

Building resilience in nonprofit food hubs

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Abstract

Food hubs serve as intermediaries between market actors in the aggregation and distribution of local food. Scholars have identified four common food hub models: retail-driven, nonprofit-driven, producer-driven, and consumer-driven. The

nonprofit sector has played a prominent role in emerging alternative food networks such as food hubs. This research uses qualitative methods to analyze the development of nonprofit food hubs in Vermont, as well as potential challenges faced and opportunities gained by this model.

The results suggest that nonprofit food hubs in Vermont can foster the awareness and education necessary to create and expand a thriving community food system, allowing multiple actors to participate at multiple levels. In this way, nonprofit food hubs provide a vehicle for cooperation between farmers and consumers. The most successful food hubs are those that develop within existing organizations; through the multifunctionality of the organization, the food hub can help educate consumers and producers and foster relationships that can lead to an increase in a local food system's capacity. Analysis reveals that although nonprofit food hubs offer the potential to positively impact local food systems, there are key areas of perceived vulnerability that threaten the overall resilience of this model. Recommended interventions for building resilience in nonprofit food hubs include technical assistance,

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market analysis, and business planning to foster financially stable nonprofit food hubs with sustainable program models and business structures.

Keywords

aggregation, alternative food networks, distribution, food hubs, food systems, local food, nonprofit, value chains, Vermont

Introduction

Food hubs have become a popular method of supporting local food systems, yet understanding of the organizational characteristics of different food hub models is still limited (Matson & Thayer, 2013). In response to growing consumer concerns surrounding the conventional food system, along with farmer concerns related to market access, networks of food system stakeholders have developed alternative methods of food production and supply that have focused on direct markets and farm-to-school programs, often referred to as alternative food networks (AFNs) (Renting, Marsden, & Banks, 2003). Direct markets refer to farmers' markets and community supported agriculture programs (CSAs), which tend to target individual consumers.

Food hubs, an emerging type of AFN, have the potential to expand the reach of AFNs beyond direct markets by providing supply chain services such as aggregation and distribution of products from multiple suppliers to multiple consumers or consumer groups. These services are needed due to the difficulty of delivering adequate and reliable quantities of food to mass markets, while still maintaining the farmers' identities and connections to consumers (Conner, Izumi, Liquori, & Hamm, 2012). Moreover, direct markets have been so successful that the markets have actually become saturated in some areas, leaving little or no room for continued growth and new market entry (Zezima, 2011). Scholars and practitioners cite the potential of food hubs to provide needed services to help AFNs scale up, evolve, and expand (Diamond & Barham, 2012). Four main food hub models have been widely identified: retail-driven, nonprofit-driven, producer-driven, and consumer-driven (Diamond & Barham, 2012). Nonprofit

food hubs offer the potential to positively impact local food systems through a "civic agriculture" lens, yet this model is vulnerable due to an overall lack of information and best practices, a reliance on volunteers, and unstable funding sources.

Scholars in the United States have defined efforts with similar goals to AFNs as civic agriculture (Lyson, 2004). Most civic agriculture in the extant literature is limited to direct markets, which limits the potential scope and impact on individual consumers. According to Lyson (2004), civic agriculture enterprises embed production and consumption activities within communities, whereas conventional agricultural production and consumption happens at a larger scale and lacks the community ties inherent to civic agriculture. Conventional agriculture typically relies on synthetic fertilizers, pesticides, and other growth regulators for production of a limited range of commodity goods at the farm level. Civic-agriculture practices generally integrate site-specific practices for the production of a wide variety of products. Lyson (2004) argues that civic agriculture can contribute to the health and vitality of communities in social, economic, political, and cultural ways. Nonprofit food hubs have the potential to advance civic agriculture in a least two ways. First, they have the ability to expand markets for and access to locally grown foods with less immediate profit-generating expectations than those of for-profit businesses, providing opportunity for creative learning and experimentation among community members to solve logistical problems. Similarly, these food hubs often have deep roots and credibility in their communities, and can serve as bridges for broader community-building and education efforts. Vermont has robust innovation and cooperation around food systems development, exemplified in part by the groundbreaking Farm to Plate legislation in 2009, which outlines specific goals and actions in the support of increasing the amount of local food consumed in Vermont (Kahler, Perkins, Sawyer, Pipino, & St. Onge, 2011). Many nonprofit organizations in Vermont have realized the potential of civic agriculture, including efforts to provide the supply-chain services that mainstream supply-chain actors have failed to provide. Nonprofit food hubs have been established to fill this gap.

Despite the overall success of nonprofits in Vermont's food system, nonprofit food hubs are relatively new models that have not demonstrated long-term financial viability and often depend on donations and grant funding for continued operation, threatening the model's overall resilience and potential impact. According to the 2013 National Food Hub Survey, although only 38 percent of nonprofit food hubs indicated they were highly reliant on outside funding, the most successful food hubs tended to be for-profit or cooperative in structure, had been in operation for over 10 years, and worked with a large number of producers (Fischer, Hamm, Pirog, Fisk, Farbman, & Kiraly, 2013). Resilience can be defined as the ability to adapt and survive in the face of economic shocks and changing markets and tastes (Meadows, 2008). For a nonprofit food hub, resilience means weathering economic changes through the development of a stable and diverse revenue stream and maintaining relevance due to its deep connections and credibility with diverse community producers and consumers, and the ability to engage them as part of its core mission.

