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Comparison of Cooperative and Noncooperative Purchasing in School Nutrition Programs

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ABSTRACT

Purpose/Objectives

The purpose of this study was to compare food cost and public school foodservice directors' satisfaction between districts participating in school foodservice cooperatives or group purchasing arrangements and districts purchasing independently. It also assessed the prevalence of purchasing cooperatives in school foodservice and various bid purchasing methods used in school foodservices to solicit and award competitive contracts for food.

Methods

A random sample (N = 1,650) of school foodservice directors, stratified by United States Department of Agriculture (USDA) region, was surveyed electronically regarding satisfaction with current purchasing methods, food prices currently paid for selected items, and participation in cooperative or group purchasing. Data from completed surveys (n = 453) were analyzed using t-tests and Analysis of Variance (ANOVA).

Results

Study results showed nearly half of respondents indicated participation in purchasing cooperatives. The majority of cooperative members were from districts with fewer than 5,000 students. Line-item bids were reported as used most frequently. There was no significant difference in overall satisfaction with purchasing outcomes between cooperative members and nonmembers. Primary reasons identified by district foodservice directors for joining a cooperative were lower costs, increased competition, and reduced paperwork. Among eight selected foods, cooperative members reported significantly ($p = .05$) lower prices on three items.

Applications to Child Nutrition Professionals

Foodservice directors could use data from this study to evaluate their current competitive purchasing. Data from this study could be useful to program directors and school officials in decision making regarding joining a cooperative or purchasing group. Further research is needed to determine factors that influence participation of vendors in school foodservice competitive bids.

INTRODUCTION

According to the School Nutrition Association (SNA), schools are the largest noncommercial foodservice market segment, with a growing rate of 3.5% per year over the last 10 years (SNA, 2006). In 2005, primary and secondary

schools spent \$7.2 billion on food purchases, representing 4.4% of the total foodservice purchasing and 15% of noncommercial foodservice purchases (SNA, 2006). Shrinking budgets and increasing labor costs have forced school foodservice directors to seek ways to control costs, while at the same time improving food served to students (Sanchez, Gould, & Sanchez, 1998; SNA, 2006). Effective procurement strategies enable foodservice directors to purchase high quality foods within constraints of a department's budget. Cooperative purchasing arrangements allow multiple school foodservice operations to consolidate purchasing processes, resulting in better control of food and supply costs (Sanchez, Gould, & Sanchez, 2000). The United States Department of Agriculture (USDA, 2002b) reported an increase in districts participating in cooperative purchasing between 1997 and 2000 with more small- and medium-sized school foodservice operation managers considering purchasing cooperatives as a means to improve cost effectiveness.

There is limited research in the area of school foodservice purchasing. Previous research showed lower food costs resulted from centralized purchasing (Chai, 1979; Hurley, 1980; Hiemstra, 1986), use of formal bids and more vendors (Hiemstra, 1986), and joining cooperative purchasing programs (Boudreaux & Oldenquist, 1996; Cleverly & Nutt, 1984; USDA, 1998). Research has also shown that better food quality resulted from cooperative purchasing programs (Boudreaux & Oldenquist, 1996); as well as district use of a cost-plus-fixed-fee system (Hiemstra & Stix, 1990).

Delivery and service are also affected by the type of bid used; Hiemstra and Stix (1990) found that the cost-plus-fixed fee system resulted in better deliver and service. Boudreaux and Oldenquist (1996) found that belonging to a cooperative resulted in improved deliver and service, whereas Hiemstra, Foo, and Jaffe (1996) found that belonging to a cooperative resulted in decreased delivery and service. Lower administrative costs have been reported among users of cooperative purchasing programs and cost-plus-fixed-fee purchasing programs (Boudreaux & Oldenquist, 1996). In all studies, foodservice directors in cooperatives reported high satisfaction with the overall purchasing program (Boudreaux & Oldenquist; Hiemstra et al.).

Hiemstra et al. (1996) concluded no single purchasing system was best for all school districts' foodservice operations. Findings from that study indicated that the cost-plus-fixed-fee system was best in terms of administrative cost and customer service, but resulted in higher food costs. Cooperatives proved the most efficient in pricing goods, but members had to make concessions to make the system work, and thus gave cooperatives a lower service rating.

