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What is the New Version of Scale Efficient: A Values-Based Supply Chain Approach

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Abstract

Although the growth in direct markets suggests a significant jump in local food purchasing by households, direct marketing still only accounts for a small percentage of total food sales because conventional food supply chains account for the great majority of food dollars. Since these traditional outlets are often unable to integrate local products from small and mid-size producers, new opportunities have arisen for farmers to reach wholesale markets. But the economic question is whether these innovations can compete in terms of efficiency, since the transaction costs associated with product distribution are likely to rise if new systems do not achieve scale economies. The goal of this study is to determine what scale would be needed for a local food distributor located in Northern Colorado to be financially feasible. Since the mission of the distributor is to increase local food access for wholesale buyers and provide a market outlet for small and mid-size producers; financial feasibility is a necessity but profit is not the primary goal.

Keywords: Farm to School, Feasibility study, Value chain, Local, Food distribution

Introduction

In the United States, 99.2% of all food is purchased through traditional wholesale channels such as grocery stores, restaurants, and institutions (Martinez, et al., 2010). Due to the large volume and centralized purchasing of most wholesale food channels, the majority of the producers that supply these outlets are large, wholesale producers. While this type of supply chain provides a consistent supply of affordable products that are available to consumers year round, it provides little opportunity for small and mid-size growers, who often can provide less consistent volumes, to reach the wholesale market.

There are emerging opportunities, however, and recently some consumers have begun to demand products that are often difficult for the traditional wholesale channels to provide. Specifically, increasing demand for source verified and locally produced foods appear to play a role in the significant growth in direct markets. Therefore, the small and mid-size farmers have partially addressed the barriers excluding them from wholesale markets through their willingness to develop strategies that allow them to sell directly to the consumer. As evidence, the number of farmers' markets across the country has increased by almost 250% since 1994 and, from 2009 to 2010 alone they showed a 16% increase (Farmers Market Growth: 1994-2011, 2011). Moreover an online registry estimates the number of farms engaged in community supported agriculture (CSA) to be 4,401 (Local Harvest, 2011), a huge growth since CSAs were first recognized in the US in 1986 (Adam, 2006).

On the supply side, from 2002 to 2007, the number of U.S. farms selling directly to consumers through farmers' markets, roadside stands, and pick-your-own operations grew by 104.7% while the value of farm products sold directly to the consumer increased by 47.6% 2

(Vogel & Low, 2010). The smaller increase in the value of farm products could be, in part, because many of those selling through direct markets were small farms with limited volumes.
Although the growth in direct markets suggests a significant jump in local food purchasing by households, direct marketing still only accounts for a small percentage of total food sales. This very small share of local food sales can be partially attributed to supply chain constraints and the relatively limited product absorption capacity of direct markets. In addition, producers face limitations in supplying more conventional wholesale channels in terms of providing consistent product supply and quality, as well as gaining assurance that their products will retain identity throughout the distribution channel. There are emerging opportunities for farmers interested in supplying wholesale markets, however but the economic question is whether these innovations can compete in terms of efficiency, since the transaction costs associated with product distribution are likely to rise if new systems do not achieve scale economies or allow for adoption of investments that may improve supply chain efficiencies.

The goal of this paper is provide insight into how new, smaller scale distributors might compete with traditional distributors. Specifically, the goal is to determine what scale would be needed for a local food distributor located in Northern Colorado to be financially feasible. This distribution facility will be located on an existing farm but will operate as a separate marketing entity. The purpose of this arrangement is to use existing infrastructure to lower costs for a collaborative of producers who sell to the same school district in order to achieve better scale economies for each

of the individual farms. The overarching mission of the distributor is to increase wholesale buyers' access to locally produced foods and provide a market outlet for small and mid-size producers. Therefore, financial feasibility is a necessity but profit is not the primary goal. 3

Previous Research

The significant growth in the demand for local foods in recent years has translated into a growing body of research devoted to the topic. A wide variety of case studies of local and regional food systems highlight best practices for building small and mid-scale supply chain infrastructure, but there are few feasibility studies of financial viability. Instead of the analyses usually included in feasibility studies, the case study literature has focused on the structure and key indicators of success among small and mid-scale distributors, typically referred to as values-based supply chains.