In order to build resilience within nonprofit food hubs, more information is needed about the development and growth patterns of this model type, as well as potential interventions that may support the movement of nonprofit food hubs toward sustainability—financially and otherwise. Gaps in the existing literature include a detailed analysis and comparison of nonprofit food hubs based on their origins, how they are structured, what services they provide, how they have evolved, and their future plans. This research begins to fill this knowledge gap surrounding nonprofit food hubs and to offer suggestions for supportive interventions and investments that can lead to greater and broader participation in local food systems by consumers and producers. The following sections summarize existing food hub definitions and typologies, as well as the nonprofit model in the alternative food sector.

Food Hub Definitions and Typologies

The concept of a food hub is a relatively recent development in the growing body of literature on AFNs. The U.S. Department of Agriculture

(Tropp, 2011),¹ Horst, Ringstrom, Tyman, Ward, Werner, and Born (2011),² and Morley, Morgan, and Morgan (2008)³ offer three definitions of food hubs, all of which parlay a common theme: food hubs serve as an intermediary between many market actors in the aggregation and distribution of local or regionally produced food, with a civic agriculture mission. Within this definition, varying operational typologies of food hubs have been identified.

A food hub study by the Centre for Business Relationships, Accountability, Sustainability and Society (BRASS) at Cardiff University identified five food hub models: retail-led, public sector-led, producer-entrepreneur-led, producer-cooperative-led, and wholesaler and food service-led. Horst and colleagues expanded upon the BRASS study by developing a typology to include “the broader range of forms that food hubs can take and the roles they can play” (Horst et al., 2011, p. 214). In developing their typology they considered food hub ownership, purpose, design, and scale. They identify nine different types of food hubs: the boutique/ethnic/artisanal food hub; consumer-

¹ The USDA unofficial working definition of a food hub is “a centralized business entity with a business management structure that actively coordinates the aggregation, storage, processing, distribution, and/or marketing of locally/regionally produced food products from multiple farms to multiple wholesale customers” (Tropp, 2011, slide 7).

² Horst et al., 2011, offer the following definition: “A food hub serves as a coordinating intermediary between regional producers and suppliers and customers, including institutions, food service firms, retail outlets, and end consumers. Food hubs embrace a spectrum of functions, purposes, organizational structures, and types, each of which can be tailored to achieve specific community-established objectives. Services provided by a food hub may include and are not limited to aggregation, warehousing, shared processing, coordinated distribution, wholesale and retail sales, and food waste management. Food hubs contribute to strengthening local and regional food systems as well as to broader community goals of sustainability and health” (Horst et al., 2011, p. 224).

³ Morley et al. (2008) describe a food hub as an intermediary between producers, retailers, food-service firms, public-sector buyers, and/or final consumers. They may manage information, administration, collection, warehousing, and distribution. If tied to local food, the food hub tends to magnify social-good objectives. A food hub may be a purchaser, seller, or courier of foodstuffs.

cooperative model; destination food hub; education and human service–focused food hub; neighborhood-based food hub; online food hub network; regional aggregation food hub; rural town food hub; and hybrid food hub.

Diamond and Barham further refined the food hub literature by distinguishing between four distribution models: retail-driven, nonprofit-driven, producer-driven, and consumer-driven (Diamond & Barham, 2012). Diamond and Barham go on to classify these four distribution models into three stages of development: start-up/nascent, developing/emerging, and mature/developed. Although Diamond and Barham began to separate out different food hubs based on development stage, the analysis lacks clear operational definitions of food hubs' development stages.

In both Diamond and Barham's and Morley et al.'s typologies, the primary driving force of who is leading and driving the food hub organization is the identifying factor between different food hub models. Horst et al.'s typology does less to clarify the structure and general characteristics of food hubs as a concept, and instead characterizes and describes how different iterations of food hubs may exist within the different organizational models outlined by Morley et al. and Diamond and Barham. In Diamond and Barham's work, the patterns, themes, general characteristics, and stages of development of different food hub models are not fully developed; these would be areas for further research.

Nonprofit Models in the Alternative Food Sector

Nonprofit or cooperative organizations have played a prominent role in emerging AFNs. Social-sector collaborations that result in innovative strategies to address challenges of scale, scope, infrastructure, and organizational capacity, and also foster synergies between social, economic, and environmental resources, are prevalent in AFNs (Beckie, Kennedy & Wittman, 2012; Sonnino & Griggs-Trevarthen, 2013). The social economy, which refers to organizations such as cooperatives, nonprofit organizations, and charities, has been used to advance equity concerns regarding access to local food, but not without challenges. One particular challenge is competition with mainstream

economic activities that do not always account for negative social, economic, and environmental externalities (Connelly, Markey, & Roseland, 2011). Despite such challenges, the social economy can provide an alternative model to reconnect communities with their resource base, which can enhance community resilience (Sonnino & Griggs-Trevarthen, 2013).