Line item, firm price bid systems resulted in food costs in between those obtained from cooperatives and cost-plus-fixed-fee, but were expensive to operate in terms of labor costs. Hiemstra and Stix (1990) concluded that cost-plus-fixed-fee purchasing was less expensive than line item bid systems when both food and administrative costs were considered. The cost-plus-fixed-fee system also resulted in better service and higher quality products. Based on results from their study, the researchers recommended the expansion of cost-plus-fixed-fee purchasing.

With rising food and delivery costs, foodservice directors also continue to look for ways to control their food costs. Research results have shown that membership in a cooperative purchasing group is one strategy that can result in reduced costs. Cooperative directors and boards continue to seek ways to improve service to members. Identifying and evaluating activities to determine their role in effective purchasing systems are important to foodservice directors as they seek to understand how different types of competitive purchasing, especially cooperatives, can help them meet financial goals of their departments, school districts, and/or purchasing organizations.

The purpose of this study was to compare the cost of food, as well as public school foodservice directors' satisfaction between districts participating in cooperatives or group purchasing arrangements and districts

purchasing independently. The prevalence of purchasing cooperatives in school foodservice and of the various purchasing methods used to solicit and award competitive contracts, in both districts participating in cooperatives and those purchasing independently, were also assessed.

Definition of Terms

Bid purchasing: The process of securing pricing by means of a formal request on the basis of written specifications and conditions for certain items, and one in which a distributor or vendor submitting the lowest and/or best price for these items is awarded the contract (Gunn, 2002).

Bottom-line bid: A process of securing pricing for goods by means of a formal request based on written specifications and conditions, with a contract awarded based on the lowest lump sum price quoted for all products bid (SNA, 2006).

Cost-plus-fixed-fee: A process of securing prices for goods by means of a formal request for prices based on written specifications and conditions. Potential contractors quote market price or invoice cost and a set amount for service, delivery, overhead, and profit. In the industry, service and delivery costs are referred to as a fixed fee. For child nutrition programs, bids must state this fee as a set amount and not as a percentage of cost. Contract awards can be based on bottom-line or line-item review of the bid (SNA, 2006).

Firm or fixed price: Product price remains unchanged for a length of time specified in the contract (SNA, 2006). Firm or fixed contracts may or may not include escalator/ de escalator clauses.

Purchasing cooperative: An organization comprising two or more foodservice programs that procure goods as a unit (Gunn, 2002).

Purchasing method: The actual process used to obtain competitive pricing for goods.

Line-item bid: A process of securing prices for goods by means of a formal request for prices based on written specifications and conditions. Contracts are awarded to the bidder offering the lowest price for each product separately (Gregoire, 2010).

Prime vendor: A distributor or vendor providing a school foodservice operation with 80% or more of all food purchased (SNA, 2006).

School district size definitions: (USDA, 1998)

Small district: Districts with fewer than 1,000 students;

Medium district: District with 1,000–4,999 students;

Large district: District with 5,000–24,999 students;

Metropolitan district: Districts with more the 25,000 students.

School foodservice: Foodservice operated in schools, participating in the USDA Child Nutrition Programs. The school district or an outside contract management company may manage these operations.

Written specifications: A description of items for purchase used to communicate to potential contractors. Specifications may or may not include estimated quantities for items to be

purchased in the bid period (Gregoire, 2010).

METHODOLOGY

A questionnaire was developed to survey school foodservice directors' satisfaction with current purchasing methods, food prices currently paid for selected items, and participation in cooperative or group purchasing. This cross-sectional survey was also used to collect demographic data of respondents' district. The survey was piloted by 15 school foodservice directors and five university faculty members for content validity, clarity, and ease of completion. Once finalized, the survey was administered online, using SurveyMonkey.com[?], to a random sample of school foodservice directors stratified by USDA region. Part one of the questionnaire assessed foodservice directors' satisfaction using a 5-point Likert-type scale, with current purchasing systems. The questionnaire was developed modifying the survey instrument used in a prior study (Bordreaux & Oldenquist, 1996); permission to modify the survey was granted by J. Bordreaux (personal communication, September 11, 2006).

