THE ROLE OF VALUES
IN FOOD HUB SOURCING AND DISTRIBUTING PRACTICES

By

Kaitlin Koch

A THESIS

Submitted to
Michigan State University
In partial fulfillment of the requirements
for the degree of

Community Sustainability – Master of Science

2014

ABSTRACT

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There has been rapid growth of interest in planning and operationalizing food hub enterprises across the country. These entities aggregate food products primarily from local and regional producers. They may have a variety of additional social goals. These enterprises may have the ability to help scale-up local and regional food systems by providing an entry point into stable, institutional and retail markets. This thesis focuses on values employed by food hub operators in their sourcing and distributing practices. Using a qualitative approach, we interviewed representatives from eleven Midwest food hubs to investigate their conceptions of values-based products, strategies used to source products and their intersection with underserved consumers. We find that most operators view flexible sourcing preferences as a prerequisite to a viable business in terms of geographic region, farm size and product attributes (e.g. production methods). We also find that serving underserved markets is a secondary priority, often taking place through partnership with other community organizations and through acceptance of EBT at farmer's market or donations to food banks. We did not find any explicit intention of developing business plans to service underserved consumers in the future.

ACKNOWLEDGEMENTS

The completion of this thesis and my degree program would not have been possible without the support and guidance of numerous individuals. I would like to extend my deep gratitude to my advisor, Mike Hamm, for his continuous support by working with me to develop a research project that met my needs, would be beneficial to practitioners, and pushing me to progress in my research, writing and critical thinking skills. I would also like to recognize and thank him for his funding support as the C.S. Mott Chair of Sustainable Agriculture. Thank you to the other members of my committee, Rich Pirog and Phil Howard. Rich, thank you for your personal and professional support, your presence at CRFS has made my experience infinitely more valuable. Phil, thank you for your guidance and insight. The support of the staff at CRFS has been so valuable, I have learned something from each of you and I thank you for that. Thank you especially to Colleen Matts, for being a teacher, friend and role model of a food systems practitioner. Mark Lelle, Chad and Marty Gerencer, thank you for your assistance with this project and your ongoing enthusiasm and interest. Thank you to Kim Chung, on a practical level, your teachings gave me the tools I need to complete this thesis, and on a personal level, you helped me to see the research process and world with new eyes. The support and friendship of my colleagues in CSUS has kept this chapter of life in perspective. In particular thank you to Michaela Oldfield, for your words of wisdom, to Micaela Fischer for your assistance and camaraderie, and to Stephanie Rustem for your generous assistance in developing a code system.

To my friends and family, your support has made this adventure possible. Thank you to my teacher, Chuck, for your flexibility and understanding. Your teachings gave me

the personal tools to make it through this. Thank you to my parents, whose love and encouragement along my path has put me in the position to pursue my dreams. I have learned so much from both of you and am grateful for your presence every day. To Justin, your daily patient and kind support has kept me grounded. Thank you for being there for me through your willingness to review my drafts, be a sounding board, and allowing me to decorate our house with concept maps.

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KEY TO ABBREVIATIONS

EBT – Electronic Benefits Transfer

GAP – Good Agricultural Practices

LLC – Limited Liability Company

SFSC – Short Food Supply Chain

USDA – United States Department of Agriculture

VBP – Values Based Product

VBSC – Values Based Supply Chain

VBVC – Values Based Value Chain

CHAPTER 1. Introduction

Food hub emergence and attention

The recent emergence of the food hub concept and their development across the country has garnered much attention from the local food systems advocacy community. Nationally, the USDA has supported the concept by forming a regional food hub subcommittee within the Know Your Farmer, Know Your Food Initiative. In partnership, the USDA and National Food Hub Collaboration define food hubs as: "a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand" (J. Barham et al., 2012, p. 4). Their most recent food hub resource guide reports that food hubs have many self-determined goals, which often include: increased institutional market access for small and mid-size farmers; making local and regional food purchasing more efficient for institutional buyers; increasing the regional food economy in their community; and a variety of additional socially-driven missions and goals (Ibid.).

The formation and operationalizing of food hubs is also generating excitement within the local food systems community. A range of entrepreneurs, community organizations and cooperatives are looking for ways to start food hubs. Feasibility studies abound assessing the food hub potential in various regions (Aubrey, 2012; Dane County Planning and Development Department, 2011, Market Ventures, Inc., 2012; Ryan & Mailler, n.d.). The number of case studies and resource guides regarding business models, operational scale and best practices are increasing (J. Barham et al., 2012; Desai, 2012; Lerman, Feenstra, & Visher, 2012a; Matson, Sullins, & Cook, 2013). Efforts to build,

operationalize and sustain these hubs have caught the attention of the popular media and the greater food community (for example, see: Brown, 2013; Holdman, 2014; Johnson, 2014; "Tahoe Food Hub raises more than $28K in crowdfund campaign," 2014).

As resources and energy are allocated to the formation, growth, and maintenance of food hubs, it becomes important that we study how food hub businesses are operating, what motivates them, and how they intersect with the food system.

This thesis will contribute to this emerging body of knowledge by studying the values a selection of Midwest region food hub practitioners are employing in their sourcing and distribution practices. The following literature review examines the context from which the concept of food hubs has emerged. I will first examine values based value chain literature, an idea that originates in the business literature. Through reviewing the literature on food access and diet-related disease health disparities, I will frame why it is relevant that food hubs are interested in interacting with underserved populations and who is included in this designation. Lastly, I will review the growing literature on the relevance of differentiated and values-based products, to better understand the current attitudes of food hub practitioners about sourcing these products. Due to the recent emergence of the food hub concept and much of the supporting scholarship to frame it, this review, by necessity, will include sources from the gray literature.

Values Based Value Chains (VBVC): Background context for emergence of food hub concept

Authors often frame food hubs as part of a Values Based Value Chain (VBVC) (J. Barham et al., 2012; Matson et al., 2013; Stevenson et al., 2011), an idea developed in the business literature. Stevenson & Pirog (2008) adapted this idea within the food system to

articulate supply chains that embody a set of shared values, both economic and social. The characteristics of a VBVC that set them apart from conventional supply chains, as described by Stevenson and Pirog (2008), include:

- Considering participants in the value chain as "strategic partners", where decisions are made transparently and collaboratively
- Products exchanged are often differentiated in some way
- The well-being of all chain participants is prioritized
- The model is effective on all scales, including local, whereas conventional supply chains are increasingly only national and/or international in scale

There is a developing literature investigating various elements of VBVCs across the country and around the world (see, for example: S. Baker, Thompson, & Engelken, 2004; Bloom & Hinrichs, 2011; Conner, Campbell-Arvai, & Hamm, 2008; Hendrickson & Heffernan, 2002; Kirschenmann, Stevenson, Buttel, Lyson, & Duffy, 2008; Lyson, Stevenson, & Welsh, 2008; Marsden, Banks, & Bristow, 2002; Pullman & Dillard, 2010). This literature points to VBVCs as one model that could stimulate and sustain local and regional food system growth, and has the potential to address some of the challenges that producers face in local and regional markets (Conner et al., 2008).

One of the widely recognized gaps that VBVCs fill is providing a market for small and mid-sized producers. Scholars have noted a significant decline in mid-sized farms (Kirschenmann et al., 2008; Lyson et al., 2008; Stevenson & Pirog, 2008), which they attribute to the polarized markets between small-scale niche producers that largely sell in direct markets and large-scale commodity producers that sell in the global marketplace, neither of which are appropriately scaled for mid-sized farmers.