Feasibility Study

Haddad, Nyquist, Record, and Slama (2011) conducted a feasibility study for a fruit and vegetable packing house in Illinois. "The primary determinant of feasibility is the commitment of sufficient acreage to provide the necessary raw material for a packing house to operate profitably as an independent commercial business" (p. 7). Achieving scale economies and operating at capacity given capital investments appears to be an important indicator of success. This is an important consideration for the northern Colorado project presented in this paper. The study by Haddad et al. suggests that an 18,000 square foot facility would require about 1,200 acres to break even and have the capacity to sell 3.5 million cases per year at average price of $10 per case.

Values-Based Supply Chains

Entrepreneurs, producers, and others involved in small and mid-scale supply chains have adopted a model from the business community—values-based supply chains. These value chains fall on a continuum of size and profit margins that lies somewhere between the two primary agricultural models (niche, direct markets and high volume, commodity markets) and provide an 4 avenue for both small and mid-size farmers to access wholesale markets. Value chains focus more on distributional efficiency (fair returns to all stakeholders), rather than the scale efficiency that has dominated food distribution for the past 20 to 30 years. A few key aspects of value chains which differ from the typical supply chain are that: 1) all actors are seen as partners with each receiving a price above the cost of production cost; 2) the focus is typically on long-term relationships; 3) horizontal linkages are created to provide adequate volume; and 4) partnerships are created to utilize existing infrastructure and knowledge (Stevenson & Pirog, 2008).

The infrastructure of value chains varies widely across organizations, from significant infrastructure and high fixed costs (similar to a traditional food distributor), to an organization owning no infrastructure and simply acting as a marketing agent. There are many examples throughout the value chain literature describing distributors that fall along this infrastructure spectrum. Three of these value chains are discussed here in order to inform what we learned about the potential business structures explored in the feasibility study.

La Montanita is a New Mexico retail store cooperative with a retail driven local food distributor under the co-op umbrella. The distribution arm operates much like a traditional distributor, owning a warehouse with both dry storage and cold storage, and multiple trucks. They rely on revenue from distribution, co-op membership dues, and grants to cover the costs of running the business. In 2008, the distribution arm of co-op did not break-even, even in the face of a fairly high sales volume of $2.2 million (Gunter & Thilmany-McFadden, 2011). However, the broader organization was willing to support the early years of that center because of its role in developing a supply chain of values-based products for their retail stores.

High Plains Food Co-op is a Colorado-based local food distributor located somewhere in the middle of the infrastructure spectrum. They focus on minimizing costs by utilizing existing 5 infrastructure but, when necessary, they purchase and rent equipment. In 2009, High Plains had sales of $30,000 and its biggest challenge was in the acquisition of capital in order to facilitate growth (Gunter & Thilmany-McFadden, 2011). Red Tomato, a non-profit value chain in the Northeast that focuses on coordinating the supply chain and promotion and uses partnerships to provide its infrastructure needs. The business is financially feasible, both fixed and variable costs are covered by trading income, consulting fees, gifts and grants (Stevenson, 2009).

Feasibility Study

In Northern Colorado, local food distribution from small and mid-size farms to wholesale buyers has two forms: 1) producers marketing and delivering their own products to buyers, and 2) producers selling their products through a new local foods aggregator and distributor. This business began operations in May, 2011 and is the first of its kind in the region. It sells all types of food products and is currently focused on servicing restaurant buyers, but their operations are growing quickly and they are looking to expand to new buyer accounts.