Part two of the questionnaire requested that participants report pricing information in January 2006 for selected items. The pricing survey was developed using actual purchasing history of a convenient purchasing cooperative (K. Falder, personal communication, October 10, 2006). On one bid award of \$4.5 million, seven items represented 80 percent of the total dollar value, as well as volume of purchases. The top items based on dollar value and volume were 1 oz. bowl pack cereal, 2.3 oz. precooked hamburger patty, 0.5 oz. breaded chicken nugget, frozen biscuit dough, breaded chicken strips, pepperoni pizza, individual 4 oz. 100% fruit juice, and French fries. A specification for each food was included in the questionnaire. Items were compared based on portion cost, pound, or standard case of product due to variations in packaging.

In part three of the questionnaire, respondents were asked to indicate types of purchasing methods used and whether they had membership in a purchasing cooperative or other type of group purchasing arrangement. Respondents answering in the affirmative to group membership were asked to identify from a provided list the top three reasons they had chosen to participate in a cooperative. Respondents were also asked to provide contact information for their cooperative or purchasing group. Part four of the questionnaire included demographic questions.

Results from the on-line purchasing satisfaction survey were downloaded for analysis using Microsoft Excel[™] and SSPS, version 15.0 (SPSS, Inc., 2006). After the data were compiled and incomplete surveys excluded, the number of respondents was analyzed to determine response rate. ANOVA and t tests were used to determine differences between groups and purchasing methods. An overall satisfaction score was determined using the sum of all means from the satisfaction rating. Nonparametric tests were used to determine what factors were important to school foodservice directors as they related to membership in a purchasing cooperative or purchasing method and reasons for joining a cooperative. Data from the pricing survey were compiled, and ANOVA was used to determine the correlation between the types of purchasing approaches used by cooperative and independent purchasing groups and the price paid for the specific items.

RESULTS AND DISCUSSION

On-line questionnaires were completed by 453 school foodservice directors, which resulted in a 28% response rate. School district characteristics are provided in Table 1. Of all responding, 185 (41%) reported membership in cooperatives; 28% (n = 52) of these were from districts with enrollment of under 1,000 students and 44% (n = 82) were from districts with enrollments of between 1,000 and 4,999 students. Cooperative membership in this study

was greater than earlier reports from USDA. In 1986, less than 10% of school districts participated in cooperatives, but by 1997–1998 school year that number had increased to over 33% (USDA, 1998, 2000b). USDA (1998) reported similar demographics of school districts with membership in purchasing cooperatives: 42.9% (n = 1,465) indicated district enrollment was less than 1,000 students, and 32.35% were from districts with enrollments of 1,000 to 4,999.

Table 1. *Characteristics of Responding School Districts (N = 453)*

| Variables | <i>n</i> | % |
|---|----------|------|
| USDA region | | |
| Midwest | 99 | 21.9 |
| Mountain Plains | 85 | 18.8 |
| Southeast | 72 | 15.9 |
| Western | 64 | 14.1 |
| Southwest | 54 | 11.9 |
| Mid-Atlantic | 46 | 10.1 |
| Northeast | 23 | 5.1 |
| No response | 10 | 2.2 |
| Number of schools in responding district | | |
| 1 | 30 | 6.6 |
| 2-4 | 142 | 31.4 |
| 5-9 | 81 | 17.9 |
| 10-24 | 54 | 11.9 |
| 25-49 | 19 | 4.2 |
| 50+ | 10 | 2.2 |
| No response | 117 | 25.8 |
| Number of schools in districts participating in the federal child nutrition program | | |
| | 35 | 7.7 |
| 1 | 138 | 30.5 |
| 2-4 | 79 | 17.5 |
| 5-9 | 56 | 12.4 |

| | | |
|---|-----|------|
| 10-24 | 21 | 4.6 |
| 25-49 | 7 | 1.5 |
| 50+ | 117 | 25.8 |
| No response | | |
| District student enrollment | | |
| Less than 1,000 | 149 | 32.9 |
| 1,000-4,999 | 179 | 39.5 |
| 5,000-9,999 | 60 | 13.2 |
| 10,000-24,999 | 37 | 8.2 |
| 25,000+ | 23 | 5.1 |
| No response | 5 | 1.1 |
| Average daily meal equivalents for responding districts | | |
| | 120 | 26.5 |
| Less than 1,000 | 94 | 20.7 |
| 1,000-4,999 | 33 | 7.3 |
| 5,000-9,999 | 27 | 6.0 |
| 10,000-24,999 | 10 | 2.2 |
| 25,000+ | 169 | 37.3 |
| No response | | |
| Foodservice management in responding districts | | |
| Self operated | 302 | 66.7 |
| Contract management | 38 | 8.4 |
| No response | 113 | 24.9 |
| Purchasing organization | | |
| Purchasing cooperative member | 185 | 40.8 |
| Not a purchasing cooperative member | 186 | 41.1 |
| No response | 82 | 18.1 |