Some scholars have expressed concern about the disappearance of these mid-sized farms, in part due to the consequences of increasing corporate consolidation in the food sector (Carstensen, 2008; Lyson et al., 2008) and in part because these farms offer a number of environmental, social and economic services that contribute to the vibrancy of their rural communities. Kirschenmann et al. (2008, pp. 4–5) comment that the majority of mid-sized farms have been family owned for many generations, demonstrating that "good land stewardship is a high priority since they regard their land as part of the family's heritage and local ecological knowledge has been handed down from one generation to the next." Lyson (2008) points out that products purchased from a mid-level farm in a community will have a high "economic multiplier", meaning that the money used in that transaction is more likely to benefit a greater portion of that community, as opposed to purchasing products that are produced by a farm or company that is based elsewhere.

A major benefit that mid-sized farms have in the market is that they have the ability to be more nimble (in comparison to large commodity producers) in providing differentiated or values-based goods, paired with the ability to inform the consumer of this differentiation (Hoshide, n.d.; Kirschenmann et al., 2008; Stevenson & Pirog, 2008). This is particularly salient because a number of scholars are suggesting that there is growing consumer interest in purchasing products based on values-based, non-monetized attributes (E. Barham, 2002; Hendrickson & Heffernan, 2002). These can include production methods such as organic certified, or pasture-raised meat (S. Baker et al., 2004; Conner et al., 2008; Marsden et al., 2002; Pullman & Dillard, 2010); location, such as local or regionally produced (Bloom & Hinrichs, 2011); or socially motivated, such as fair trade (Jaffee, Kloppenburg, & Monroy, 2004).

One VBVC member often aggregates products from mid and small-sized farms allowing access to institutional markets that require larger, more consistent volumes (Clark, Inwood, & Sharp, 2011; Hoshide, n.d.; Izumi, Wright, & Hamm, 2010; Kirschenmann et al., 2008; Matson et al., 2013). Stevenson et al. (2011) point out that some institutional markets are interested in carrying more differentiated products, which could provide a steady outlet for mid-sized producers.

VBVCs may also have a distinct advantage in helping create meaningful, trusting relationships among members of the supply chain. Hendrickson & Heffernan (2002) speculate one of the weaknesses of firms that operate in the global system is their inability to form trusting relationships with customers that desire transparent information. They offer that alternative structures, such as VBVCs, have the ability to create, foster and maintain trusting relationships among the participants in the chain. Others echo these sentiments. Scholars report that trust is a prerequisite for the formation of successful, collaborative relationships in organic food VBVCs (Kottila & Rönni, 2008; Pirog & Bregendahl, 2012). Another noted that creating trust in inter-organizational relationships and sharing common values were defining characteristics of a VBVC community of practice (Campbell & MacRae, 2013). Framing a case study that investigated a short food supply chain (SFSC), a model that is closely related to VBVCs, Marsden et al. (2002) note that building trusting relationships is a defining factor of these chains. Stevenson and Pirog's (2013) articulation of food VBVCs frame the relationships that exist within these chains as "strategic partnerships" that are outlined in "win-win terms" for all parties involved. These relationships have a high level of collaborative decision-making, transparency and trust. Lastly, they show a commitment to the well-being of all members in the VBVC.

Food hubs as a model of a VBVC

This foundation of research and inquiry into VBVCs sets a backdrop for development of the food hub concept. These two concepts overlap, as food hubs are often thought to be part of value chains, or that they can operationalize attributes of VBVCs (Stevenson et al., 2011). One report highlights the capability of food hub businesses to maintain product differentiation, build capacity of producers and embody transparent relationships and communications (Day-Farnsworth, McCown, Miller, & Pfeiffer, 2009). An early piece on food hubs speculates that they may be the "missing middle" necessary for scaling up local and regional food systems, given a supportive policy environment (Morley, Morgan, & Morgan, 2008). A USDA report shares the realization of this potential through a number of food hub case studies that are increasing local food distribution through a variety of business models (Matson et al., 2013).

Currently, most of the food hub resources are gray literature, or literature that is not peer-reviewed, and focus on practitioner interests. Lerman et al. (2012b, pp. 2–3) review thirty food hub and values based supply chain (VBSC) reports and identified several themes. These themes include: the need for food hubs and VBSCs, descriptions of VBSCs and food hubs, benefits of VBSCs and food hubs, challenges of VBSCs and food hubs, and best practices for stakeholders involved in VBSCs and food hubs.

The two national food hub surveys are notable exceptions to resources that typically target practitioners. These surveys document a range of information about food hubs in the U.S. including: location, legal status, age, funding, revenue, products offered, activities, services, and employee demographics (J. Barham, 2011; Fischer et al., 2013). Barham's

survey (2011) included responses from 45 food hubs across the country. The reported results mainly focus on the state of food hubs at that time and were intended to be a guide for developing food hub resources, as well as to inform funding possibilities for food hub development.

The second survey was both a follow-up to the 2011 survey and expanded to examine the characteristics of "successful" food hubs and identify barriers to growth and development (Fischer et al., 2013). This survey included data from 107 respondents, more than doubling the number from the 2011 survey.

A food hub resource guide, informed by the first national food hub survey, was published by the USDA Agricultural Marketing Service (J. Barham et al., 2012). It was intended that this guide also appeal to funders by clarifying the food hub concept, their current impacts among stakeholders and in their communities. In addition to providing information about the potential impacts of food hubs, and applied topics for practitioners, this guide expands on socially driven missions and values that food hubs often incorporate. Of specific interest to this research project is the notion that food hubs may often take an interest in increasing food access to underserved populations.

Underserved Populations in the Value Chain: The motivation behind food hubs' social mission to increase food access

The most recent reports and food hub guides have indicated that a number of hubs have a social mission to increase food access for underserved populations in their communities (J. Barham et al., 2012; Fischer et al., 2013). This thesis will further examine how and why hubs are motivated to work on issues of food access by situating this desire to work with underserved markets within the scope of VBVCs. There is a growing body of

evidence in the literature related to food access, and the correlation between access and diet-related disease within underserved populations.

It is well established that food access is not equal among all residents of the U.S., where a lack of access is measured by living more than one mile from a grocery store in an urban area and more than ten miles in a rural area (ERS, USDA, 2013). Reduced or limited access to healthy food has been shown to correlate with lower income levels (Morland, Wing, Diez Roux, & Poole, 2002; Ver Ploeg et al., 2012). For example, a study examined data from across the U.S. and reported that low-income neighborhoods have 75% less access to supermarkets than middle-income neighborhoods (Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007).

Race and ethnicity are also significant factors determining access to healthy food, often more significant than income level. A multitude of studies have shown that communities of color, in particular Black and Latino communities, have lower access to healthy food than white communities (E. A. Baker, Schootman, Barnidge, & Kelly, 2006; Bell & Standish, 2009; Galvez et al., 2008; Morland et al., 2002; Powell et al., 2007; Seligman, Laraia, & Kushel, 2010; Shaffer, 2002; Stuff et al., 2004). In Morland et al.'s (2002) study supermarkets were reported four times more likely to be found in predominantly white neighborhoods than in predominantly Black neighborhoods and that convenience stores were more likely to be located in Black communities. Culturally appropriate fruits and vegetables for Latino and African American populations in Southwest Chicago were much less likely to be found than commonly consumed fruits and vegetables (Grigsby-Toussaint, Zenk, Odoms-Young, Ruggiero, & Moise, 2010).

