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U. S. Food Store Experience in Handling Crawfish*

by

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Abstract

The expansion of markets for crawfish outside the South Central United States is largely dependent on obtaining the support of grocery stores. Two hundred grocery store managers in each of the nine census divisions in the United States were interviewed by telephone to characterize the store, clientele and sales of stores handling crawfish products. Stores more likely to market crawfish were members of a chain, either low or high volume operations or located in the Mountain

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or Pacific census divisions. Primary reasons for stores not handling crawfish were a lack of demand and perceived unfavorable consumer attitudes toward crawfish.

Introduction

Retail food firms are highly important to agricultural producers and consumers. They use their knowledge of the local market to determine those products desired by customers. Food products that meet their customers' needs, both actual and perceived, are then purchased by retail food firms, thus providing a market for both raw and processed agricultural products.

Aquacultural products move through the marketing channel similar to other agricultural crops, culminating with consumption at home or away from home. Recent increases in aquacultural production have made market expansion critical, particularly for crawfish. Markets need to be developed or expanded outside the major production areas.

Many consumers are not knowledgeable about aquacultural products, especially in areas of limited or no local production. The retailer often becomes the means of introducing aquacultural products to the consumer. By choosing whether or not to provide shelf space to specific aquacultural products, the food retailer influences consumer choice and, indirectly, controls consumer access to products. Similarly, suppliers of aquacultural products, through control of product quality and availability as well as promotion and advertising programs, influence the food retailer's decision to handle the product and the firm's long run success or failure with the product.

Statement of Problem

Information influencing domestic sales of aquacultural products, specifically crawfish, in food stores is limited. Data are needed by area of the United States on the types of crawfish products being handled, problems associated with the availability and/or quality of crawfish products, the promotional practices of food stores and the reasons why individual stores choose to not handle crawfish products.

Based on these needs, a nationwide telephone survey of food stores was conducted during May and June, 1988 as part of a regional research project authorized and funded by the Southern Regional Aquacultural Center (SRAC). This survey was expected to provide information useful in identifying potential new markets, limitations to expansion of existing markets and the types of products with the highest potential for sale in these markets.

Appropriate Literature

The retail grocery industry has changed greatly over the past 50 years. While there were 446,350 grocery stores (excluding specialized foodstores) in 1940, the number had decreased to 162,000 in 1982 (Duewer). The average size of a chain supermarket in 1982 was 25,964 square feet, considerably larger than the average of 17,715 square feet for independent supermarkets. Chain supermarkets comprised 51 percent of all supermarkets in 1982. Numbers of supermarkets per 100,000 population in 1981 ranged from a low of 6.8 in the District of Columbia to a high of 17.3 in Wyoming, with a U.S. average of 12.6. Sales of fresh and processed meat products comprised around 21.5 percent of all grocery sales in 1982. The percentage of total grocery sales claimed by meats does not vary greatly on an annual basis.

Research has shown that geographic region, race and population density influence the consumption of red meat, poultry and/or seafood products (Haidacher, et al). In analyzing data from the 1977-78 Nationwide Food Consumption Survey, Capps found that expenditure patterns for at home consumption of shellfish and finfish were influenced by geographic region, urbanization (population density) and race. He also indicated that the consumption of convenience/nonconvenience product forms (such as peeled crawfish tails and breaded crawfish tails) are influenced by the demographic and socioeconomic characteristics of households. Capps concluded that food marketing analysts could use this information on household characteristics in planning marketing strategies.

Objectives and Methodology

The general objective of the study was to analyze nationwide foodstore experience in handling crawfish. Specific objectives included:

1. Estimate, by census division, the characteristics of grocery stores handling crawfish products,

2. Identify, by census division, grocery store reasons for not handling crawfish products, and,

3. Develop strategies for the expansion of crawfish sales in foodstores in the more promising census divisions.

A random sample of 1,800 foodstores was selected, equally divided among the nine census divisions. A survey instrument was developed and pre-tested by the scientists. The survey was conducted by the Miller Research Group, Little Rock, Arkansas. Two hundred grocery store managers were interviewed by telephone in each of the nine census divisions (New England, Middle Atlantic, South Atlantic, East North Central, East South Central, West North Central, West South Central, Mountain and Pacific).

The Chi Square Test was used to determine whether stores having particular characteristics differed in handling or not handling crawfish. Several hypotheses were tested: (1) Chain organized stores are more likely to handle crawfish than independent stores; (2) Stores with larger floor space are more likely to handle crawfish than stores with smaller floor space; (3) Stores with higher gross weekly sales are more likely to handle crawfish than stores with smaller weekly gross sales; and, (4) Stores with higher income customers are more likely to handle crawfish than stores with lower income customers. Limited data availability forced the combining of data from the nine census divisions into national figures as well as the combining of several income and sales categories to avoid violating the minimum expected cell frequency requirement of the Chi Square analysis (Larson).