Diamond and Barham's work (2011) indicates that there is a significant relationship between legal structure and food hub development, including operation, funding mechanisms, infrastructure investments, and propensity to run financially self-sufficient operations (Diamond & Barham, 2011). In cooperative structures, members own the cooperative; any profits are either reinvested or returned to members as dividends. As Diamond and Barham (2011) explain, nonprofits are established to pursue a public purpose, are accountable to independent boards of directors, and typically receive ongoing funding from private foundations, government grants, and individual donors. Unlike cooperatives, there are no "owners" or shareholders in a nonprofit to hold a nonprofit organization accountable. This in turn allows nonprofits to take on more risk as a business entity compared to retail-, producer-, or consumer-driven cooperative food hub models, allowing nonprofit models to absorb more of the risk faced by farmers and/or retailers (Diamond & Barham, 2011). Diamond and Barham found that nonprofit food hubs can absorb more risk to allow farmers and retailers to experiment with alternative models of food distribution and aggregation, but this may in turn impede the development of resilient modes of operation, creating an ongoing vulnerability.

Our research further analyzes the nonprofit food hub model to clarify development stages and models, challenges and opportunities, and the emergent theme of nonprofit vulnerability. The research questions we considered in exploring food hub development include: (1) what are the characteristics of nonprofit food hubs, (2) what services do nonprofit food hubs provide, and (3) what are the perceived future directions of nonprofit food hubs? The following sections discuss the study's methods, results, and implications.

Methods

The focus of our research was nonprofit food hubs in Vermont. In addition to having a high level of innovation and cooperation around food systems development, Vermont's small size and large concentration of food hubs in the nonprofit sector created a convenient sample in which to study food hub development. Our research included a new state designation, the low-profit limited liability company (L3C), which has a social mission component that is similar to the mission-driven purpose of a nonprofit.⁴

The research sample was developed from a list of over 20 food centers in Vermont that were part of the Vermont Regional Food Centers Collaborative (a group that emerged to collaborate on a statewide vision of an interconnected food system), as of September 2011. Of the 20 food centers, nine organizations were eliminated from the sample because they were not distributing or aggregating local food, according to organization websites and conversations with experts and practitioners familiar with the groups. Of the 11 organizations contacted, 10 chose to take part in the study.

We used a comparative case study design, primarily using qualitative data collection methods and analyzed using grounded theory (Glesne, 2011; Yin, 2011). We conducted semistructured interviews with participants from each sample organization. The questions were designed to explore the contextual conditions of food hub development in the nonprofit sector in Vermont. Between July 2011 and December 2011, we conducted a semistructured interview with the executive director and/or food hub coordinator of each organization.

We triangulated our findings using website and document analysis, including annual reports, outreach material, and independently created reports or peer-reviewed articles, if available. GuideStar USA, Inc., an information service specializing in U.S. nonprofit companies, was used to compare each Form 990, a tax document that

provides the public with financial information about an organization. Some organizations have not formally applied for nonprofit status, or had within the year, so no Form 990 was available. The information from websites and public documents was compared to interview information to help identify gaps or inconsistencies.

We coded and analyzed the data using constant case comparison, which involves breaking down the data into discrete units and coding these units into categories, which then undergo content and definition changes as the units are compared to each other (Glesne, 2011). We coded interviews to develop emergent themes and patterns that were organized into a table and a ranking system that separated out each theme by the level or degree for which that particular element was present in each food hub. This allowed for a more in-depth constant case comparison with more quantifiable variables with which to compare each food hub. After initial data analysis, information gaps were identified and follow-up questions were drafted for all interviewees. These follow-up questions were answered through personal communication with interviewees via email and phone.

Results

We found that the major contribution of nonprofit food hubs in supporting alternative food systems is their multifunctionality, or the array of civic agriculture-based services that are offered for the specific community that the nonprofit serves. The results indicate that there are two major development patterns of nonprofit food hubs in Vermont: those that developed within existing nonprofit organizations, and those that developed as new nonprofit entities. These results offer insight into the different challenges faced and opportunities presented by nonprofit food hubs, specifically their characteristics, services offered, and what next steps nonprofit food hubs may take as they seek to build resilience in the face of vulnerability.

Farmer Involvement

Our results showed that involving farmers in nonprofit food hubs is a critical aspect of their design. Based on the nonprofit food hubs

⁴ Legislation authorizing L3Cs has been enacted in Illinois, Louisiana, Maine, Michigan, North Carolina, Rhode Island, Utah, Vermont, and Wyoming (Americans for Community Development, n.d.).

examined, two categories of farmer involvement emerged: moderate and high. Food hubs with high farmer involvement embraced the uniqueness of the specific farmers they worked with, spending time to develop strategies that worked for the farmers involved. In this way, some of the strategies were not transferable as best practices, as they evolved based on the unique characteristics of the specific farmers within each community.

We found that moderate involvement of farmers was characteristic of start-up food hubs. These food hubs involved farmers informally in their structure and operations. For example, farmers may have been surveyed or asked to participate, but may not have had an ownership stake or may not have been involved at a high level of food hub planning. Food hubs with moderate farmer involvement viewed farmers mainly as market actors mainly who would utilize the food hub.

