manufacturers are not receiving desired services. Also, our analysis did not capture changes in strategies or organization structures of existing firms (e.g. W. W. Grainger's branch office expansion program). Such data were not available in this study, but surveys of retailers and manufacturers should be used to obtain information on the importance and quality of services; annual reports should be used to investigate potential advantages of national wholesaling systems relative to independent entrepreneurs.

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