Results

Selected characteristics of the grocery store sample are given in Table 1. Locationwise, the stores are reasonably representative of the census divisions with the less populated divisions having a higher percentage of rural stores and the more heavily populated divisions having a larger percentage of suburban and urban stores. Stores tended to be larger on the basis of floor space in the Western census division and smaller in the New England and West North Central divisions. Independent stores predominated in all census divisions except for the Pacific and East North Central divisions, where chain stores comprised more than half of the responding stores.

The largest percentage of customers of the responding foodstores were in the middle income group. The range in percentage of stores with low income clientele by census division was from 15.2 (Mountain division) to 29.6 (West North Central division). The Pacific division had the highest percentage of high income customers. Only the Mountain division reported greater than ten percent of stores with either Asian or Hispanic customers.

Stores without a specialized fish market section were asked to give the "probability" of adding a specialized section in the near future (Table 1). By census division, between 2.3 and 13.6 percent of the responding stores indicated that it was "very likely" that a special fish marketing section would be established. However, from 61 to 86 percent, by census division, indicated that it was "very unlikely" that such a section would be added in the near future.

In three of the census divisions, more than ten percent of responding stores currently handled crawfish: West South Central, Mountain and Pacific divisions (Table 1). However, less than one sixth of the responding stores in the division with the most stores handling crawfish (West South Central) actually handled crawfish. Given that, on average, only 6.6 percent of stores surveyed actually handled crawfish, the number of stores handling crawfish in some census division was very small (three stores in both the East North Central and East South Central areas).

Table 1. Selected Characteristics of Responding Grocery Stores, Telephone Survey, United States, 1988.

Measure	NE	MA	SA	ENC	ESC	WNC	WSC	M	P
	Census Division[a]								
	Percentage								
Organization (Chain and Independent)									
Chain	37.5	36.8	35.2	34.8	50.8	32.4	36.8	39.7	52.6
Location									
Rural	36.2	41.1	40.8	60.9	45.5	53.5	45.6	58.8	47.4
Suburban	36.2	28.6	33.3	23.2	31.8	28.2	31.6	30.9	28.2
Urban	27.6	30.3	25.9	15.9	22.7	18.3	22.8	10.3	24.4
Weekly Sales Volume ($1,000s)									
<40	51.7	36.8	50.0	52.9	50.8	59.2	47.4	44.1	42.3
40-75	27.6	14.0	22.2	27.1	13.8	25.4	22.8	26.5	12.8
75-99	0.0	12.3	5.6	4.3	6.1	4.2	1.7	2.9	6.4
100-149	12.1	19.3	9.3	5.7	12.4	7.0	12.3	8.8	6.4
150-199	5.2	8.8	1.8	5.7	6.1	1.4	7.0	7.4	14.1
≥200	3.4	8.8	11.1	4.3	10.8	2.8	8.8	10.3	18.0
Square feet of Floor Space (1,000s)									
<20	72.4	59.6	53.7	60.9	47.0	75.7	66.1	62.1	57.1
20-29	19.0	24.6	20.4	14.5	34.8	14.3	14.3	7.6	11.7
30-39	3.4	8.8	5.5	10.1	6.1	5.7	12.5	12.1	14.3
≥40	5.2	7.0	20.4	14.5	12.1	4.3	7.1	18.2	16.9
Primary Clientele[b]									
Low Inc Bk	6.9	12.3	14.8	7.1	18.5	16.9	21.0	7.6	9.1
Low Inc Wh	19.0	8.8	9.3	12.9	6.2	12.7	5.3	7.6	16.9
Mid Inc Bk	19.0	35.1	35.2	28.6	41.5	46.5	26.3	21.2	20.8
Mid Inc Wh	36.2	35.1	26.9	51.4	21.5	19.7	31.6	39.4	27.2
High Inc Bk	1.7	1.7	5.6	0.0	4.6	1.4	5.3	3.0	7.8
High Inc Wh	10.3	3.5	3.7	0.0	4.6	1.4	1.8	4.5	7.8
Asian	1.7	0.0	0.0	0.0	3.1	1.4	1.7	1.5	5.2
Hispanic	5.2	3.5	1.8	0.0	0.0	0.0	7.0	15.1	5.2
Have Specialized Fish Market Section?									
Yes	33.3	66.7	50.0	100.0	100.0	25.0	44.4	71.4	62.5
Probability of Adding a Specialized Fish Market Section[c]									
Very Likely	5.9	4.4	5.1	5.4	6.7	4.8	2.3	9.6	13.6
Sw Likely	11.8	13.4	17.9	8.9	6.7	11.3	7.0	13.5	16.9
Sw Unlikely	14.7	11.1	10.3	8.9	11.1	6.5	4.7	5.8	8.5
Vy Unlikely	67.6	71.1	66.7	76.8	75.5	77.4	86.0	71.1	61.0
Handle Crawfish?									
Yes	5.2	5.3	3.7	1.4	1.5	5.6	15.8	10.5	10.3

