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Supply Chain Response to Institutional Markets' Demand for Healthy and Sustainable Food Options

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Abstract

Institutional food buyers in the U.S. are increasingly demanding food products that are safe, traceable, healthier, local/regional, or sustainably produced and supplied. These markets consist of schools, universities, hospitals, charities, correction facilities, clubs and other similar organizations that buy goods and services to meet demands of their end-customers (students, patients, prisoners, etc.). These institutions comprise a large portion of the U.S. population. In 2008, the total number of children and adults enrolled in schools throughout the country - from nursery school to college - was estimated at 75.5 million (i.e., 18.7 million in colleges and 56.8 million in schools). This amounts to more than one-fourth of the U.S. population age three and older (U.S. Census Bureau, 2009). About 29 million children are participating each month in the National School Lunch Program (NSLP).

The NSLP, established by the 1946 national School Lunch Act, has the goals of providing school children access to nutritious foods and creating markets for food producers. In the latter case, the school food program serves as an outlet for commodities that are assumed to be in surplus by the USDA. The NSLP functions through an entitlement program, in which participating schools receive cash reimbursements based on family income level of participating students (Allen and Hinrichs, 2007). The schools are entitled to use the cash reimbursements to order and purchase commodities through the USDA commodity program. Most of these commodities are meat, cheese, fruit and vegetable products that mainly come in processed form.

One of the growing concerns about the USDA commodity program is about its perceived impacts on child nutrition and health. In the last few years these concerns have led to increased attempts to make changes in school food programs and nutritional makeups. Schools are increasingly demanding food products that are safe, sustainable and come from known local and regional suppliers or producers. One of the key challenges in this transformation process is finding the right product and appropriate supply chain that can assume a wide range of responsibilities to meet demand.

The present paper explores the responsiveness of the conventional food supply chain (primarily food manufacturers, distributors and wholesalers) in the produce, dairy, bread and poultry sectors to meet school districts' desired food purchasing and procurement changes. The study is part of a large research project that focuses on the

transformation of food purchasing and procurement practices in large urban school districts (i.e., school districts with more than 40,000 students). Specific objectives are to (1) learn manufacturers' and wholesalers' (hereafter food suppliers) perceptions about specific demands by the school districts, (2) assess logistical requirements and product development activities and challenges while establishing a business case to meet demand as perceived by the food suppliers, and (3) identify other related supply chain issues to transform school food procurement and purchasing practices.

1 Methods and procedures

The paper addresses supply chain issues of one case study large urban school district that manages and administers food purchasing and procurement practices in 67 schools with about 40,000 students. The school district was selected based on its readiness and interest to transform its food procurement and purchasing practices towards more healthful, sustainable and locally/regionally sourced food products.

An integrated research approach was applied to conduct the study. This includes the application of a Participatory Action Research (PAR) integrated into traditional research approaches that mainly include interviews and surveys to explore supplier potentials and interest to meet desired food purchasing and procurement changes at the case study school district. Most supply chain research on buyer-seller relationship examines a single link in the value chain mainly focusing on a buyer's point of view (Gueimonde-Canto et al. 2009). The uniqueness of the present study is its incorporation of multiple links of the supply chain as a target. The unit of analysis in the study is not just a single supplier. Rather it includes both the case study school district and a range of suppliers (food processors, distributors and wholesalers) and producers.

The PAR approach incorporated two university researchers, one research project manager, representatives of the case study school district, and its community partners. The integrated research approach incorporated four steps. *First*, the school district worked with the research team and its community partners to identify its priority areas to change and transform its food procurement and purchasing practices. Identified priorities are discussed in the finding section. *Second*, interviews were conducted with current and potential food suppliers (manufacturers, distributors and wholesalers), growers, school district partners and government agencies to complete the research. The paper specifically presents and discusses findings from interviews with 11 food suppliers (three bread suppliers, three milk processors, four produce suppliers and one chicken processor) and three local producers. Semi-structured interview guides were used to conduct interviews with the food suppliers to learn about their responses. Interview questions included supply chain issues and supplier perspectives on current production practices; processing and wholesale operations; and product development activities as well as related logistical issues. *Third*, follow-up visits, meetings, debriefings and additional interviews were conducted with those food suppliers and growers who responded positively and showed interest to meet the school districts' desired goals and establish a new relationship. *Fourth*, the supply chain interviews and follow-ups were supported by surveys to create more knowledge and information on specific issues