High farmer involvement was characteristic of emerging food hubs. These hubs benefited from the relationships with farmers that had been established previously through existing programs and services offered through the managing nonprofit. Food hubs with high farmer involvement were found to actively include farmers in decision-making processes through board representation and annual meetings. Some food hubs with high farmer involvement were created through the initial urging of farmers.

According to one manager of an emerging hub with high farmer involvement, farmers had been part of operations as part of the initial assessment to create the food hub, and they continued to be surveyed after each growing season. At this particular food hub there were three to four meetings every year where farmers informed the critical business decisions, from crop planning and pricing to operations and logistics. Emerging food hubs had ongoing conversations with farmers about business operations and finances, and some had long-term goals of farmer investment or ownership once profits were made. According to one emerging food hub, farmers were offered new markets, fair prices, guaranteed capital, guaranteed markets, networking, a collaborative environment, marketing support, technical support, and on-farm meetings at various members' farms to discuss market-

ing strategies.

Our results indicated that the geography and local characteristics of each community, and the farmers and consumers each food hub worked with, were important in influencing the development of nonprofit food hubs. One food hub manager described how the organization was embedded within the community, explaining:

There are some things that we do that are transferable, but the whole structure of the network is based on the geography, the personalities of the farmers, and the location and personalities of the buyers. Because of that locale of the community, that is the hidden immeasurable value in a local or community food system. Anywhere you go, the thing will evolve based on all those individual relationships, personalities, roads, existing infrastructure, etc.

This ethos of uniqueness was mirrored in all conversations with food hub leaders, as each organization had sought to embed its organization within its respective community.

Nonprofit Food Hub Services

Nonprofit food hubs in Vermont offer an array of food system services for their communities, above and beyond aggregation and distribution services. As research revealed, these services can be broadly categorized to include the logistical services for farm-to-school programs, and services for consumer and producer education and food access.

Farm-to-school logistical services

As food leaders in Vermont described in interviews, nonprofit food hubs have the potential to help address logistical barriers and time constraints for increasing the amount of local food available in institutions, such as schools. For some organizations, increasing the amount of local food in schools was the impetus for beginning to aggregate and distribute food. One interviewee said:

Lots of schools and farm-to-school programs wanted to serve and buy from local

farmers, but for the food service chef — there was just no way they could try to track down a number of different farmers and try to track down the product. On the other end, there's no way a farmer would want to deal with 10 different school buyers and service and deliver to all those little accounts with separate invoicing, so the whole system wouldn't work without some aggregation.

Food hubs can serve an important role in reducing the time cost for institutions to source local food. Another food hub leader described the process of identifying a need within the school communities and how the organization came to a solution. The process this food hub leader went through illustrates the specific needs that each producer and buyer may have, and how they eventually were able to come up with a process that worked for all parties.

There weren't enough efforts to get more local food into the cafeteria. We started with sharing a list of farms, but that wasn't enough because of the many challenges that food service directors face, like limited time and inability to do the outreach to farms, to help make those connections. We helped make the initial orders for food service directors and once they made that connection to the apple orchard, they would continue to buy from them, but we found that wasn't enough, so we started producing monthly product lists, where we listed all the farms and their products and allowed people to order through us and we found that was successful in getting people to try buying more local food. For the past three years we have ramped up our communications so now are distributing a weekly product list.

Our results show that food hubs can help increase local food purchases by schools through providing time-intensive logistical services. These services can include developing product lists and communication processes with producers and buyers, in addition to aggregation and distribution of products.

Community food access and education

Ensuring that local food was available for all income levels was an important theme in discussions with food hub leaders. Some food hubs in Vermont were developed with the sole intention of increasing low-income community members' access to local foods, and other food hubs have purposefully taken an inclusive community stance by being open to all methods of food production.

One food hub leader described how supporting access to local foods is just one of many ways that underserved community members benefit from the food hub:

What our food hub is founded upon isn't just access to local foods, it's education, it's hands-on learning and gardening, for single moms, elders, people on parole, for children. It's bridging generation gaps, it's doing more than just providing food to people who need it, it's providing education on how to use that food and grow that food, too.

In addition to education surrounding food access, some food hubs were beginning to offer payment options through Electronic Benefit Transfer (EBT) so that consumers with food stamp benefits could participate. Some organizations were also offering subsidized prices for some consumers or subsidizing some participating sites, such as daycare centers or senior centers. At the time of our research it was unclear what the level of success was in regard to these new initiatives; this is an area for further research.

Another aspect of local food access is making purchasing convenient for people who are committed or interested, but will not participate if it is not convenient. A food hub can make it easier to reach these types of consumers, whom farmers' markets and CSAs do not reach. Regarding these types of consumer needs and the reasons behind creating a food hub, one informant said:

Consumers were certainly interested in getting more local food, but they also highlighted convenience, diversity, quality, price, things along those lines. A conventional CSA model probably wasn't going to address all

of those concerns. There are some people that will really do anything to eat local, then there's the next ring of people who are really committed but if it's not convenient then they won't participate. So we were after that group. The dedicated group were already going to the farmers' market and existing CSAs and growing their own food. The folks that would get done work and just go to Price Chopper, go home, get the kids — that's the group we were trying to hit.