Competitive Bidding Organization

Table 2 shows the distribution of purchasing bid methods. Approximately 75% of respondents (n = 359) indicated a particular method for competitive bid awards. The largest group of respondents (n = 115, 29%) indicated they did not know the type of bid method used to competitively procure food.

Table 2. *Distribution of Type of Bid Award and Pricing Methods for Purchasing Cooperative Members and Nonmembers (N = 359)*

| Bid method | All respondents ^a | | Cooperative Members | | Non-members of cooperatives | |
|---------------------|------------------------------|------|---------------------|-------|-----------------------------|------|
| | n | % | n | % | n | % |
| Do not know | 115 | 28.9 | 57 | 26.2* | 54 | 30.5 |
| Line-item | 114 | 28.7 | 57 | 26.2* | 57 | 32.2 |
| Bottom-line | 63 | 15.8 | 35 | 16.0* | 28 | 15.8 |
| Firm price | 53 | 13.3 | 31 | 14.2* | 22 | 12.4 |
| Cost-plus-fixed-fee | 53 | 13.3 | 38 | 17.4* | 16 | 9.1 |

^a39 respondents gave multiple responses, 25 from cooperatives and 14 not from cooperatives.

*p <0.05. ANOVA between groups

Cost-plus-fixed-fee bid method was reported significantly more often by cooperative members (n = 38, p <0.05) than non-members (n = 16). Of the 13% of respondents that reported cost-plus-fixed-fee bids, this method was used significantly more often (p <0.05) by cooperative members (n = 38) than by independent purchasers (n = 16). The 13% found in the present study was higher than the 6.5% reported by USDA (1996) and less than the 36% reported in the Mississippi study (Boudreaux & Oldenquist, 1996).

Line-item bidding was reported by 29% (n = 114) of the 359 respondents regarding purchasing method. USDA reported 40% of school districts awarded bids based on line-item pricing while 15% used bottom-line pricing, 30% reported bid awards were firm prices, and 6.5% of respondents used cost-plus-fixed-fee pricing (USDA, 1998). Twenty-eight percent of Mississippi school foodservice directors reported using traditional line-item bids prior to joining a statewide purchasing system (Boudreaux & Oldenquist, 1996). Combination bottom-line, firm price contracts were used by 36% of those directors and 36% had used cost-plus-fixed-fee bids. USDA (1996) reported similar results for bottom-line bids, whereas firm pricing was reported by 30%.

Respondents in this study (n = 53, 13%) indicated firm pricing less frequently than line-item (n = 114, 29%) or bottom-line pricing (n = 63, 16%). Firm pricing can be associated with either line-item or bottom-line bids, and

directors may not have recognized this as a separate bid method, accounting for directors reporting this bid method less frequently.

Cost-plus-fixed-fee bidding was reported less frequently than other types of bid methods. This type of bid is more complex to administer than other types of bid contracts. Audits of successful contractor costs must be conducted to determine bid compliance as recommended by Child Nutrition Program (CNP) procurement guidance (USDA, 2002b). Directors, not members of a cooperative, from a small school district or with limited formal education may not have the time or may not understand audit requirements.

Cost of Selected Food Items

The literature has suggested increased purchasing power should reduce prices paid in competitive bid situations (Dreyer, 1995). Table 3 presents a summary of mean prices of selected items paid by cooperative members and nonmembers in January 2007. Cooperative members paid significantly less for orange juice, breakfast cereal, and French fries ($p = 0.05$). Differences in this study and previous studies may be attributed to various factors. In the Indiana (Hiemstra et al., 1996) and USDA (1998) studies, differences in purchasing cooperative's bid methods were not addressed which may explain differences in prices compared to the present study. Rebates are often used to pay cooperative costs and only unspent balances are returned to member districts as lump sum payments; these payments may not be identified by directors as savings on individual food items, thus resulting on overstated costs. Geographic differences may also affect price paid for items. In some cases, cooperatives receive bid discounts as rebates.