Other studies have shown that access to healthy food may result in consumption of a healthier diet (Bodor, Rose, Farley, Swalm, & Scott, 2008; Moore, Roux, Nettleton, & Jacobs, 2008). Consumption of a healthy diet was 25-46% less likely by residents who did not live in close supermarket proximity than those residents living in areas with the densest incidence of supermarkets, even after controlling for age, gender, race, ethnicity and income (Moore et al., 2008). A New Orleans study reported that increased vegetable consumption was related to more shelf space allocated to vegetables in food stores that were close to the respondents' homes (Bodor et al., 2008).

The food access literature has noticeably expanded in recent years. A number of more recent reviews of this literature have pointed out important critiques and weaknesses in this body of work. Systematic review of this literature has been cited as difficult due to diverse definitions and access measurement methodologies (Beaulac, Kristjansson, & Cummins, 2009; Black, Moon, & Baird, 2013; Walker, Keane, & Burke, 2010). More than half of the studies in one review found no relationship between proximity to healthy food outlets and diet (Black et al., 2013).

More recent articles on this topic report results that broaden this discussion. The assumption that food shopping generally takes place in the neighborhood of residence is in question (Aggarwal et al., 2014; Zenk et al., 2011). Zenk et al. (2011) found no relationship between dietary behavior and supermarket presence in the neighborhood. The authors speculate that this may be related to the majority of participants engaging in daily activities outside of their neighborhoods. Similarly, Aggarwal et al. (2014) found that consumption of fruits and vegetables was not related to proximity of food outlets, and that many participants would travel farther to reach low-cost grocery stores. A recent pilot study

examined the effects of a new supermarket located in a predominantly African American, low-income community, and found no relationship between the newly created access and consumption of fruits and vegetables (Cummins, Flint, & Matthews, 2014).

Despite the diversity of methodologies and questionable assumptions present in some of these studies, there is a growing consensus that healthy food access is disproportionately lower for low-income communities of color (Beaulac et al., 2009; Black et al., 2013; Walker et al., 2010). This access deficit is disconcerting because a diet low in fruits and vegetables has been shown to increase the risk for developing diet related diseases including Type II diabetes and cardiovascular disease (Ogden, Carroll, & Flegal, 2008; Seligman et al., 2010; USDA, 2009). These diet related diseases are more prevalent in low-income communities, and Latino and African American populations, as compared to white populations (Bell & Standish, 2009; Narayan, Boyle, Thompson, Sorensen, & Williamson, 2003; Ogden et al., 2008; Seligman et al., 2010; USDHHS, 2001).

Set within this context of healthy food access, diet-related disease and racial disparity, this thesis attempts to situate the consideration of underserved consumers within the scope of VBVCs and food hubs. This research investigates the motivation of food hubs to serve these populations, and if hubs do attempt to engage in this service, how they are doing it.

Differentiated and values-based products: Economic and social considerations in a growing market

Generally, regional food hubs provide product differentiation services, so that producers can take home larger revenue (i.e. a larger share of the consumer food dollar). Food hubs accomplish this by providing services identifying the farm or producer, group

branding, carrying specialty products like heirloom varieties, and/or carrying products that use specific production practices, like organic or "naturally grown" (Barham et al., 2012, p. 4).

The literature provides some grounding for the motivation behind sourcing and selling differentiated, values-based products (VBPs). While this thesis focuses more on social, rather than economic considerations of food hub's interaction with VBPs, it must be recognized that economic sustainability is crucial for farms and producers that are selling VBPs in the marketplace. Therefore, we will begin by briefly looking at a portion of the literature relevant to the economic impacts for VBP producers.

While describing characteristics of successful value chains, Diamond and Barham (2011, p. 3) claim that product differentiation is critical, because producers are gaining economic value through this strategy. Other studies have complementary conclusions. Conner et al. (2008) note that VBVCs bring a premium price to the producer through product differentiation, which can increase farm viability. Three case studies look at value chains that are marketing pasture-raised beef (Ibid.; Marsden et al., 2002; Pullman & Dillard, 2010), and all three note that differentiating this product from conventional beef leads to the producer capturing a higher price.

In addition to the economic benefits that producers can capture from product differentiation, this strategy may provide social benefits for value chain members when products are identified as having additional attributes that represent a larger goal or perspective. In this case the attributes are not valued in dollars, but as a social or environmental goal (Diamond & Barham, 2011; Stevenson & Pirog, 2008).

Barham (2002) writes that labeling and communication of values can be thought of as a way to "re-humanize" the market, by allowing food-purchasing choices to be based on traditionally non-monetized attributes. She also speculates that these choices can be explicitly political and part of a social movement based on common goals and values. In a case study of two farmer's markets in Northern California, Alkon (2008) found that customers at these markets were purchasing food based partly on political and moral considerations. Coff et al. (2008) write that labeling values-based products facilitates more informed consumer purchasing choices by allowing transparent insight into the production methods that were used in making a particular product.

A number of researchers comment that there is growing consumer interest and demand for differentiated products (S. Baker et al., 2004; Connell, Smithers, & Joseph, 2008; Conner et al., 2008; Marsden et al., 2002; Painter, 2007; Pullman & Dillard, 2010). While values-based labels may represent a variety of values, many of them connect with environmental consciousness via production methods, such as organic (S. Baker et al., 2004), or pasture-raised animals and their humane treatment (Conner et al., 2008; Marsden et al., 2002; Pullman & Dillard, 2010). Other labels signify a socially motivated goal, such as preservation of small to mid-size family farms culture (Alkon, 2008; Conner et al., 2008; Pullman & Dillard, 2010), or impact of authentic and fair relationships along the value chain (Hendrickson & Heffernan, 2002; Jaffee et al., 2004).

With growing consumer interest in product differentiation, and a multitude of potential environmental, social, and cultural impacts that these products may supply, this movement towards product differentiation becomes increasingly important to examine.

Conclusion

Within the context of current regional food hub operations and what informs their social, environmental and economic goals, this thesis will focus on two aspects of food hub operation. First I will examine how food hub practitioners are currently conceptualizing niche markets, differentiated and values-based products, and what, if anything, their operations are doing to source these products. Second, I will investigate how food hubs are interacting with underserved consumers as a part of the VBVC. These questions will be examined through a qualitative study of food hubs in Michigan, Ohio, Indiana and Wisconsin that ranged in their stage of development from planning to operational.

CHAPTER 2. The role of values in food hub sourcing and distributing practices

Introduction

The recent emergence of the food hub concept and its development across the country has garnered much attention. Food hub operations have been framed as a strategy to scale-up local and regional food systems, specifically by increasing market access to small and mid-sized farms (J. Barham et al., 2012; Kirschenmann et al., 2008; Stevenson et al., 2011).

In partnership, the USDA and National Food Hub Collaboration define a regional food hub as "a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand" (J. Barham et al., 2012, p. 4). The self-identified, intended goals of food hubs are many: increased institutional market access for small and mid-size farmers; strengthening the regional food economy in their community; and a variety of additional social goals, including increasing food access for underserved populations (Ibid.). Results from a recent national food hub survey reinforce that many hubs have mission driven goals (Fischer et al., 2013). Their results also show that the majority of food hub businesses are financially profitable. These findings indicate that food hubs may provide examples of solvent, values-based businesses.