In the region, restaurants and K-12 schools are the main wholesale buyers that have shown a strong commitment to purchase local foods from small local growers. Currently, farmers are distributing their own produce to schools but, due to the steady growth in that market, many groups are interested in the possibility of a local food distributor in the region that will focus on providing locally sourced produce to the schools and to other wholesale buyers. An existing farm in the region was identified as a potential location for a local food distributor. This farm is centrally located, has existing infrastructure including a structure for aggregation and distribution and a walk-in cooler, and the farm operators already have experience selling to wholesale customers including K-12 schools. 6

The remainder of this paper will explore the necessary scale for several potential infrastructure investments that the farm-based local food distributor is considering. Based on previous research, three scenarios will be explored—each with a different level of upfront capital costs—to determine the breakeven sales requirements for each scenario. Scenario one is a distributor system with a high level of infrastructure which includes owning a refrigerated truck, employing a full time manager and purchasing a walk-in cooler. Scenario two is a distributor with some infrastructure (vehicles and equipment), but more focused on minimizing capital investments to reduce costs. In the final scenario, the distributor acts solely as a marketing agent that uses the infrastructure belonging to the existing local foods distributor in the region.

Based on the size of the infrastructure and the current level of produce marketed by farmers to wholesale buyers in the region, the highest first year sales volume reasonably assumed is $70,000. The distributor would be operational 6 months per year, based on the climatic limits of Colorado's growing season. Products will be delivered once a week for the first year, with an increase to two days and then three distribution days in the subsequent years, to keep up with the increase in sales. In terms of liability coverage, a $2 million liability insurance policy, necessary vehicle and employee insurance costs are included for all scenarios, except scenario three which assumes the insurance is held by a partner.

Based on industry averages, a 15% markup will be assumed for all K-12 school sales, a 20% markup will be assumed for all other wholesale sales, and an 8% brokerage fee is assumed for the final scenario (where marketing costs are shared with a partner). Because the main focus of the distributor is K-12 schools, it is assumed that 90% of sales in year one will be to K-12 schools, but this reliance with decline to 85% in year two, and 80% in year three. All remaining sales are assumed to be to other wholesale accounts such as restaurants and retailers. A very 7

ambitious sales growth of 80% each year is assumed, but such growth is consistent with past sales growth (of the local food distributor located in the region) and the potential demand evaluated in primary data analysis (Gunter, 2011).

Scenario One Results

In scenario one, the distributor will purchase a refrigerated 14-foot truck, a used walk-in cooler, and all necessary office equipment and supplies. All capital purchases are financed over time so that marketing cash flows can cover repayment on loans. A marketing manager and one employee will work full time for 6 months out of the year and a bookkeeper will work as a 0.10 FTE equivalent (given the relatively low workload)1. Table 1 shows the results of this scenario. Based on year one sales of $70,000, net income goes from (-$68,000) in year one to (-$49,000) by year three. By far the largest expense in this scenario is personnel, with an annual expense of $52,400. The second highest expense is $8,000 for insurance.

1 Increased personnel are not assumed for future years based on the assumption that volunteer labor will be utilized, as is a common practice in food hubs (Barham, 2011).

Scenario Two Results

In scenario two, the goal is to own as little infrastructure as possible. The first version of this scenario included renting a refrigerated truck, utilizing existing walk-in cooler space and employing one full-time employee for 6 months. Renting a truck is less expensive in the first year when one delivery day per week is assumed, but in year two when there are two delivery days it becomes more expensive to rent than own. For this reason, a truck is purchased in scenario two rather than rented; but all other assumptions remain the same.

Table 2 shows results for this scenario. Year one sales of $70,000 result in a net income of (-$25,000) in year one, negative (-$19,000) in year two, and negative (-$7,800) in year three. 8 Personnel and insurance remain the two largest two expenses at $16,000 and $8,000, respectively.

Scenario Three Results

In scenario three, the only expenses for the distributor is one full time employee for six months, a cell phone, and worker's compensation insurance. The distributor will be acting as a broker with an assumed brokerage fee of 8%. Table 3 describes results from this scenario. Assuming year one sales of $70,000, net income in year one is (-$14,400), dropping to (-$10,700) in year two and (-$4,200) in year three.