within a given priority area. This was particularly conducted if the interviews and follow-up visits did not lead to some progress in sourcing priority products as identified by the school district. Two surveys were conducted in this connection to learn more about the school districts' milk and bread product sourcing practices. The paper discusses findings from the interviews, meetings, follow-up visits, debriefings and surveys focusing on the school district's identified priority areas in its food purchasing and procurement practices. The study was conducted between 2008 and 2010.

2 Conceptual framework – Supplier perception and responsiveness

The responsiveness and perception of the food supply chain actors in addressing the school district's desired food purchasing and procurement changes rest upon the following conceptual frameworks and approaches.

(1) *Does the proposed food purchasing and procurement change have the potential to generate value for food suppliers?* In the literature, the concept of value is critical in the exchange of goods and services and the value creation process involves the creation of benefits for all supply chain participants (Mizik and Jacobson, 2003). Success for the school district will depend on whether the proposed changes incorporate a unique value proposition applicable for the food suppliers. It is expected that supply chain actors view the value creation process from their primary buyers' point of view. In this regard, the key research question would be assessing the value creation process triggered by the changes and transformations in the school district's procurement and purchasing practices.

(2) *What is the impact of the existing market power and supply chain structure and integration in implementing the proposed change?* Supply chain actors with greater bargaining power are better positioned to influence value creating activities within the supply chain. In particular, corporate identities are key visible devices that can lead to a disproportionate share of the value created in the supply chain. The research question would thus be to identify the power differentials and imbalances including collaborative relationships that have significant impacts on relationships between the school district and the food suppliers. .

(3) *What is the role of trust and supplier-buyer relationship in meeting the school district's desired goals?* Since it defines the extent to which a supply chain actor believes that its exchange partner is honest and/or benevolent, trust is one of the key features in relationship building within the supply chain. A series of research has identified several causes and consequences of trust. Trust is affected by quality of communication and collaboration experience in the past. It is viewed as an important co-ordination mechanism, reducing uncertainty and enabling collaboration, and it is also increasingly viewed as a precursor to attaining superior performance and competitive advantage (Emmett and Crocker, 2006). This research will examine and explore the conditions and relationships that exist to build trust, degree of interdependence between the school district and its suppliers, and the overall impacts of trust on achieving desired goals.

(4) *What school district/food supplier operational and logistical factors affect food suppliers' response to meet the school district's desired changes?* This particularly

involves the food suppliers' capabilities in terms of new product development, volume flexibility, stock levels and product delivery systems, The aforementioned frameworks and approaches have been applied in analyzing and understanding the conventional chain actors' perceptions and responses to meet desired goals of the school district.

3 Initial findings from the study

School district food purchase priority areas and recent successes

Priority 1: *Produce sector - Sourcing fresh produce from local regional sources.* Produce items should come processed/semi-processed to the districts' central location. The researchers interviewed altogether four regional produce suppliers (produce processors, packers and shippers). At the end of the project, the school district has made some progress to achieve its goals in this area. First, it created a Request for Proposal (RFP) specifically designed for sourcing local. Input for the RFP was collected from the current and potential food suppliers, the school district's partners and some local food producers. A recent RFP defines local to be within 200 miles radius and included a list of 15 produce items that could be sourced from local producers. The RFP articulates that local produce suppliers' need to offer a seasonally fixed price for each produce item. Supplier should also provide names and locations of producers as well as prices paid to participating local producers. Two of the interviewed regional produce suppliers responded to the RFP. In the 2009/10 school year, the school district purchased nearly \$150,000 worth of local produce through a regional supplier from six local producers.