Despite the attention the food hub concept is generating, research on the collective impact, characteristics and motivations of food hub businesses has only recently begun. Much of the existing research targets hub practitioners and appears in case studies, reports and resource guides (J. Barham et al., 2012; Cohen & Derryck, 2011; Day-Farnsworth et al.,

2009; Greenberg, 2007; Matson et al., 2013). With the notable exception of the two national food hub surveys (J. Barham, 2011; Fischer et al., 2013), we are not aware of research examining the motivations and operations of food hub sourcing and distributing practices.

Several case studies have commented on intended and observed food hub operational characteristics, including: hubs' ability to maintain product differentiation (Day-Farnsworth et al., 2009; Greenberg, 2007; Matson et al., 2013) and their potential to engage in transparent and collaborative relationships with other business partners and stakeholders (J. Barham et al., 2012; Matson et al., 2013). Fischer et al (2013) confirm that food hubs nationwide differentiate products. For example, 60% of the 107 hubs surveyed branded or labeled products (Fischer et al., 2013, p. 37). The results also indicated a majority of hubs prefer to carry products which either use particular growing methods or have specific certifications.

While the national survey and case studies provide a useful baseline of food hub information, there is still much to be learned about the values, characteristics and motivations of food hub operations.

Values based value chains (VBVCs): A theoretical framework

Researchers often frame food hubs as part of a VBVC (J. Barham et al., 2012; Matson et al., 2013; Stevenson et al., 2011), an idea developed in the business literature. Stevenson & Pirog (2008) adapted this idea to articulate supply chains within the food system by including explicit encouragement of equitable relationships among food supply chain members along with more traditional supply chain management strategies (Bloom &

Hinrichs, 2011). They describe the VBVC characteristics that set them apart from conventional supply chains as:

- Considering value chain participants as "strategic partners", where decisions are made transparently and collaboratively
- Products exchanged are often differentiated
- The well-being of all chain participants is prioritized
- The model is effective on all scales, including local, whereas conventional supply chains are increasingly nationally or internationally scaled

VBVCs may also be a model to address concern about mid-sized farms' disappearance in the U.S. (Carstensen, 2008; Lyson et al., 2008; Stevenson & Pirog, 2008). This concern is due in part because these farms offer a number of environmental, social and economic services that contribute to the vibrancy of their rural communities. Kirschenmann et al. (2008) note mid-sized farms are often family owned for multiple generations which increases their practice of sound land stewardship. Mid-sized farms also have the comparative advantage of being more able to meet growing consumer needs for differentiated or values-based goods, compared to large scale commodity farms (E. Barham, 2002; Diamond & Barham, 2011; Hoshide, n.d.; Stevenson & Pirog, 2008).

VBVCs may provide increased market access for small and mid-sized farmers by aggregating products. This allows them to move into institutional and retail markets that require larger, consistent volumes (Clark et al., 2011; Hoshide, n.d.; Izumi et al., 2010; Kirschenmann et al., 2008; Matson et al., 2013).

This study explores food hub sourcing and distributing practices through a values-based perspective. To further contextualize the study, we will look at product

differentiation and values-based products (VBPs) and the relevance of including underserved populations in the VBVC.

Product differentiation and values-based products

A suite of benefits from the VBVC strategy of selling differentiated goods or VBPs can result for producers. Economically, sales of differentiated goods may result in a premium price (Conner et al., 2008; Marsden et al., 2002; Painter, 2007; Pullman & Dillard, 2010), often crucial for mid-sized farm financial stability.

Environmental or social goals may also be accomplished via VBPs. Consumers are increasingly interested in purchasing products that use practices such as organic production (S. Baker et al., 2004), pasture raising of animals, and/or their humane treatment (Conner et al., 2008; Marsden et al., 2002; Pullman & Dillard, 2010). Consumers are also interested in social goals, such preserving family farm culture (Alkon, 2008; Pullman & Dillard, 2010) or promoting authentic and fair relationships throughout the supply chain (Jaffee et al., 2004). Finally, Fischer et al. reported that 22% of hub respondents included food access as a value in their mission statement (Fischer et al., 2013, p. 31).

Underserved populations in the value chain: health and access disparities

There is a growing body of literature investigating a relationship between the lack of food access to the occurrence of diet related diseases in underserved populations. Multiple studies show that decreased access to healthy food is related to lower income levels (Morland et al., 2002; Powell et al., 2007;, 2009). The availability of healthy food is lower in communities of color that are predominantly Black or Latino, as compared to access in predominantly white communities (E. A. Baker et al., 2006; Bell & Standish, 2009; Galvez et

al., 2008; Morland et al., 2002; Powell et al., 2007; Seligman et al., 2010; Shaffer, 2002; Stuff et al., 2004).

A number of more recent reviews of this literature have pointed out important critiques of this body of work. Systematic review of this literature has been cited as difficult due to diverse definitions and access measurement methodologies (Beaulac, Kristjansson, & Cummins, 2009; Black, Moon, & Baird, 2013; Walker, Keane, & Burke, 2010). More than half of the studies in one review found no relationship between proximity to healthy food outlets and diet (Black et al., 2013).

More recent articles on this topic report results that broaden this discussion. The assumption that food shopping generally takes place in the neighborhood of residence is in question (Aggarwal et al., 2014; Zenk et al., 2011). No relationship between a new supermarket and consumption of fruits and vegetables was found by a pilot study examining the effects of the newly created access point located in a predominantly African American, low-income community (Cummins, Flint, & Matthews, 2014).

Despite the diversity of methodologies and questionable assumptions present in some of these studies, there is a growing consensus that healthy food access is disproportionately lower for low-income communities of color (Beaulac et al., 2009; Black et al., 2013; Walker et al., 2010). This access deficit is disconcerting because a diet low in fruits and vegetables has been shown to increase the risk for developing diet related diseases including Type II diabetes and cardiovascular disease (Ogden et al., 2008; Seligman et al., 2010; USDA, 2009). These diseases have been shown to be more prevalent in low-income communities or Black and Latino populations, as compared to higher income

or white populations (Bell & Standish, 2009; Narayan et al., 2003; Ogden et al., 2008; Seligman et al., 2010; USDHHS, 2001).

Thus, it is important to understand strategies that can simultaneously address viability of small and medium-scale farms as well as improve healthy food access in underserved communities. Within this context, we further examine food hub sourcing and distributing practices by sharing results on two topics. The first is how food hub practitioners are conceptualizing differentiated and VBPs, and what, if anything, their operations are doing to source these products. Secondly, we investigate how food hubs are interacting with underserved consumers as a part of the VBVC.

Methods

Research design and data collection

This research was approved by the Michigan State University Institutional Review Board for Human Subjects (IRB#x13-504e) and was classified as 'exempt.' This research utilizes a qualitative approach to explore our research questions. Ideally, qualitative inquiry may result in themes, patterns, insights or understanding within the diverse terrain that comprises food hub business models, values and priorities (J. Barham et al., 2012; Fischer et al., 2013; Patton, 2002). This study used Maxwell's (2012) qualitative research design model - a reflexive and adaptable model that requires constant evaluation as it develops and changes.

The sample for this study included representatives of 11 food hubs from the following states: Michigan (8), Ohio (1), Indiana (1) and Wisconsin (1). Maximum variation sampling was used to identify candidates for participation (Patton, 2002). Our criteria

were that the hubs were geographically spread and were ranging from 'in planning', to 'in development', to 'operational' in their business development.