Table 3. Mean Prices Paid for Selected Food Items^a

| Food item | All Respondents | | | Cooperative Members | | | Nonmembers of Cooperatives | | |
|-------------------------------|-----------------|-------------------------|-----------|---------------------|-------------------------|-----------|----------------------------|-------------------------|-----------|
| | <i>n</i> | Mean price ^a | <i>SD</i> | <i>n</i> | Mean price ^a | <i>SD</i> | <i>n</i> | Mean price ^a | <i>SD</i> |
| Beef patty ^b | 215 | 0.28 | 0.11 | 119 | 0.27* | 0.09 | 96 | 0.29 | 0.12 |
| Chicken nuggets ^b | 239 | 0.32 | 0.17 | 126 | 0.32* | 0.17 | 113 | 0.33 | 0.17 |
| Biscuits, raw ^b | 156 | 0.15 | 0.04 | 87 | 0.15* | 0.04 | 69 | 0.15 | 0.05 |
| Orange juice ^b | 254 | 0.16 | 0.07 | 134 | 0.15* | 0.05 | 120 | 0.17 | 0.09 |
| Pepperoni pizza ^b | 185 | 0.43 | 0.10 | 107 | 0.42* | 0.10 | 78 | 0.43 | 0.11 |
| Breakfast cereal ^b | 245 | 0.23 | 0.07 | 128 | 0.22* | 0.06 | 117 | 0.24 | 0.09 |

| | | | | | | | | | |
|-----------------|-----|-------|------|-----|--------|------|----|-------|------|
| Chicken stripsc | 139 | 1.89 | 1.08 | 75 | 1.80* | 0.82 | 64 | 2.00 | 1.31 |
| French friesd | 215 | 16.12 | 5.97 | 118 | 15.22* | 3.66 | 97 | 17.22 | 7.81 |

aMean price is in dollars. bPrice is per serving. cPrice is per pound. dPrice is per 30-pound case.

*p <0.05. ANOVA between groups

Director Satisfaction

Table 4 shows a summary of directors' responses to 17 statements related to level of satisfaction with current purchasing methods using a 5-point Likert-type scale with 1 = *very dissatisfied* and 5 = *very satisfied*. A one-way ANOVA indicated a few significant differences between cooperative members and those not participating in cooperative purchasing. Findings from this study are similar to those of Hiemstra et al. (1996), who reported that foodservice directors who utilized cooperative purchasing appeared to be more satisfied with their purchasing system than directors who conducted their own competitive purchasing. Cost-plus-fixed-fee bidding generally has provided for longer bid periods and multiple contract extensions when all parties are pleased with existing service and may foster an extended vendor relationship. This fact may have been a contributing factor in higher satisfaction ratings by cooperative members with cost-plus-fixed-fee contracts. In the current study, directors that were not members of cooperatives were very satisfied with the way vendors responded to their needs.

Table 4. *Frequencies and Means of Ratings of Satisfaction of Current Purchasing Method by Foodservice Directors (N = 453)*

| Items | <u>All respondents</u> | | | <u>Cooperative members</u> | | | <u>Nonmembers of cooperatives</u> | | |
|-----------------------|------------------------|-----------|-----------|----------------------------|-----------|-----------|-----------------------------------|-----------|-----------|
| | <i>n</i> | <i>Ma</i> | <i>SD</i> | <i>n</i> | <i>Ma</i> | <i>SD</i> | <i>n</i> | <i>Ma</i> | <i>SD</i> |
| Frequency of delivery | 370 | 4.30 | 0.63 | 184 | 4.36* | 0.62 | 185 | 4.23* | 0.64 |
| | 365 | 4.22 | 0.64 | 182 | 4.18* | 0.65 | 183 | 4.26* | 0.64 |
| | 350 | 4.18 | 0.77 | 179 | 4.17* | 0.75 | 171 | 4.18* | 0.80 |
| | 363 | 4.18 | 0.78 | 184 | 4.17* | 0.80 | 179 | 4.20* | 0.76 |
| | 367 | 4.17 | 0.72 | 184 | 4.09* | 0.69 | 183 | 4.24* | 0.67 |
| | 363 | 4.15 | 0.67 | 181 | 4.19* | 0.69 | 182 | 4.12* | 0.65 |
| | 369 | 4.14 | 0.70 | 185 | 4.11* | 0.72 | 184 | 4.17* | 0.67 |
| | Order fill rate | 365 | 4.12 | 0.70 | 184 | 4.14* | 0.76 | 185 | 4.11* |