It should also be noted that the three scenarios imply different risk, since the investments in scenario three are very "reversible." In short, if sales increases are not realized, personnel can be scaled back and no other investments have been made. However, in scenarios one and two, there are some investments that may need to be sold at a loss (truck) or connected to an operation (cooler) to recoup original investment costs.

Conclusion

Historically, food distribution is a business characterized by small margins, which suggests efficiency, but may have unintended implications. Traditional distributors rely on a combination of large volume and efficient use of infrastructure to remain profitable, so their models may not provide market access for small and mid-size food producers. Moreover, if investments in high quality, fresh produce are made by producers, it is hard to capture the premium buyers would pay through wholesale distributors, who are more concerned about volume than the needs of a particular niche of buyers (like schools and institutions who want to use local, fresh produce, meats and dairy). How can smaller scale distributors compete, when faced with same small margins? Although there is no one answer to this question, results from 9 this feasibility study provide insight into three potential infrastructure investment/sales volume combinations that can be analyzed for financial feasibility.

Breakeven sales requirements are dependent on the assumed growth rate and capital cost requirements. In all scenarios, with an assumed growth rate of 80% and a scaling back of capital cost requirements in each scenario, the distributor will not breakeven in its first three years of business. As the infrastructure needs decrease in each scenario, net income becomes less negative and closer to breaking even; but the question then becomes (for scenario two) whether a facility with limited infrastructure can reasonably facilitate the increased sales in years two and three, and this seems unlikely. In scenario three, on the other hand, we do not rely on owning infrastructure and our constraints are tied more to investments that the partner distributor may be willing to make to expand and serve the producers.

Utilizing existing infrastructure helps to lower fixed costs, but it also places a limitation on the volume that can reasonably be assumed to flow through a distributor. Even with the cost savings, the facility is not likely to breakeven in its first three years of operations because it cannot reach the necessary scale. But when some essential aspects of a value chain are integrated into the model, such as a partnership to utilize existing infrastructure, we begin to see a more feasible scenario.

The inability for the distributor to breakeven in any scenario is not uncommon. In a survey of local food distributors conducted by Jim Barham (2011) with the U.S. Department of Agriculture, 60% of the food hubs surveyed received government funding to begin operations and 30% continue to receive government funding after operations have begun. It is very common for burgeoning regional food distributors to rely on grant or other donated funds/time to become established in the early years before sufficient sales accounts can be established. 10

The goal of the local food distributor in this study is to increase wholesale buyers' access to locally produced foods (in particular the K-12 schools), and to provide a market outlet for small and mid-size producers who are otherwise overlooked by traditional wholesalers (who rely on large volumes, rather than specialized product offerings) for their core business model. How this goal is accomplished is not the main concern, except that jobs creation is a goal of any current community conversation. Based on the feasibility study results, the best way to accomplish our goal is to either partner with the local food distributor in the region and act as a market coordinator (at least in the short run as sales volumes are established); or provide support for the current local food distributor in the region without creating a separate business. Perhaps support for that enterprise (through help in writing grants and establishing accounts), could earn vested organizations, school districts and producers a seat within a newly formed "Advisory Board" that guides some of the buying and pricing policies of the existing distributor. These initial numbers and discussion points are just a starting point, and meant to inform subsequent discussions of how to move forward on Farm to School and broader, regional food distribution efforts in Northern Colorado. 11

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Table

Table 1. Scenario One	Year 1	Year 2	Year 3
Total Revenue	70,000	126,000	226,800
Cost of goods sold	59,150	106,470	191,646
Gross Margin	10,850	19,530	35,154
Operating expenses	73,465	72,790	74,298
Operating Income	(62,615)	(53,260)	(39,144)
Non-operating expenses	3,641	3,193	2,709
Net Income	(68,386)	(60,287)	(48,754)