The steering team of the Michigan Food Hub Learning and Innovation Network provided a list of potential candidates and their contact information. Those identified had been actively participating in the network. Invitations to participate in the research were sent to 15 food hub organizations in Michigan, eight of which responded. We then broadened our geographic scope to include neighboring, Midwestern states. The national food hub survey administrator (M. Fischer, personal communication) provided a list of organizations in neighboring states that responded to the survey. An additional seven invitations were sent to food hubs in Ohio, Indiana, Illinois and Wisconsin with three agreeing to participate.

Participating hubs represent a mixture of legal structures. Four hubs are for-profit LLCs, four are non-profit organizations, one is a cooperative, one has both LLC and non-profit components, and one was too early in planning to have determined their structure. On the spectrum of business development, five hubs were clearly operational, one hub was clearly in planning, and the remaining five hubs were ranging between in planning/in development to in development/operational. Although many of the hubs in this sample did not distinctly fit into one of the business development categories, for analysis purposes, we placed them in a singular group. This designation was based on a combination of how the hub operators self-identified and our conception of where they best fit.

The data were primarily collected through semi-structured in-depth interviews (Rubin & Rubin, 2011). Seven interviews were conducted in-person and, due to distance, four were conducted by telephone. We had access to seven of the hubs' 2013 national food

survey responses (MSU IRB# x12-125e) which were reviewed prior to the interview to set context and to avoid redundancy in the collection of information. All interviews were recorded and transcribed verbatim. The interviews lasted between 60-90 minutes and, if in-person, took place at the food hub. The interview guide had three sections: (1) general food hub information and business development, (2) sourcing practices and preferences and (3) distributing practices and interaction with underserved populations.

Data Analysis

We chose the organizational level as our unit of analysis (Patton, 2002) in order to comment on food hub organizational practices. This helped inform the type of information that was included in our investigation. Early analysis of the data was conducted by using contact summary sheets (Miles & Huberman, 1994), where a summary and commentary of each interview was written shortly after the interaction. The remainder of the analysis was completed using memos, thematic coding (Rubin & Rubin, 2011) and data displays (Miles & Huberman, 1994), with the assistance of QSR International's NVivo 10 (*NVivo*, 2012). Data displays were created by hand.

Results

The hubs were categorized along a spectrum of 'in planning', 'in development', and 'operational' with respect to their business development. One hub was 'in planning', which did not have a physical space or paid staff. They had some developed ideas, including a mission and potential programs, but had not yet formed a legal entity. Five hubs were 'in development' all of which had funding. Four of these five had a physical space identified, all had business plans and staff or volunteers. At the time of this study, one of these hubs

was already sourcing and distributing food. Three of these hubs had operational programs outside of food distribution, and the other two were planning programs. Five hubs were 'operational' – they were sourcing and distributing food. All five had staff, a functional infrastructure, business plan, mission, vision, sales, expenses and programs. Each of these hubs had at least one item, such as a program or expansion that was in planning, but not yet actualized. The business development phase and legal structure (e.g. non-profit, LLC, co-op) will be highlighted where there are notable differences or nuances among these categories.

Food hub sourcing practices

There were three main themes that emerged in relation to food hub sourcing practices. The first relates to region and type of farm from which food hub practitioners are sourcing products. Notably, food hub practitioners do not appear to have hard and fast rules on the region or the size of the farm from which they source. A second theme relates to product attributes. We found that the majority of hubs do not have product attribute requirements. Neither did the majority of hubs mention attribute preferences, with the exception of food safety practices or certification. The third and final identified theme relates to farmer training and education provided by the hubs. We found that half of the hubs provide training for their farmers, primarily focused on food safety practices.

Looking more specifically at the farms and producers for sourcing we found that all hubs source, or will source, a portion of their products locally or regionally, with varying delineations of these terms. The smallest geographic range identified is a radius of 100 miles, and the largest covers a four state area. Several of the hubs are sourcing, or are planning to source, primarily within 50 miles. Seven of the hubs are willing to, or already

do, expand their sourcing area to secure more product over an extended time, demonstrating that they do not have strict sourcing boundaries. Two practitioners from different hubs expressed their willingness to source outside of their local area:

> "*Our range is typically within 50, but that doesn't mean that we can't reach out to [other areas] …"*
>
> *"The majority of what we are hoping to focus will come locally, um, and everyone's definition is different, but you know, within the 10 county region, …, around here – is what I am thinking. But, if there's products that people want that we can't get here that are being grown [elsewhere], I don't really see a problem working with them."*

The hubs that hope to expand their future sourcing area acknowledge a need to address product logistical challenges first.

The other four hubs do have set sourcing boundaries. When asked whether hub practitioners would compromise their boundaries under certain circumstances, representatives from two hubs voiced that they would not. An operator from a hub still in development explains the circumstances that would encourage them to source outside of their boundaries:

> *"…there comes a point in time where it would be nice to reach beyond that, say to [other areas] and get fruit, for example. Things that aren't as abundant [here]. That may be in the cards, but again, we would let the market determine that – and if we're really receiving lots of requests, like – hey, we really want this, could you do this and integrate it into your site – then we would entertain that idea."*

The fourth of these hubs does source outside its' boundaries under special circumstances, described as follows:

> *"Practitioner 1: We try not to go outside of the state*
> *Practitioner 2: 99% of the time we are not leaving the state*
> *Practitioner 1: We have specific customers, with specific needs, and we will help them. But we're not doing it to bring it into stock*"

Over half of the hubs are working primarily with farms that they define as small and medium sized. Only two hubs state an intention of specifically supporting these sized farms. For e.g. one hub operator commented:

> *"Those are single family farms um, none of them are larger than mid-size, okay? And we only have two mid sized, all the rest are small."*

The other five hubs that source from small and medium sized farms are open to working with larger farms often expressed through a common theme of having less supply than demand. This was expressed similarly by operators from two food hubs:

> *"Preference as to size, no, but we do need more larger farms. Uh, larger farms have economies of scale, and we need their participation."*

> *"We have a much greater demand for local product than we can meet. Our customers are constantly wanting more local production, but quite frankly there's – there might be a few products out there where the supply outpaces the demand, but the vast majority of products – especially on the produce side – we can't come anywhere close to meeting the demand with the farmers that we actually kind of have available here in the Midwest"*

In terms of product attributes (e.g. certifications or non-certified production methods), eight of the hubs do not have specific requirements. The majority of the hub operators interviewed do not explicitly mention attribute preferences, other than food safety. Seven of the hub practitioners are encouraging their producers to work towards food safety practices or certifications.

There are three hubs that do have product requirements or strong preferences. The operators from these three hubs expressed the thought that these product requirements or preferences will give them market separation. One hub, the only co-operative in this sample, has the strictest sourcing requirements and won't deviate from these guidelines to secure more food supply. The co-op operator describes the value the co-op places on their produce attribute requirements, which she describes as ethics:

> *"As this co-op was formed the expressed intention was food done right. We are not becoming part of that big system. We shadow the big system, but we are not a piece of it. If we wanted another [large corporation], that's not hard to do. But we're not them. So we do have ethics. Somewhere in there, we actually have rules. So no, we would not eighty-six the ethics to just get the food. That's not what we're in business to do."*

The two remaining hubs both strongly prefer certified organic or non-certified organically produced products. The developing hub described the production practices of the products they are hoping to source as follows:

> *"I think that we would like to feature in - let's say our portfolio - is sustainably raised, you know, and some farmers are going to be certified organic… Or, if not, they are working on it. But, the other growers would follow similar practices."*

The other operational hub also carries both certified organic and non-certified organic produce. They will carry products that do not follow organic growing practices when the organic is not available, expressed as follows:

> "*We do prefer organic… we do have a couple of farmers that don't do organic – that don't have their certification but they do sustainably grown, they don't grow with pesticides or herbicides. We will source those products as well, in the event that there's not an organic or sustainable option on the market for something that we want to carry, we will source a conventional product. In kind of a – a next option, you know, there's some like green beans and sweet corn that's really hard to buy regionally that – in an organic fashion."*

When this hub offers non-organic produce, their staff ensures that customers are informed about the production methods. The other hub, which is in development, anticipates that they may need to compromise on their preference for organically produced products in order to have adequate supply.