Our results indicate that nonprofit food hubs in Vermont play an important role in working to ensure that lower income consumers, or consumers who are not already accessing local foods, are not left out of civic agriculture efforts. These groups were described by interviewees as less familiar with local products and how to prepare and consume unfamiliar items; nonprofit food hubs were able to serve as educators for these consumers.

Cross-cutting theme: Food hub vulnerability

A theme that emerged during this research is the issue of vulnerability of food hubs. Even in Vermont, where there is significant interest, time, money, and support invested in food hubs, and in spite of the deep community connections that enhance their resilience, none of the food hubs in this study have reached a mature status. Our results revealed that key areas of perceived vulnerability include an overall sense of ambiguity surrounding the concept of a food hub in the nonprofit sector, which is perpetuated by a lack of information and best practices, a reliance on volunteers, and unstable funding sources.

Most hubs have been developed within the last five years, suggesting that this is a dynamic time for nonprofit food hubs in Vermont. At the time of the study, each organization was undergoing some sort of major change because of the start-up nature of the food hub model. Some of the changes being considered by hubs in Vermont include changing ownership models, name changes to represent being a food center rather than a food hub, mergers with other organizations, expansion, downsizing, different price structures, more or fewer product offerings, changes in aggregation and dis-

tribution methods, and additional or fewer farmer or consumer participants. Many of these changes reflected the rapid growth and change of these food hubs as they went through development stages of start-up to emerging, and sought to become mature food hubs.

Additional nonprofit food hub vulnerabilities included a reliance on volunteers and poor income streams. Many food hubs, although grateful for volunteer labor, admitted major drawbacks to relying on volunteers who can be unreliable or unskilled in the task needed. For example, one food hub found that many product orders contained errors when volunteer labor was used to pack orders. Financially, nonprofit food hubs relied on grant funding to subsidize the overhead costs associated with aggregation and distribution. According to interviews no food hubs broke even (although one was projecting a gross profit for the year 2013, after five years of operation). This meant they relied on grants and donations to support continued program operation. Although food hubs work toward strengthening their community, the sustainability of their operations is in jeopardy without reliable staff or fully developed revenue sources. These revenues can come from a combination of improved business operations and/or support from donors such as individuals, foundations, and local state governments willing to invest in the community benefits of local food systems. The benefits to the community can be framed in terms of creating a fairer playing field in the face of heavily subsidized conventional commodity agriculture. In any case, increased private and public revenues can leverage each other for increased impact and resilience.

Even in the best cases, only two emerging food hubs were forecasting that they would break even financially in the upcoming fiscal year (2013). Although this indicated that some nonprofit food hubs in Vermont may be able to develop self-sustaining business models, most are still searching for a viable financial model. Other food hubs that were still seeking ways to develop income streams to support operations were restructuring their fees in order to move toward a more sustainable fiscal model.

Food Hub Development Stage

Although this research sought to build on Diamond and Barham's typology of food hub development in the nonprofit sector, our results indicate that, as of the completion of this research, there were no fully developed nonprofit food hubs in Vermont. Our results describe observations of start-up food hubs and emerging food hubs, and offer insights into potential characteristics of developed hubs.

Start-up food hubs

Unlike food hubs that developed specific programming within an existing food system-oriented nonprofit, these newly formed nonprofit food hubs tended to have limited paid staff, if any, and some did not have any formal office space. Three of the start-up food hubs were operating with an already established nonprofit partner serving as the fiscal agent, as these start-up hubs did not yet have the 501(c)(3) nonprofit status needed to operate administrative aspects of a business. These food hubs were often developed by individual community food proponents or community groups that advocate for increased access to local food. Compared with more established nonprofits that have a wide range of programming expertise and service areas, start-up food hubs lack the foundational benefit of having existing relationships.

Many of the start-up food hubs were started by food proponents in the community and had provided limited opportunity for farmers to engage in the governance and decision-making of the food hubs. A focus on education and outreach was a major goal of newer food hubs, which stated a need to continue to develop an overall community awareness of the importance of supporting locally produced foods, including how to cook local products that may not be familiar to some consumers. This goal often included collaborating with other organizations in educating the community in their common mission of supporting local food system development.

One food hub surveyed local farmers before creating its food hub program, asking them what opportunities they saw, what barriers they faced, and what production capacity existed. The manager explained:

The farmers said very clearly, if you can find decent markets for us, we'll grow production, we're ready to go. We asked a number of different questions about what direction to go in —aggregation, storage, CSAs, brokerage. We were trying to figure out the domestic fair trade approach. The results came in, and it was clear that farmers had some market capacity barriers. In that case, the direct market capacity had been reached in the region, and farmers were looking for new markets.

One of the distinguishing factors between start-up food hubs and emerging food hubs was the level of market research that has been conducted. At the emerging level, most food hubs had conducted extensive market surveys and analysis to determine the feasibility of food hub programming. In some areas of Vermont, which is dominated by small farms, direct markets were found to still have additional capacity, indicating that the market was not yet ripe for food hub activities. Additional direct market capacity may not preclude food hub development in other regions, as food hubs can be important for midsize farms that are too large for direct marketing, yet have trouble reaching the traditional wholesale market. One informant said,

One challenge is supply. There are farms in this area that would participate, but they still have strong direct sales markets, and it hasn't been proven yet that there is a strong enough market for aggregated products and that farmers should switch the way they grow to wholesale.