Priority 2: *Bread sector – Involves a desire to source healthier bread products.* Specifically the school district had the desire to (1) source whole grain bread products (currently no wholegrain bread product), (2) reduce hamburger and sandwich bun sizes from the current 3.5" to 2". Buns should come in pillow packs (30 or more buns/pack) to reduce labor time and cost in preparing and slicing buns. (3) Explore changes in the bread product delivery system to each school (currently bread is distributed directly to schools). Interviews were conducted with a total of three bread product suppliers and regional bakeries. Until now, the school district has limited success in this product category. In the 2009/10 school year, it has started in sourcing 53% wholegrain bread product. However, there are no changes in bun sizes and in the bread delivery system.

Priority 3: *Dairy sector - Sourcing locally produced reduced sugar and hormone free flavored milk.* Interviews were conducted with three milk processors in the state. At the end of the project period, the school district has succeeded in sourcing the desired product.

Priority 4: *Meat sector – The desire in this sector has been in sourcing healthier poultry products (i.e. primarily sourcing reduced sodium, reduced fat, and "clean label" chicken products).* Chicken products should come pre-cooked to the district central location. Most poultry products in the school district come through the USDA commodity

program. Interviews were conducted with one large vertically integrated chicken processor. At the end of the project, there was no success in sourcing the desired products in this category.

4 Discussion

The study identified a variety of issues that affect the perceptions and responsiveness of the food suppliers to meet the school district's desired procurement and purchasing changes.

The existence of established trust has been a key aspect that affected the relational structure between the school district and the food suppliers. For example, the existence of long-term relationships and established trust between some produce suppliers and the school district helped in creating and implementing the RFP designed for local. On the other hand, other potential produce suppliers were not willing to participate in the proposed relationships due to lack of trust in some aspects of the transparency indicated in the RFP. These suppliers particularly argue that providing names and location of the local producers to the school district will have a negative impact on their company in the long term. This is primarily associated with the risk of being eliminated as an intermediate if the school district establishes direct relationships with the local producers.

There are also different views regarding information sharing and transparency in price between the school district on one side, and the food supplier and local producers who decided to participate in the process on the other. For the school district, price transparency was mainly required as a strategy to meet two major goals: (1) As a risk containment strategy (i.e., to know the price establishment and how products are produced, processed or supplied so that they can trace back whenever problems occur), and (2) as a strategy to establish a fair pricing system for local producers. In the latter case, the main interest has been to know prices paid to local producers as a result of the school district's engagement with the produce supplier. However, the participating local produce supplier is not interested in sharing produce sales and purchase prices to all its exchange partners for different reasons. The supplier's basic argument is that such action requires prior clarification and understanding about its operations and price building processes among the exchange partners. This is perceived to help partners understand the costs involved in the processing and packaging operations and to avoid misunderstandings on product pricing. Also, participating local producers are not generally interested in the proposed price transparency. It appears that the producers use the channel not for getting better prices, but primarily for selling season-end low quality produce items (grade two product as they call it) that do not have access through other channels. This situation indicates the existence of a significant buyer-seller discrepancy in perceptions regarding the value of the relationships between the school district, its supplier and the local produce growers.

The value concept has also been a key aspect considered by other food suppliers in meeting the school district's desired changes. For example, for the processor that reformulated its product to supply the desired milk product to the school district, the

value perception was focused on the regional competition. At the beginning of the research, the supplier was not interested in making changes in its milk formulations based on the school district's demand. The research team thus conducted a survey to learn about milk purchasing practices in other school districts within the state. The key finding from the survey was identification of other milk suppliers that produce the desired milk product. Interviews with some of these suppliers indicated that, despite their current low production capacity, they were willing to supply the desired product if some advance arrangements are made. This new knowledge and information was shared among other milk suppliers, partners and school districts in the state. This situation alerted the current milk supplier and motivated it to make changes in its milk formulations to address the school district's desired changes and thereby remain competitive in the marketplace.