> *"It's going to take a little while to get those processes and to get the food flowing through here in the way that we envision. But, the first principle of being sustainable is being sustainable economically, and there are years like last year when there are no apples. And so, if you are a cider business, and you have no apples, you… do what it takes to stay in business."*

Half of the hubs provide training and education to the farmers they work with. The majority of this training is focused on food safety, with a common motivation of moving farmers toward certification or acceptable practices to meet safe food market requirements. Many of the hub practitioners expressed their interactions with food safety requirements, or the anticipation of needing them. One commented:

> "*We spend a lot of time on that food safety education because if regulation forces people out of the markets – we're dead. And, so we need to make sure that all of the small and medium farms are getting the skill set necessary and the education to incorporate that in."*

A second had a similar comment:

> *"I mean – sooner or later – no one is asking me yet, but I'm just waiting for the buyers to ask me – you know, are you GAP certified? Or, are you, you know what do you have?"*

A third commented with respect to school marketing:

> *"I'd like to get into, you know, schools are another interesting thing – when I started [the hub], I was like, oh, we'll just sell to schools – that'll be easy. Well, talk about rules. GAP certification, that's at the farmer level, that takes a year or two, and a lot of money and inspections."*

Two of the hubs that provide educational resources have intentions of increasing the skills and knowledge of their farmer partners. Examples include workshops on digital literacy or technical assistance on growing, specifically through season extension. One hub operator expressed their perspective on providing additional resources to their producers:

> *"It's about increasing the capacity of farmers, not just about their financial capacity to you know, grow and sell, but capacity in broader terms."*

Food hub distribution practices

There were three main themes that emerged in relation to how food hubs are interacting with underserved consumers. The first is that food hubs are broadly aware of,

or stated that they value increasing food access to underserved consumers. The majority of hubs are addressing food access barriers or providing services to underserved populations by engaging in partnerships. The second theme includes the main identified activities that food hubs use to increase food access. The two most common activities are supporting or hosting farmer's markets that accept Electronic Benefits Transfer (EBT) and/or donating leftover produce and products to food banks. The final theme consists of the various challenges that food hubs face in working with and reaching underserved populations.

Seven of the hubs engage directly in activities to increase food access by underserved populations. The following are two examples of hub operators discussing how food access is included in their mission:

> *"Our particular one is an aggregation point, and also that it's satisfying out – where it's located – it is helping to minimize its' status as a food desert. Because, I mean, twice a week we are out there, making that available to the community"*

> *"We manage market operations, develop programs, build facilities and provide infrastructure to strengthen the [hub] district, improve access to good food choices in [our city], fortify the food sector as a regional economic driver."*

Two additional hubs consider themselves part of a network engaging in activities to increase food access. All of the hubs that are actively pursuing increased food access are at least partially attempting to accomplish this via partnerships with other organizations. The 'in planning' hub hopes to engage in a partnership providing job training to area residents.

Seven hubs are operating or supporting farmer's markets in their area. Six of these markets accept EBT (the ability of the seventh is unknown) and five are explicitly operated to increase food access. Two hubs, one a non-profit and one a for-profit, partner with community organizations to operate mobile markets. Another non-profit hub operates an

in-house mobile market. Two of the non-profit hubs operate their own farmer's markets on site.

The majority of hubs donate, or plan to donate, leftover produce or products to food banks. One developing hub operates a food pantry. They would like producers to donate to the pantry, but have not yet established how or if this will happen. Donations of product are the only way that two food hubs interact, or plan to interact with underserved populations. For example, this hub operator commented:

> *"We do provide space for gleaning in the region. We give them three pallet spots in a very crowded cooler, so they can glean and store…. But that's as far as we go."*

Other strategies hubs use to reach underserved consumers include providing resources or programs, in addition to farmer's markets. Seven hubs either already do provide programs or resources, or plan to in the future. Of these seven hubs, four are non-profit organizations, which offer the widest range of services and programming to underserved populations. Two hub operators describe the programs and focus of their respective hub activities:

> *"Whether we are talking about our health programs, or our housing programs, or our food programs, you can array those on a continuum – ranging from straight up social services at one end, right? To something that is really about empowerment and capacity building at the other end."*

> *"The majority of what our food hub actually does right now is much more of the education, access, and working with people of lower income and just the general population, than the wholesale piece."*

All four of these non-profit hubs offer business development or job training. One of the for-profit hubs partners with a community organization to offer job training to low-income residents. Another partners on an initiative to get more fresh produce into corner stores, which was the only hub working on this type of program with the retail sector.

Many hubs identified challenges to providing services or reaching underserved consumers, none of which were experienced by the majority of hubs. Three hubs do not have ample time or resources to engage in these activities, at least without partnering. Two hubs identified low-income customers' lack of access to transportation to their farmer's markets as a barrier. A challenge mentioned by two hubs is the perception that healthy food is too expensive.

In summary, we have identified fluidity to food hub sourcing practices as a seeming prerequisite to a viable business model. The sourcing practices in geographic distance, farm size and product attributes are malleable, with a few exceptions, in order to secure enough supply. We have also identified that the majority of hubs are working in partnership with other organizations to reach underserved consumers, mainly through food bank donations or hosting/supporting farmer's markets. For the majority of hubs, we did not find intentions to develop a business plan to focus on servicing low-income or underserved markets via corner grocery stores or other market-based entities within these communities.

Discussion

By definition, food hubs source primarily local and regional products (J. Barham et al., 2012) – however the boundary conditions for this are very unclear. Our findings show that all of the hubs are sourcing some portion of their products locally or regionally while most do not have established sourcing boundaries. Of the hubs with established boundaries, all but two compromise, or are willing to, based on market demand and availability. We found the hub administrators interviewed in this study willing to go

beyond their current or desired boundaries based on supply and demand. Fischer et. al's (2013) survey support our findings by reporting that securing more product supply was a barrier to growth experienced by 47% of hubs – indicating that until local production expands both in-season and out-of-season there will be a continuing need to bound a region or locale while moving outside it to secure product . This sourcing approach demonstrates that hubs do value and attempt to source products from their region, but the majority are not willing to be tied to strict sourcing boundaries at the cost of gross revenue.

Food hubs have been identified as a potential business model to increase institutional market access to small and mid-sized farms (J. Barham et al., 2012; Kirschenmann et al., 2008; Stevenson et al., 2011). Two hubs in our sample are exclusively working with small and mid-sized farms and half are sourcing some of their products from these farms, which was a smaller percentage than was reported nationally. Fischer et. al (2013) found that 32% of hubs are sourcing all of their products from small and mid-sized farms and that 44% of hubs are sourcing some products from these farms. It is not clear why our data is divergent from the national sample- although it could be related to the geographical region from which we sampled.