Another interviewee indicated that a feasibility study had been conducted and the capacity for a food hub did not exist due to other area commercial kitchens or processing facilities, and because many farmers conduct value-added processing of products at their own facilities. These comments suggest that even in a small state such as Vermont, the market can vary greatly between different regions, showing the importance of market research to reflect the specific characteristics of a given food hub community.

Emerging food hubs

Emerging food hubs tended to benefit from greater capacity offered through a larger and more developed organization. These organizations typically had full-time staff and office space and many owned land, facilities, and/or vehicles. In these cases, the food hub program was one of many services offered, and it benefited from being able to draw on existing expertise within the organization, such as grant-writing and accounting. In these instances, the food hub program was typically developed as a way to further the organization's general mission or to expand existing services or programs. The executive director of an emerging food hub described the benefits of developing the program within an existing organization, saying:

We're almost 25 years old. We have a lot of program activity experience, so we can draw on that. We weren't starting from scratch — we had relationships with farms that we could tap into quite easily, as well as existing relationships with funders for grants. We had a track record that definitely helped us.

One manager of an emerging food hub suggested that the hub was performing more like a business, and that food hub may eventually transition to the for-profit sector. Part of the business mentality included conducting feasibility studies and demand research, which was an important first step for many emerging food hubs that have seen program growth. As one food hub manager explained, the potential growth of a nonprofit food hub can be slowed by the pace of decision-making within the nonprofit organizational structure:

It has been very difficult managing a fast-growing business within a nonprofit. There are needs and resources that the business must have in order for it to be successful, yet it is stymied by the pace and level of decision-making required within the nonprofit environment and the resources available.

As our results indicate, market analysis for start-up and emerging food hubs is an important

first step in building a resilient nonprofit food hub. Our research showed that if analysis for a potential food hub finds that there is additional direct market capacity, then the education and outreach services that many nonprofit food hubs offer can be helpful in continuing to develop the local food market capacity.

Discussion

Food hubs can help create new avenues for local foods to reach broader markets, and also can support and strengthen existing AFN markets for local food and help achieve the community-building and problem-solving goals of civic agriculture (Lyson, 2004). As Kennedy (2007) and Izumi, Wright, and Hamm (2010) describe, regional food distributors that have social relationships with farmers are needed to increase the scale and scope of AFNs, so that local food can reach markets that are currently served by broadline distributors. By helping support farm-to-school programs, for example, food hubs can act as a regional distributor by connecting schools with farmers, and by assisting with logistics, aggregation, and distribution. Food hubs are emerging as an important aspect of AFN development, as they represent a method of taking direct markets to the next step of aggregating and distributing local food with local supply chain actors.

Our research builds on the work of Morley et al. (2008), Horst et al. (2011), and primarily Diamond and Barham (2011, 2012). By building on the definitions and typologies of food hubs that have been developed, we dug deeper into the characteristics of food hubs within the nonprofit sector, and analyzed hubs through an organizational development model that was initially outlined by Diamond and Barham.

This study found no food hubs that currently fit into the developed/mature category. Diamond and Barham do not describe this level of development in depth, but based on our findings the next steps for many emerging food hubs may include market development, financial stability, and structure and process improvements.

Food hub managers who focus on building and expanding market avenues for farmers built relationships with potential consumers and fine-tuned food hub offerings and pricing to reach a

balance between what farmers can provide and at what cost, and what consumers want and what they are willing to pay. By actively working toward creating a program that is financially stable and self-sufficient, food hubs sought a diverse revenue stream that would cover the overhead costs of the program without continually relying on grant income or volunteer labor. This is critical to their resilience in the face of economic forces as well as their ability to serve the aforementioned community-building and problem-solving civic agriculture functions. Food hubs that were planning to focus on structure and process improvements were hoping to fine-tune their systems as far as how the food hub is run. For some, this included exploring different ownership models, and for others this just meant adjusting their operations to run more smoothly, as they learned what worked and what did not.

Figure 1, Food Hub Development Stages (below), shows the general characteristics of food hubs at three major stages of development, as these results have demonstrated.

This research taught us three key aspects to approaching vulnerabilities in nonprofit food hubs, including: (a) a thorough understanding of market conditions and local needs, (b) farmer involvement in all aspects of hub development and programming, and (c) the ability to build on the capacity of existing organizations and relationships.

These findings mirror the major food hub definitional themes found by Morley et al., Horst et al., and Diamond and Barham. We found that the social benefit was a key factor in the development of food hubs in the nonprofit sector, and is part of what differentiates a nonprofit food hub from other distributors. The social benefit was related to the civic agriculture functions of nonprofit food hubs. Additionally, the multifunctionality of nonprofit food hubs shows that they offer an array of services in addition to aggregation and distribution.

Community Engagement

Food hubs in the nonprofit sector did more than just aggregate and distribute food, especially those that have many other programs and have been in existence for many years, such as The Intervale Center. Food hub leaders from the examined

organizations stressed the importance of the additional services and program offerings as an important aspect of supporting their food hub work. The availability of additional staff to assist in food hub operations and existing organizational relationships that exist through additional services and programs can benefit the food hub in acquiring funding and increase its resilience.