[a] New England, Middle Atlantic, South Atlantic, East North Central, East South Central, West North Central, West South Central, Mountain and Pacific.

[b] Low Income Black, Low Income White, Middle Income Black, Middle Income White, High Income Black and High Income White.

[c] Very Likely, Somewhat Likely, Somewhat Unlikely and Very Unlikely.

In general, the largest percentage of stores handling crawfish were suburban (Table 2). However, the percentage of urban stores handling crawfish was greater than the percentage of suburban and rural stores selling crawfish in the East North Central and East South Central areas. In the Middle Atlantic and South Atlantic areas, half or more of the stores selling crawfish were in rural locations.

The percentage of stores selling crawfish that were members of a chain was 50 or greater in all census divisions except in the New England area. Although the number of independent stores exceeded chain store numbers in the sample, chain stores more frequently handled crawfish.

Except in the South Atlantic, Mountain and Pacific areas, more than half of the stores selling crawfish had less than 30,000 square feet of floor space. In four census divisions, 75 percent or more of stores selling crawfish had weekly sales under $75,000, and, in four other census divisions, 60 percent or more stores selling crawfish had weekly sales exceeding $150,000. These results would appear to imply that size of store handling crawfish is associated with the size of store used by the particular chain or independent in the census division.

The primary customers of stores selling crawfish differed widely by census division. The low income segment predominated in the New England and South Atlantic areas, the high income segment in the East South Central area and the middle income segment in the remaining areas.

With the exception of the New England and South Atlantic areas, 75 percent or more of the stores handled less than 100 pounds of crawfish weekly. Only the West South Central division had any stores selling between 100 and 199 pounds weekly. All stores selling crawfish in the South Atlantic division reported sales of more than 200 pounds weekly.

The only crawfish product sold in all nine census divisions was fresh whole crawfish. Tail meat, either fresh or frozen, was sold in all areas except the East North Central and East South Central areas. Six crawfish products were sold in the New England, West North Central and West South Central areas. Breaded tail meat was sold in only four of the nine census divisions.

With the exception of the East South Central and South Atlantic areas, 50 percent or more of the stores selling crawfish had promotional support for these sales. All stores selling crawfish in the New England, Middle Atlantic and East North Central divisions promoted crawfish. The most popular methods for promoting crawfish were in store signs and newspaper ads. Some stores in the New England, West South Central, Mountain and Pacific areas used news circulars to promote crawfish. Radio advertising was used in the New England and West North Central areas. Several stores in the Mountain and Pacific areas used price discounting to promote crawfish sales. Only one store, located in the West North Central area, used television advertising. In store taste sampling was used in the Middle Atlantic, West South Central and Mountain census divisions.

Larger store size (whether expressed in square footage or sales volume) would be expected to lead to more products being handled, including crawfish. Since the level of crawfish consumption is believed to be positively correlated with level of income, sales would be expected to be larger in high income areas. As stated previously, chain organized stores are more likely to handle crawfish due to planned standardization among stores serviced by a chain's regional warehouse. Based on Chi-square analyses of the four variables tested and combined national data, the null hypothesis of no differences was rejected, indicating that form of organization, floor space, weekly gross sales and customer income are explanatory of stores handling crawfish (Table 3).

The few stores that reported problems with the consistency of crawfish supplies were largely confined to the Northeastern and far western divisions. The problems consisted of "insufficient quantities available" and "availability of product throughout the year."

The most commonly stated reason why foodstores did not currently handle crawfish, among both chain and nonchain stores, was "Lack of Demand" (Table 4). In most cases, half or

Table 2. Selected Characteristics of Grocery Stores Handling Crawfish by Census Division, Telephone Survey, United States, 1988.