| | | | | | | | | | |
|-----------------------|-----|------|------|-----|-------|------|-----|-------|------|
| Food cost savings | 365 | 4.03 | 0.71 | 182 | 4.10* | 0.74 | 183 | 3.96* | 0.68 |
| Time of delivery | 371 | 4.01 | 0.91 | 185 | 3.94* | 1.02 | 186 | 4.08* | 0.77 |
| Brands bid by vendors | 354 | 4.00 | 0.68 | 183 | 4.08* | 0.71 | 171 | 3.91* | 0.71 |
| | 350 | 3.99 | 0.83 | 180 | 3.99* | 0.83 | 170 | 3.99* | 0.85 |
| Number of items bid | 351 | 3.98 | 0.73 | 182 | 4.02* | 0.75 | 169 | 3.93* | 0.70 |
| | 349 | 3.96 | 0.78 | 181 | 4.07* | 0.77 | 168 | 3.85* | 0.79 |
| | 340 | 3.91 | 0.78 | 172 | 3.99* | 0.78 | 168 | 3.82* | 0.77 |
| | 347 | 3.88 | 0.84 | 178 | 3.89* | 0.82 | 169 | 3.88* | 0.85 |
| Product substitutions | 365 | 3.73 | 0.90 | 184 | 3.72* | 0.97 | 181 | 3.75* | 0.83 |

aRating scale: 1 = *very dissatisfied*, 2 = *dissatisfied*, 3 = *neutral*, 4 = *satisfied*, 5 = *very satisfied*.

*p < .05. Chi-squared between groups and items

Cooperative members were significantly more satisfied ($p < 0.05$) with savings in administrative cost, brands bid by vendors, and frequency of deliveries. Nonmembers were significantly more satisfied with vendor responsiveness to their problems. An overall satisfaction score was determined by calculating the sum of all satisfaction ratings. There was no significant difference in overall satisfaction with current purchasing methods between school foodservice directors who were members of cooperatives and those who were not.

Nonparametric tests were used to determine the effect of bid method and cooperative membership on directors' satisfaction rating. Directors in cooperatives that used cost-plus-fixed-fee rated 11 of the 17 items on the satisfaction survey significantly higher than directors who were not members of a purchasing cooperative ($p < 0.05$). Those factors were food cost (4.38 ± 0.11), administrative cost (4.24 ± 0.13), ability to affect purchasing decisions (4.49 ± 0.12), input into development of specifications (4.21 ± 0.13), and brands bid by vendors (4.33 ± 0.11). In addition, these directors in cooperatives using cost-plus-fixed-fee bidding also rated their satisfaction with number of items bids (4.25 ± 0.12), competitive bid method (4.41 ± 0.11), vendor responsiveness to problems (4.41 ± 0.11), general satisfaction with service (4.35 ± 0.10), order fill rate (4.35 ± 0.11), and product substitutions (4.08 ± 0.14) higher than other directors. Directors in cooperatives that used bottom-line bid awards were significantly ($p < 0.05$) more satisfied with their input into specification development (4.27 ± 0.14) and input into contract language than other directors (4.34 ± 0.13). Directors in cooperatives that used firm pricing were less satisfied with vendor responsiveness (3.83 ± 0.13) than other directors. There was no significant difference in satisfaction ratings given by directors in cooperatives that awarded bids using line-item bid method for any of the listed items.