We found that food hubs in the nonprofit sector offer an array of support services and outreach that help bolster local food markets and give farmers the knowledge to access these markets. The role of nonprofit food hubs is far greater than just aggregation and distribution of local foods; by educating the community and farmers they help create the environmental and cultural conditions that allow this exchange of products to be successful. We found that community members are often educated in the potential economic and environmental impacts of supporting local farmers, and in how to integrate unfamiliar ingredients into meals. Farmers, we found, are often educated in how to market to local consumers and develop relationships with buyers, and in general farm viability and business planning. Our results suggest that the success of a food hub in actually selling products depends on a community having the underlying knowledge of why they should change their current purchasing habits. Our results illustrate that nonprofits play an important role in educating communities, thereby advancing civic agriculture goals and ideals and creating future markets for itself, thereby increasing resilience.

Nonprofit food hubs are poised to serve as steppingstones for communities that have saturated existing consumer and producer outlets via farmers' markets and traditional CSAs. Existing organizations that create food hub programs are able to effectively incubate these new program models from the start-up stage to the emerging stage. As nonprofit food hubs continue to develop, evolve, and mature, there may be overlap into the additional food hub models identified by Diamond and Barham: retail-driven, producer-driven, and consumer-driven.

Implications for Practitioners and Future Research

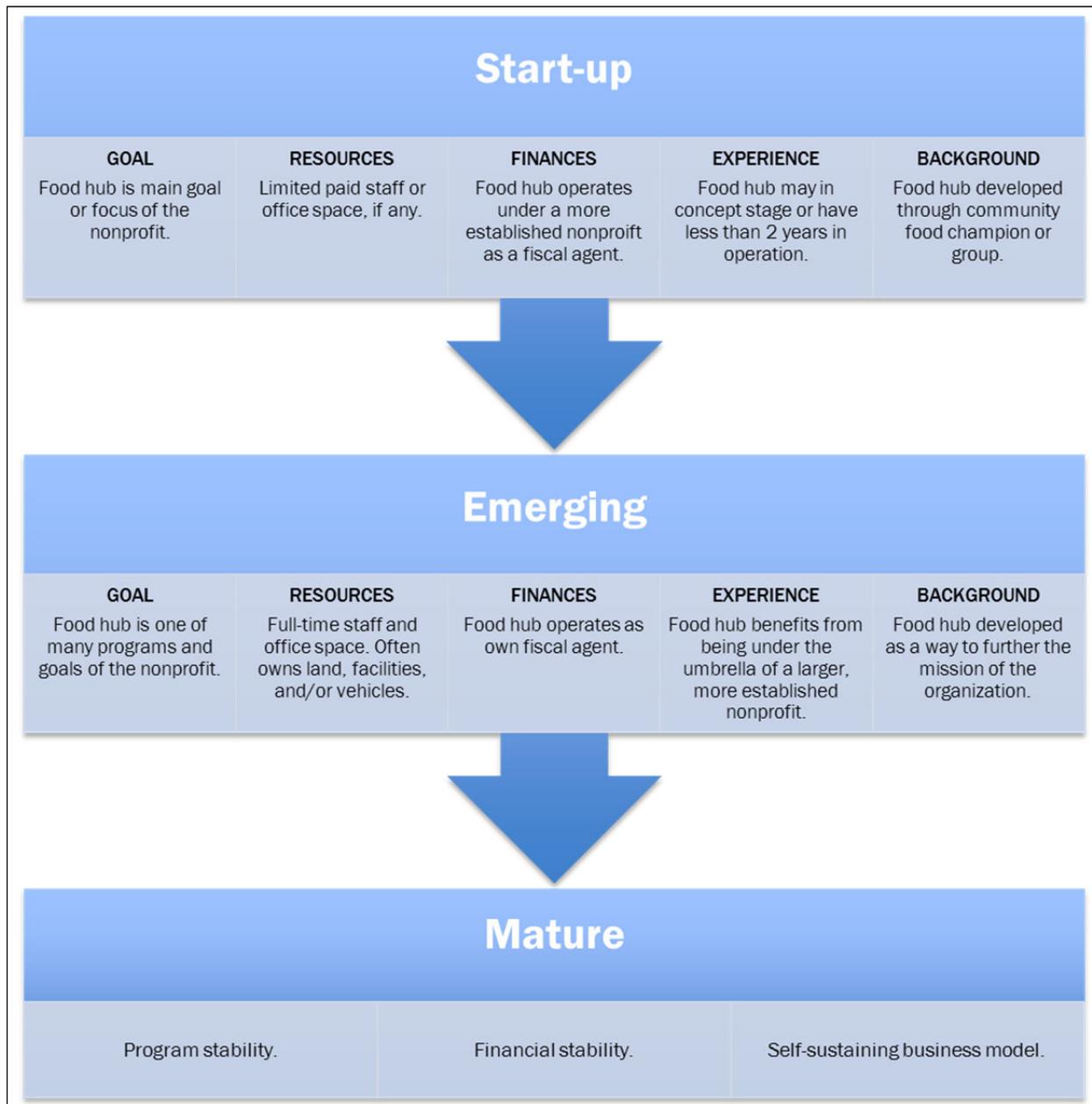
Many of the food hubs that are developing in

Vermont have gone through growing pains as they have experimented with different business models, sometimes through trial and error since there are limited best practices research to draw on. Nationwide, food hubs are all learning together about how to effectively aggregate and distribute local food in a market environment that is still very much dominated by more conventional methods of food purchasing and distribution. This suggests

that nonprofit food hubs are currently tenuous and fragile tools for supporting local food systems.