	Census Division[a]								
Measure	NE	MA	SA	ENC	ESC	WNC	WSC	M	P
	Percentage								
Organization (Chain and Independent)									
Chain	33.3	66.7	50.0	100.0	100.0	75.0	66.7	71.4	100.0
Location of Store									
Rural	33.3	66.7	50.0	0.0	0.0	0.0	33.3	42.9	12.5
Suburban	33.3	33.3	50.0	0.0	0.0	75.0	22.2	57.1	62.5
Urban	33.3	0.0	0.0	100.0	100.0	25.0	44.5	0.0	25.0
Weekly Sales Volume ($1,000s)									
<40	33.3	0.0	100.0	100.0	0.0	25.0	22.2	0.0	12.5
40-75	66.7	0.0	0.0	0.0	0.0	50.0	11.0	14.3	12.5
76-99	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100-149	0.0	0.0	0.0	0.0	0.0	25.0	22.2	14.3	12.5
150-199	0.0	33.3	0.0	0.0	0.0	0.0	22.2	42.8	0.0
≥200	0.0	66.7	0.0	0.0	100.0	0.0	22.2	28.6	62.5
Square Feet of Floor Space (1,000s)									
<20	66.7	0.0	50.0	0.0	0.0	25.0	33.3	14.3	25.0
20-29	33.3	66.7	0.0	100.0	100.0	50.0	22.2	0.0	12.5
30-39	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	25.0
≥40	0.0	33.3	50.0	0.0	0.0	25.0	33.4	85.7	37.5
Primary Clientele[b]									
Low Inc Bk	33.3	0.0	50.0	0.0	0.0	0.0	11.2	0.0	0.0
Low Inc Wh	33.3	0.0	50.0	0.0	0.0	25.0	0.0	0.0	12.5
Mid Inc Bk	0.0	66.7	0.0	100.0	0.0	50.0	33.3	28.6	25.0
Mid Inc Wh	0.0	33.3	0.0	0.0	0.0	0.0	33.3	42.8	37.5
High Inc Bk	0.0	0.0	0.0	0.0	0.0	0.0	22.2	0.0	25.0
High Inc Wh	0.0	0.0	0.0	0.0	100.0	25.0	0.0	14.3	0.0
Asian	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hispanic	33.4	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0
Pounds Sold per Week									
<50	50.0	100.0	0.0	0.0	0.0	0.0	40.0	71.4	66.7
50-99	0.0	0.0	0.0	100.0	100.0	75.0	40.0	28.6	33.3
100-199	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0
≥200	50.0	0.0	100.0	0.0	0.0	25.0	10.0	0.0	0.0
Products Sold[c]									
Fre Tail Mt	100.0	66.7	100.0	0.0	0.0	50.0	55.6	14.3	42.9
Fro Tail Mt	66.7	33.3	100.0	0.0	0.0	50.0	44.4	57.1	14.3
In Fro Ta Mt	100.0	33.3	100.0	0.0	0.0	25.0	11.1	0.0	14.3
Fre Whole	100.0	66.7	100.0	100.0	100.0	25.0	44.4	14.3	57.1
Fro Whole	66.7	0.0	100.0	0.0	0.0	25.0	33.3	71.4	0.0
Bd Tail Mt	66.7	33.3	0.0	0.0	0.0	25.0	33.3	0.0	0.0
Promote Crawfish?									
Yes	100.0	100.0	0.0	100.0	0.0	50.0	50.0	80.0	83.3

[ab] See key under Table 1.

[c] Fresh Tail Meat, Frozen Tail Meat, Individually Frozen Tail Meat, Fresh Whole, Frozen Whole and Breaded Tail Meat.

Table 3. Chi Square Analysis, Selected Relationships, Grocery Store Sample, 1988.

Variables	df	χ^2 Value	Prob.
Organization (2) [a] Handle Crawfish (2)	1	22.32	.0001
Floor Space (4) [b] Handle Crawfish (2)	3	42.03	.0001
Weekly Sales (3) [c] Handle Crawfish (2)	2	38.52	.0001
Customer Income (3) [d] Handle Crawfish (2)	2	6.72	.0005

[a] Null Hypothesis: H_0: $U_1=U_2$
U_1 = Number of chain organized stores handling crawfish.
U_2 = Number of independent stores handling crawfish.

[b] Null Hypothesis: H_0: $Z_1=Z_2=Z_3=Z_4$
Z_1-Z_4 = Number of stores with -- 1) <20,000 sqft floorspace, 2) 20,000-29,000 sqft floorspace, 3) 30,000-40,000 sqft floorspace, and 4) >40,000 sqft floorspace -- handling crawfish.

[c] Null Hypothesis: H_0: $Y_1=Y_2=Y_3$
Y_1-Y_3 = Number of stores with -- 1) sales <$99,000 weekly, 2) sales of $100,000-$200,000 weekly, and 3) sales >$200,000 weekly -- handling crawfish.