There is a perception among some food suppliers that the proposed product delivery system to individual schools does not fit with their current distribution model. Therefore, although some suppliers produce the desired product, they were not willing to establish a relationship with the school district. In particular, frequent delivery of food products to the 67 schools was viewed by some suppliers as one of the barriers to go into the school food business. For example, one of the interviewed bread suppliers produces the desired bun products in pillow packs. However, it was not interested in delivering the product to each school as requested by the school district. As a large regional bakery, this was found to be out of its business and distribution model. It was rather interested in delivering the product to the district's central location, which requires new bread delivery arrangements at the school district level. The school district was not ready to take over this activity. Other suppliers do not have adequate infrastructure to supply the desired products (e.g., lack of year round storage or equipment to prepare food in the desired form). For example, although it produces the desired bread product, one interviewed regional bakery was not set up to do any bulk slicing as required by the school district. Another regional bakery produces the desired wholegrain bread product. However, it does not have the right packaging that fits into the school districts' needs.

Market power and supply chain structure play a significant role in relationship building between the school district and its food suppliers. For example, the current bread supplier is a vertically integrated national bread producer. For this supplier, the school district account was viewed as being not enough to introduce new products, processes or delivery arrangements in its operations. Therefore, it was not interested to address the school district's demand at the beginning of the research. New knowledge and information created by the research team about the growing demand for healthy bread products in schools was the trigger that finally motivated the supplier to start introducing some minor changes in its bread products. Similar trends have been observed in the chicken industry. Therefore, the school district has very limited success in making changes in both product categories.

Overall, it appears that in the bakery and chicken market, there is clear supplier dominance that are not interested in making changes and transformations in their business model based on the school district's demand. On the other hand, the milk

industry tends to be concentrated and integrated at the regional level. As mentioned above, the school district has succeeded in meeting its desired goals in this sector. In this regard, it can be argued that large urban school districts are a good fit and large enough to influence changes within the milk industry. In the produce industry, on one side, there are fragmented small suppliers that do not have enough volume to supply the school district. On the other side, medium-size regional produce suppliers view the school district as a good fit for their business model. However, they are not ready to switch to new delivery arrangements and supply and price transparent systems.

The findings in the present study generally indicate that food suppliers' responses are greatly affected by industry structure and the suppliers' current status within the supply chain. In the milk sector, suppliers are mostly focused on regional production and distribution practices. Meeting customer demand in this sector was thus dependent on the following three factors: (1) The strength or weakness of competitors within the region, (2) the availability and flow of market, product, and price information within the supply chain, and (3) the potential market size for a new product in the region. The above three factors have been very critical in changing the suppliers' perception to develop and introduce the desired milk product. On the other hand, in case of bread and chicken, introducing changes to address the school district's goals would require consideration of demand at a broader level, and further specification and defining of the desired products. The suppliers expect broad horizontal collaborations among school districts and other institutions to help create a consensus on the definition of the new products and an effective demand that can create a stable market as perceived by the suppliers. In the produce sector, adequate transparency can be created if there is trust and clarity that defines the business relationships between the school district, and the participating local produce suppliers and producers.

5 Concluding remarks

The findings from the present study indicate the conflicting interests of supply chain actors in meeting identified demands of institutional markets and the variation in the relevance and understanding of demand and market information to introduce effective and responsible changes within the supply chain. It appears that, in case of institutional markets, development of an effective demand that leads to new product development and functional changes within the supply chain requires the following: (1) Horizontal collaboration among different institutional buyers that would enable buyers to influence changes within the current supply chain. (2) New product developments need close collaborations and participation among manufacturers, institutional buyers and researchers in order to define and specify the type of product and pilot it considering the appropriate markets (i.e., schools, colleges, etc.). (3) Supply and price transparency as well as source identification along the supply chain requires the development of trust and established relationships incorporating common goals of the participating supply chain actors. .

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