Despite the uncertain long-term viability of nonprofit food hubs due to their overall vulnerability, this research found that nonprofit food hubs have the potential to serve as a tool that can help AFNs grow and become more resilient. As our research illustrates, nonprofit food hubs can support the logistical elements of farm-to-school pro-

Figure 1. Food Hub Development Stages and Their Characteristics



grams, can offer additional market opportunities for farmers, and can provide an additional way for consumers to purchase local products.

Nonprofit food hubs can offer a level of engagement with communities that can foster the awareness and education necessary to create and expand a thriving community food system that allows multiple actors to participate at multiple levels in the local food system. These food distribution models connect farmers and consumers in more cooperative and direct ways and can promote environmentally and socially beneficial food production, distribution, and consumption. These organizations are able to build relationships and educate producers and consumers, yet their nonprofit status can make them vulnerable. Building resilience in nonprofit food hubs within different business climates may involve technical and/or financial assistance from research or financial consultants through feasibility studies and/or market studies of local food systems. Recommendations for nonprofit food hub investments to support increased resilience are described below.

- **Providing technical assistance for key staff members** to become knowledgeable about food distribution and farming will help food hubs develop relationships with farmers and consumers, and create successful and realistic aggregation and distribution program models.
- **Providing state and federal funding for market analysis** will help foster informed decision-making. An understanding of economic conditions in the community being served will help nonprofit food hubs better understand the needs of their communities and identify which markets have unmet or saturated conditions. This can help identify focus areas, such as community outreach to increase consumer purchases at farmers' markets, or market development to increase avenues for farmers to sell goods.
- **Providing technical assistance for business planning** will help nonprofit food hubs develop sound organizational development choices. A diverse revenue stream that covers the overhead costs of the pro-

gram will enable nonprofit food hubs to hire skilled staff members without draining resources from other important programs. A nonprofit can also be a successful business.

In summary, this research found that the most significant implications for food hub practitioners and researchers are that it is important for nonprofit food management to think like a for-profit business in seeking long-term financial viability, without losing sight of the civic agriculture components that may be the greatest attributes of a nonprofit food hub. This means that nonprofit food hub leaders must be aware, through research and analysis, of what services are needed in the community, what services can be provided efficiently, and in what ways those services will pay for themselves. Nonprofit food hub leaders must also be able to balance these services with the community needs that may not be economically efficient, but are necessary in the long term to grow a vibrant local food system. As our results indicate, while the potential growth of a nonprofit food hub can be stymied by the slow pace of decision-making within the nonprofit organizational structure, this slower pace may be part of what enables a nonprofit to thoughtfully balance business needs with the organizational mission. Balancing this tension between a business mentality and a civic agriculture ethos is an area in which further research is needed.

Core competencies that may be important characteristics of successful nonprofit food hubs include engaging farmers and communities as well as serving as educators for the community to prepare consumers and producers to better engage in a community food system. Start-up and emerging food hubs in particular should pursue research and technical assistance on how best to (a) determine which functions are most needed by the specific community that the food hub will serve and especially will pay for themselves; and (b) engage with farmers and communities. Nonprofit food hubs must maintain a healthy bottom line, like a business, yet still provide the civic agriculture functions of community-building and problem-solving. Maintaining this difficult balance will be an ongoing area of research and outreach.

Conclusion

This research develops a deeper understanding of nonprofit food hubs, and specifically their development stages and factors hindering the potential resilience of this model. This study is limited in scope because interviews were conducted only with food hub leaders within the nonprofit sector in Vermont, and the responses only reflect the limited information of those interviewed. Information may not be generalizable in other states or countries, as nonprofit hubs in different contexts will likely have different challenges. Additional research should explore whether these findings hold true in other regions.

Our research focused on the organizational dynamics of nonprofit food hubs; additional research could expand on the roles of producers and consumers in relation to food hubs, and in how different food hub models compare to each other. Some of the nonprofit food hubs in this study were working on food access issues, but their level of success in food access initiatives was unclear at the time of research; this is an area for further investigation. This research captures food hubs during a dynamic period of development, and further research will be needed on food hub practices and impacts over time, and in relation to other AFN models. Additionally, further research is needed on logistical and financial structures related to the movement of food between market actors. The logistical and practical elements of different food hub models could also be expanded on. Because this study found no nonprofit food hubs to be categorized as developed/mature, more research is needed to further explore this development stage as food hubs evolve. Additional research and outreach is needed to document, test, and share keys to success in order to begin to develop a roadmap for development from nascent to maturity. This will aid in creating resilient nonprofit food hubs that are able to maintain relevance through deep connections and credibility with diverse community producers and consumers, and that can engage these community groups as part of their core civic agriculture mission. 

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