[d] Null Hypothesis: H_0: $W_1=W_2=W_3$
W_1-W_3 = Number of stores with -- 1) low income customers, 2) middle income customers, and 3) high income customers -- handling crawfish.

Table 4. Reasons for Not Handling Crawfish and Likelihood of Adding Crawfish, Grocery Sample by Census Division, United States, 1988.

Measure	Census Division[a]								
	NE	MA	SA	ENC	ESC	WNC	WSC	M	P
	Percentage								
Reasons for Not Selling Crawfish									
No Knowledge of Crawfish									
Chain	21.7	5.6	0.0	4.2	0.0	0.0	0.0	12.0	0.0
Nonchain	12.2	5.1	2.4	3.6	2.8	1.9	0.0	2.3	9.3
Unfavorable Consumer Attitude									
Chain	26.1	16.7	5.9	16.7	18.8	21.7	17.6	16.0	8.8
Nonchain	17.1	12.8	17.1	9.1	11.1	14.8	2.8	15.9	14.0
Wholesale Price too High									
Chain	0.0	0.0	0.0	4.2	0.0	0.0	11.8	4.0	5.9
Nonchain	0.0	0.0	0.0	0.0	5.6	3.7	5.6	0.0	0.0
Product not Fresh									
Chain	0.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0
Nonchain	0.0	2.6	2.4	3.6	2.8	1.9	0.0	2.3	0.0
Lack of Demand									
Chain	34.8	66.7	64.7	50.0	65.6	56.5	58.8	48.0	52.9
Nonchain	46.3	66.7	63.4	65.5	44.4	48.1	66.7	59.0	46.5
Other Reasons									
Chain	17.4	11.1	29.4	16.7	15.6	21.7	11.8	10.0	29.4
Nonchain	24.4	12.8	24.4	18.2	33.3	29.6	25.0	20.5	30.2
Anticipate Adding Crawfish Within One Year[b]									
Very Likely	0.0	2.1	4.0	0.0	8.3	3.4	2.2	0.0	0.0
Sw Likely	9.8	6.4	18.0	6.0	15.0	13.5	4.4	12.5	14.3
Sw Unlikely	9.8	19.2	10.0	4.5	13.3	8.5	13.0	7.1	11.1
Vy Unlikely	80.4	72.3	68.0	89.5	63.4	74.6	80.4	80.4	74.6

[a] See key to Table 1.

[b] Very Likely, Somewhat Likely, Somewhat Unlikely and Very Unlikely.

more of the responding stores gave this reason. A lack of favorable "Consumer Attitude" was the second most frequently cited reason. A number of chain stores in the New England and Mountain divisions reported that they were "not knowledgeable of crawfish." Only a few stores responded that they were not handling crawfish because of "high wholesale prices" and/or "problems with freshness."

Four of the census divisions did not have any stores indicating a high probability of adding crawfish to their offerings within the next year (Table 4). Seventy percent or more of stores in seven of the nine census divisions indicated that it was very unlikely that they would add crawfish in the next year.

Conclusions and Implications

While the market for crawfish is nationwide, the East North Central and the East South Central census divisions had few stores handling crawfish. However, 23 and 22 percent of the responding stores in the East South Central and South Atlantic divisions, respectively, indicated an interest in adding crawfish to their offerings in the next year.

Results of this survey of U.S. grocery stores reveal several opportunities for expanding the market for crawfish outside the South. Currently, the Mountain and Pacific census divisions have a higher percentage of stores handling crawfish than any other division except the West South Central division. The stores handling crawfish in these two areas were large volume units primarily located in rural and suburban areas, two traditionally strong crawfish consuming locations in the South. Over 80 percent of these stores promoted crawfish. Given the current interest in crawfish handling and consumption, these two census divisions appear to have the greatest potential for expansion of any area outside the South. This conclusion, however, presupposes that Louisiana crawfish are a good substitute for crawfish produced in the Northwestern United States.

Chain organized stores more frequently handled crawfish than independent stores in all divisions except the New England and South Atlantic divisions. The semi-centralized management of corporate chain organizations and the efficiencies they enjoy (due to volume and organized delivery schedules) increases the potential for large market gains if the chains' regional managers choose to handle crawfish. Given the potential to reach large numbers of stores with a fixed investment in market development funds, the corporate chain organization appears to offer the greatest potential for market expansion. Some problems associated with volume requirements, uniformity of product and consistency of supplies would need to be resolved to successfully expand into these markets.

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