Two operational hubs provide greater insight into the motivation and willingness to work with larger farms. Both of these hubs have developed sourcing systems to obtain products with the needed qualities to operate their business and to expand their customer base. The first hub focuses primarily on quality and volume. Securing a combination of these attributes often requires them to source from larger, more distant farms. The second hub focuses primarily on volume and price. They require low price points to reach new

customers that are accustomed to lower prices from large distribution companies. These prices are most often obtainable from larger scale farms.

The majority of hub practitioners did not mention organizational preferences or requirements for product attributes (e.g. certifications or non-certified growing practices). Our findings indicated that many hubs were hesitant to define product preferences or requirements but were inclined to carry a range of products with various attributes, allowing their customers to choose the desired products. Essentially, hub operators were allowing "voting with your dollar", or political consumerism; that is, actions by their customers to make choices among producers and products to change objectionable market practices (Micheletti, 2003, p. 2).

There were several exceptions of hubs that had requirements or strong preferences. It isn't clear if this is particular to these hubs or more related to their stage of development. Two of the three hubs that stated preferences for product attributes were in development and had not yet begun sourcing and supplying products to customers. It would be interesting to track these developing entities longitudinally to understand the relationship between food hub developmental theory and their market practice.

The most notable exception relating to product attribute preference is the majority of hub operators' desire to encourage food safety certifications and/or practices among growers. This was often recognized as a challenge for small and mid-sized farms primarily due to the food safety certification expense.

Authors that classify food hubs as members of VBVCs indicate that they expect hubs will differentiate their products (J. Barham et al., 2012; Matson et al., 2013). All of the hubs in our study carried or brokered some form of differentiated product and many of them

provided additional information to their customers. Our findings demonstrated that the specific differentiated attribute was not as important as the act of differentiation itself.

All the food hubs in our study mentioned awareness of increasing access for limited-resource residents or stated that their organizations valued this goal. More than half of the hubs engage in activities to accomplish this. This is consistent with previous findings that food hubs may value increasing food access to underserved populations (J. Barham et al., 2012; Fischer et al., 2013). Our findings provide new insights into how they are attempting to accomplish this. There are two types of strategies to consider – the first is through organizations doing free distribution and the second is via the market economy. The majority of hubs in this study are partnering with food banks or gleaning organizations to donate leftover produce. Thus a portion of meeting this goal for them is through emergency food assistance.

Our sample includes hubs that engage limited-resource populations through the market economy as well – although in a limited way. More than half of the hubs host or support farmer's markets or mobile markets that accept EBT. Of the three hubs that operate mobile markets the results to date are mixed: one is considered successful by the interviewee, another is not as successful as expected and the last did not comment on their success. It is still unclear whether mobile markets offer a sound market-based solution to access in communities.

Food banks and farmer's markets are the most common way our study's food hubs interact with underserved populations – only one of those interviewed interacted via servicing product to small footprint grocery stores in the neighborhoods. Beyond that, some food hubs, mainly those that have a non-profit legal structure, offered a range of

other, mostly educational, services. A minority of hubs offered "capacity building" services for underserved consumers including business development, job training skills or food production and preservation education. Many of these programs were operational prior to the hubs' formation.

Half of the hubs in our sample are in early phases of development - either planning or developing their businesses and currently do not have ample resources to focus on reaching underserved populations. Five of the hubs are mainly focused on wholesale and institutional markets and any strategies they use to reach underserved consumers fall outside of their daily operations as a food hub. This poses another challenge in reaching limited-resource customers. It appears that there are systemic issues in the ways food hubs reach out to underserved populations, or the ways in which they are challenged in accomplishing this. This is demonstrated by the challenges hub operators identified, including: lack of organizational resources, limited access to transportation by those that the hubs are trying to reach, and a perception that their food products are too expensive.

It appears that hubs which demonstrate the most success reaching underserved consumers are those that are either non-profit in structure or have a business model that includes direct sales to consumers. These hubs were also most likely to include increasing food access in their mission. The non-profit hubs all have additional streams of funding or revenue that allow them to run programs outside the realm of their food hub operations. The hubs that include direct to consumer sales have the opportunity to prospect specific groups of consumers by doing targeted outreach or by adapting their business models to accept EBT.

Conclusion

Our findings contribute to the relatively young food hub literature by adding depth and nuance to our current understanding about the sourcing practices of these business enterprises. This study also provides previously unavailable insights into how food hubs value and interact with underserved populations. While our regionally based study may not be generalizable to food hubs across the U.S., it does provide a deeper, contextualized understanding of the included organizations' values and motivations relative to product sourcing and customer development.

Our findings suggest that food hub operators' main objective is to create a viable business. With some exceptions, this necessitates the adoption of flexible sourcing practices. Activities to increase food access for underserved consumers appeared to become a secondary priority. Consistent with food hub working definitions, hubs are sourcing a portion of their products locally and regionally as well as from small and mid-sized farms. Interestingly, we found the majority of hubs not willing to rigidly enforce guidelines on sourcing distance, size of farm, or product attributes, motivated mainly by a lack of supply. We also found that many of the hubs are challenged in reaching limited-resource customers with the goal of increasing food access. Due to lack of resources, the majority of hubs work in partnership towards this goal. Hub activities to increase access mainly fall into two categories: free distribution as donations to food banks and market-based as on-site or mobile farmer's markets. Further research is needed to better understand the lack of supply from local/regional small and mid-sized farms, how the hub business development stage impacts their practices, and viable strategies for serving limited-resource consumer populations.

CHAPTER 3. Conclusions

Reflections on research results

This thesis examined how eleven food hub enterprises employ values in their sourcing practices and how they interact with underserved consumers. Generally, we found that the majority of hubs do state and hold values pertaining to both of these topics. Looking more closely at these stated values, we found that the majority of hubs have flexible boundary conditions for their sourcing preferences and requirements in terms of geographic distance, size of farm, and product attributes. In terms of hubs' interaction with underserved consumers, we found that most hubs form partnerships to reach and serve these consumers, and that the main activities to accomplish these goals are accepting EBT at farmer's markets and donating produce to local food banks. For the majority of hubs, we did not find any explicit intention of developing plans to reach local underserved consumers in, for example, small footprint grocery stores.

Despite the attention that food hub enterprises receive for focusing on local and regional produce, and small and mid-sized farms (J. Barham, 2010; Fischer et al., 2013; Matson et al., 2013), we found that a minority of hubs strictly source products with these descriptors. The majority of hubs do source a portion of their products locally/regionally and from small or mid-sized farms, but they also source beyond their preferred boundaries and from larger farms. This flexibility in preferences and requirements was also true of product attributes. For the few hubs that did prefer specific production methods, such as organic, they were open to the possibility of sourcing non-organic products if an organic option was not available.

The most notable exception to this flexibility was a preference for food safety certifications and/or practices. The majority of hub operators raised concerns about food safety requirements for their institutional markets, or that they engage in training and education activities to benefit their producers on these topics. Many hubs cited market requirements for safe food as a motivation for these concerns and activities.

These findings of flexible sourcing practices can be partially explained by a lack of supply available locally and regionally from small and mid-sized farms. The root of the supply issue may connected to the challenges that mid-sized farms in the U.S. face. The literature suggests food hubs as a potential business model appropriately scaled for mid-sized farm product distribution. Missing from this literature are the additional efforts food hubs may need to undertake in order to prepare existing mid-sized farm businesses to interact in this market. Our results indicate that hubs may need to support existing mid-sized farmers in skill and business development in order to ensure they can secure the needed supply. They may also need to support the recruitment and skill building of new farmers to increase local and regional supply.