Foodservice Directors' Reasons for Joining a Cooperative

Respondents who had indicated membership in a cooperative were asked to rank their top three reasons for joining

from a given list using ranking scores of 1 (primary reason), 2 (second most important reason), and 3 (third most important reason). For analysis, scores of importance were reverse coded. Importance scores are provided in Table 5. Nonparametric tests showed lower food cost, greater competition among vendors, and less paper work as the three most important reasons for joining a cooperative ($p < 0.01$). Saving staff time and increasing the number of bidders were also significant reasons for joining a cooperative ($p < 0.05$). Of the 220 directors responding to the question regarding reasons for joining a cooperative, 143 (65%) directors indicated that one of their top three reasons for joining a cooperative was lower food costs. The number of study participants indicating they had not been involved in the decision to join a cooperative was 27 (5.90%).

Table 5. Cooperative Members Reasons for Joining a Purchasing Cooperative ($n = 220a$)

| Reasons | All responses | | | SD | Rankingd | | |
|-----------------------------------|---------------|-------|--------|------|----------|----|----|
| | nb | %c | Me | | 1 | 2 | 3 |
| Lower food cost | 143 | 31.22 | 2.76** | 0.52 | 114 | 23 | 6 |
| Greater competition among vendors | 63 | 13.75 | 1.89** | 0.57 | 7 | 42 | 14 |
| Save staff time | 62 | 13.54 | 1.71** | 0.69 | 8 | 28 | 26 |
| Regulation compliance | 53 | 11.57 | 1.91** | 0.79 | 14 | 20 | 19 |
| Less paper work | 49 | 10.70 | 1.31** | 0.59 | 3 | 9 | 37 |
| Increase number of bidders | 31 | 6.77 | 1.48** | 0.68 | 3 | 9 | 19 |
| Decision made by others | 27 | 5.90 | 2.19** | 0.88 | 13 | 6 | 8 |
| State agency administered | 14 | 3.06 | 1.64** | 0.68 | 2 | 5 | 7 |
| State agency recommendation | 9 | 1.97 | 1.56** | 0.73 | 1 | 3 | 5 |
| Vendor recommendation | 7 | 1.53 | 1.71** | 0.95 | 2 | 1 | 4 |

aTotal number of respondents, each gave up to three responses. bTotal responses, $N = 485$. cPercent of total responses. d1 = most important reason, 2 = second most important reason, 3 = third most important reason for

joining a cooperative. eRankings were reverse coded before determination of mean.

**p = 0.01 Chi-squared. *p <0.05 Chi-squared between reasons

In an earlier study of school foodservice directors who joined a statewide cooperative, 92% indicated perceived time saved on purchasing activities as the number one reason for joining the cooperatives and reduction of stressful conditions as the second highest ranked reason (86%; Boudreaux & Oldenquist, 1996). Differences between the Mississippi study (Boudreaux & Oldenquist) and this present study may be attributed to various factors. Participants in the Mississippi study had recently joined a statewide cooperative. Directors new to cooperatives would not have experience with cooperative benefits and disadvantages on which to base their responses. Geographic differences may have been a contributing factor, as this present study involved participants from a national sample, whereas the other study (Boudreaux & Oldenquist) was limited to one state.

CONCLUSIONS AND APPLICATION

Findings from this study indicated increased membership in purchasing cooperatives from research conducted a decade ago. Participants in this study from small school districts were more likely to be members of a purchasing cooperative than larger districts, as over 73% of all respondents indicating membership in a cooperative were from districts with fewer than 5,000 students. Additional research is needed to verify this growing trend. School foodservice directors, both cooperative members and nonmembers, were not aware of competitive bid methods used in their district or cooperative. Further research is also needed to determine what factors influence competitive bid methodology decisions and reasons.

The increase in cost-plus fixed-fee bidding might indicate a trend toward this flexible pricing method. In regard to director satisfaction, study findings indicated both cooperative membership and bid method affected director's satisfaction with the procurement process.

The majority of study participants indicated satisfaction with their current purchasing method, regardless of the bid or pricing method. Also, cooperative and independent purchasing directors were both satisfied. More in-depth research is needed regarding foodservice directors' levels of satisfaction and to determine if a relationship exists between bid requirements and bid price.

Additional research in school foodservice is needed to determine the factors in competitive purchasing that influence price. Many prepared products specifically formulated for the child nutrition market are available for purchase from a limited number of manufacturers. It would be important to study the effects of these products on bid pricing, as some manufacturers have national bid discount pricing programs. It would also be important to determine if these programs diminish the effect of competitive bids. It would be important to understand how USDA commodity programs, such as net off invoice and commodity delivery by distributors, influence bid pricing. School wellness programs have moved many schools to use more locally grown and/or fresh products. Research is needed to determine how current bid methods impact successful implementation of these initiatives.

Recommendations for further research also include the development of a selection criteria tool to aid school foodservice directors with bid method selection. Selection tools should help school districts identify appropriate bid and pricing methods that take into account the district's nutrition and financial goals. A similar tool is needed to assist in assessing the feasibility of joining a purchasing cooperative.

Purchasing is a difficult and important process in school foodservice. Directors must be conscious of the increasing cost of food, the current economic climate, and the use of public dollars to fund their operations. Further research

and additional guidance to improve decision-making in purchasing, such as the First Choice procurement training provided by the National Food Service Management Institute, is important in school foodservices because of the impact on food quality and food cost (Gunn, 2002).

REFERENCES

- Boudreaux, L. J., & Oldenquist, J. A. (1996). The effectiveness of the Mississippi State Department of Education purchasing programs for Child Nutrition Programs. *School Food Service Research Review*, 20(1), 13-18.
- Chai, J. C. (1979). School food purchasing: Purchasing models and guides. *School Food Service Research Review*, 3(1), 33-38.
- Cleverly, W. O., & Nutt, P. C. (1984). The effectiveness of group-purchasing organizations. *Health Services Research*, 19(1), 65-81.
- Dreyer, S. (1995). Purchasing co-ops offer economy & efficiency. *Franchising World*, 27, 27-28. Retrieved May 15, 2007, from ABI/INFORM Global via ProQuest:<http://proquest.umi.com.proxy.lib.iastate.edu:2048/pqdwebindex=4&did=5369664&SrchMode=1&sid=1&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1179237407&clientId=60760> .
- Gregoire, M. (2010). *Foodservice organizations: A managerial and systems approach* (7th ed.) Upper Saddle River, NJ: Pearson Prentice-Hall.
- Gunn, M. (2002). *First Choice: A purchasing systems manual for school food service* (2nd ed.) University, MS: National Food Service Management Institute.
- Hiemstra, S. J. (1986). Indiana school food price survey. *School Foodservice Research Review*, 10, 123-127.
- Hiemstra, S. J., Foo, P. L., & Jaffe, W. (1996). The cost effectiveness of three purchasing systems. *School Foodservice Research Review*, 20, 19-24.
- Hiemstra, S. J., & Stix, C. J. (1990). Evaluation of cost-plus-fixed-fee purchasing methods in Indiana schools. *School Foodservice Research Review*, 14, 29-33.
- Hurley, M. K. (1980). A comparison of decentralized purchasing with centralized purchasing in the Jackson City school system. Unpublished master's thesis, University of Tennessee, Martin.
- Sanchez, N., Gould, R., & Sanchez, A. (1998). A study of financial management tools used by Kansas school foodservice directors. *Journal of Child Nutrition & Management*, 22(2), 64-67.
- Sanchez, N., Gould, R., & Sanchez, A. (2000). What financial tools do school foodservice directors use? *Journal of Child Nutrition & Management*, 24(1), 40-42.
- School Nutrition Association. (2006). *Little big fact book* [Brochure]. Alexandria, VA: Author.
- U.S. Department of Agriculture, Food and Nutrition Service. (1998). *School food purchase study: Final report*. Retrieved October 24, 2006, from <http://www.fns.usda.gov/oane/MENU/Published/CNP/cnp-archive.htm>
- U.S. Department of Agriculture, Food and Nutrition Service. (2000). *The school meals initiative implementation study: First year report*. Retrieved May 19, 2007, from <http://www.fns.usda.gov/oane/MENU/Published/CNP/FILES/SMIYear1.pdf>

U.S. Department of Agriculture, Food and Nutrition Service. (2002a). *The school meals initiative implementation study: Third year report* (Report no. CN-02-SMI3). Retrieved May 15, 2007, from <http://www.fns.usda.gov/oane/MENU/Published/CNP/FILES/smiyear3.pdf>

U.S. Department of Agriculture, Food and Nutrition Service, with the National Food Service Management Institute. (2002b). *First choice: A purchasing systems manual for school food service*. 2nd Ed. University, MS: National Food Service Management Institute.

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