Resources available on beginning farmers identify two main barriers to starting a business. These are high start up costs and access to land (Ahearn & Newton, 2009). Addressing these issues is no small task, especially for a developing food hub business. If food hub operators are interested in sourcing the majority of their products locally or regionally from small and mid-sized farms, they may need to include more strategies in their business plans to develop existing farmer capacity and to recruit new farmers.

We found that the majority of hubs had awareness of food access disparities in their communities, or stated that their organization values improving access to underserved

consumers through various strategies. The majority of hubs acting on this goal are partnering with other community organizations. Many of the hub operators cited lack of staff, time and monetary resources as a barrier to engaging in these activities as an individual organization.

The strategies hubs use to increase food access fall into two categories: first, charitable distribution by donating products to local food banks and second, market based strategies mainly by hosting or supporting farmer's markets that accept EBT. These were the most common activities used to increase food access across the various business development stages and legal structures of hubs in our sample. A minority of hubs used mobile markets as another market based strategy to increase food access. With the exception of one hub, who partnered on an initiative to distribute produce to corner stores in limited-resource neighborhoods, we did not find that any other hubs had explicit intentions of engaging in retail market-based strategies to reach and service underserved consumers in their areas.

In contrast to providing farmer's market access and food bank donations, the non-profit hubs provided additional services. The majority of these hub operators stated a value of increasing individual community member capacity, mainly by providing educational services on topics of nutrition, cooking, job training, business development, food preservation and gardening production skills. These hubs appear to share an intention of providing services to community members at a variety of levels, moving beyond the concept of increasing access by making food available in their communities.

Most of the hub practitioners identified challenges in either serving limited-resource customers or reaching them to communicate existing services. For many hubs,

this may be due to their primary focus of working with institutional markets. For others that do include direct consumer services, there were challenges of perceptions that healthy food is too expensive or that there are business model barriers to accepting EBT. Some hub operators expressed that underserved consumers in their area lack access to transportation to farmer's markets, which brings the efficacy of this strategy into question.

The number of new food hubs has risen dramatically over the last few years. If each of these new hubs were to distribute healthy food or offer educational services for limited resource consumers, the potential impact for this population could be significant. This research did not collect the number of customers served by each hub. Neither is this information available nationally. Therefore, it is beyond the scope of this paper to estimate the quantitative impact of increasing services that target underserved consumers. Food hubs should not be expected to be the sole solution to the issue of food access disparity. However, as their number and operational scale increases across the country, they should be able to play a contributory role to more equitable healthy food access.

Limitations and future research

Due to the size and geographic region of this study, the findings are limited in their general applicability to food hub enterprises nationally. However, it should be noted that many of the findings of the national food hub survey supported the findings presented here. In either case, it was not the intention of this study to create generalizable findings, but rather to share food hub activities, values and motivations situated in their specific context.

Our findings prompt a number of additional topics to be further investigated. One of the main barriers to sourcing products with preferable attributes was a lack of supply. Further research could focus on actual supply levels in food hub regions and whether it is entirely absent, and/or whether it is being directed into other markets and unavailable to food hubs. Research of small and mid-sized farmer willingness and barriers to supply food hub markets would also be instructive on this topic.

A major question regarding underserved markets that emerged from this study is the question of whether food hubs have a responsibility to address issues of access and providing services to this group of consumers. Examples of food hubs that prioritize these issues, their motivations and business plans that incorporate these goals could elucidate viable strategies in this realm. In relation to this study, it would likely be helpful to explore how food banks and food hubs are partnering to increase food access, with the possibility of expanding or reimagining these relationships. Underserved consumer desires, needs, motivations and barriers could be researched to better inform food hubs that choose to pursue serving this market. Strategies for food hubs to effectively reach and market to underserved consumers would also be practically useful and requires further research.

APPENDIX

Interview Guide

Pre-interview

1. Introductions, hellos, express gratitude for taking the time to participate
2. Go over IRB informed consent
3. Ask permission to begin

Development + Organizational Structure

1. Let's start with a general question about food hubs. Would you mind sharing, in one to two sentences, what you think a food hub is?
    - What parts of your organization do you [envision/currently consider] to be part of your food hub?

2. Does your organization have a mission and vision? If so, could you share it?

3. For this project I have been thinking about food hubs falling along a spectrum of organizational development. The spectrum ranges from "in planning", to "in development" to "operational". Would you mark where you think that your organization fits along this spectrum?

    [*Ask them to mark the spectrum on paper. It's okay to use more than one mark to refer to different parts/projects within the organization*]
    - What reasons lead you to place your organization there?
    - [Prompt for in development/in planning] Do you have an idea of what your developmental plan looks like? A sense of your timeline for this?

Transition: That is helpful to set some context. Let's switch gears into [how you envision your hub operating/your hub operations]. I am curious to learn more about whether your organization has any preference about what types of food or food products it [would like to/does] source for the food hub.

Sourcing

1. Specifically, does your organization have a preference or requirement for – [*have list of attributes from National Food Hub survey for reference*]
    - Certifications? Which ones?
    - Growing methods [not certified]?
    - Scale of production/size of operation?
    - Distance traveled?

    - What parts of your mission and vision lead the organization to try and source these types of products?
        - [Prompt] Why are these attributes important to your organization?

2. How do you [plan to/already] verify that the products that you are sourcing have these attributes? [Prompt if necessary]
    - Farm/producer visits?
    - Audits?
    - Proof of certification?
    - Anything else?

3. [Do you anticipate/Have there been] any challenges sourcing products that have these desired attributes?
    - [Do you anticipate/Have you had] any problems with supply of the products with your desired attributes?
        i. [Prompt if they answer no] What leads you to believe this? Have you done market/supply side research?
    - What concessions about these attributes [would you be willing to make/have you made] if you cannot find adequate supply?

Transition: Thanks for all that information. I have a much better understanding of your sourcing now. I'm also interested in the distribution side and your [potential/current] customers.

Distribution + Retail

1. Can you help me to understand the geographic area of what your [planned/current] sales market is? [Prompt if necessary]
    - Specific regions? Counties?
    - Cities?
    - Neighborhoods?
    - Distance from your site?

2. Does your organization [plan to/already] target any specific groups of consumers? Specifically, do you have any specific interest in reaching –
    - Urban populations?
    - Low-income populations?
    - Communities of color?

3. A. [For planning hubs] Do you have any plans to implement strategies to aid in reaching these groups of customers? What types of strategies have you considered? [Prompt if necessary]
    - Incentive programs?
    - Outreach strategies?
    - Other strategies?
    - What are the pros and cons to the programs you are considering?

B. [For operational hubs] Have you developed or used any strategies that seem to work well in reaching these groups of customers? [Prompt if necessary] If so what are they?

- Incentive programs?
- Outreach strategies?
- Other strategies?
- How do you run these programs?
- What seems to be working well? What is challenging?
- Do you have a good sense of your customer base? What impact do these programs have on your customers? Can you tell whether your customers are returning to use/due to these programs?

4. What challenges [do you anticipate/have you experienced] in developing a supply chain for these groups of customers?

Closing remarks

1. I want to respect your time, and I am so grateful that you were willing and able to sit down and share with me. My goal is to use the information from this interview and interviews with other food hubs around the state to create a sharable document with some of the best practices and challenges that emerge around food hub sourcing and distributing. I'll be sure to keep you in the loop with progress on that.
2. Do you have any questions for me?
3. Express a final thank you. Please feel free to get in touch if you have any more thoughts or questions that come up. Would you mind if I contact you if I have any questions that come up in the future?

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