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Farm Fresh Food Boxes: A pilot that examined relationships in value chain partnerships

SPECIAL ISSUE: MORE THAN
VALUES IN THE FOOD SYSTEM



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Abstract

The Farm Fresh Food Box (F3B) project is a market innovation that aims to capitalize on successful characteristics of direct-to-consumer (DTC),

values-based supply chains (VBSCs), and traditional supply chains with the goals of expanding producer sales and improving rural food access. In the F3B model, farmers sell boxes of fresh produce in rural retail outlets to bring food to customers with limited access to locally grown foods. We

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present pilot findings on indicators of relationship quality, communication of embedded value, and food environment, and compare these with extant research to assess whether F3B behaves like a DTC, VBSC, a traditional supply chain, or something else entirely. Unlike much of the previous value-chain research, this work places a unique emphasis on the importance of the *farmer-retailer* relationship. We merge existing knowledge of DTC strategies and barriers with those of VBSCs and traditional supply chains to understand better the process of expanding into new outlets and consumer populations. We find that while the F3B model reduces some resource constraints, it adds a layer of complexity that requires time and expertise to develop a quality relationship between producers and retailers. Additionally, it is apparent that the F3B model must be tailored to fit local contexts of farmers and retailers participating in F3B market innovations.

Keywords

Direct to Consumer, Alternative Food Systems, Farming, Food Retail, Values-Based Food Chains, Food Access, Relationships

Introduction

The transformation of the American food system over the last century has generated an array of interconnected challenges that bridge economic, ecological, and social spheres. The growth of large farms has challenged livelihoods on small- and medium-sized farms (Chase & Grubinger, 2014), while the proliferation of national supermarket chains has negatively affected the survival of independent stores in rural communities (Hanawa Peterson & Procter, 2019; Lyson, Stevenson, & Welsh, 2008). Together, these trends threaten rural agricultural economies and communities (Jilcott et al., 2010).

Further, loss of retail outlets impacts the health of residents through diminished access to the fresh, affordable produce needed to support a healthy lifestyle (Blanchard & Lyson, 2006; Liese, Weis, Pluto, Smith, & Lawson, 2007). The relationship between the consumption of fresh, whole foods and the risk of nutrition-related chronic diseases lends a sense of urgency to the situation

(Andreyeva, Middleton, Long, Luedicke, & Schwartz, 2011; Bailey, 2010).

In response to these trends, several market and social institutions have pursued the development of alternative food networks (AFNs) that seek to reduce the number of intermediaries and spatial distances between producers and consumers (Bloom & Hinrichs, 2011; Valchuis, Conner, Berlin, & Wang, 2015). AFNs use both direct-to-consumer (DTC) sales and innovations such as values-based supply chains (VBSCs) to distribute foods with qualities often missing from industrially produced foods (Feenstra & Hardesty, 2016; Dimitri & Gardner, 2019). In DTC venues, farmers convey product characteristics through a direct relationship with consumers, while in VBSC, each actor is responsible for conveying this to the end purchaser.

After several decades of growth in AFN venues like farmers markets and community supported agriculture (CSA), DTC sales appear to have flattened (U.S. Department of Agriculture National Agricultural Statistics Service [USDA NASS], 2014). Additionally, many barriers that limit the efficacy and reach of AFNs remain.

The Farm Fresh Food Box (F3B) is a market innovation that has the goals of expanding producer sales, stabilizing rural retail outlets, and improving rural food access (Smith, Wang, Chase, Estrin, & Van Soelen Kim, 2019). It has the potential to increase vegetable consumption and provide revenue for farms and stores. F3B offers CSA-style produce boxes in the unique setting of rural retail outlets, with the aim of reaching new consumer segments. This implies an additional step inserted between farmers and consumers that defines the DTC approach. It also requires the development of new relationships between farmers and retailers, a topic that has not been extensively studied in the literature. In this paper, we describe the development of F3B producer-retailer relationships and assess their quality to explore how this affects their ability to convey the embedded values of the product to the consumer. Then, we compare our findings with existing knowledge of DTC and VBSCs to inform how the use of F3B can help farmers and retailers expand into new consumer populations.

Literature Review

Competition from large-scale farms and agribusinesses challenges small and mid-scale farmers to maintain sustainable livelihoods (Andreatta, Rhyne, & Dery, 2008). Large centralized farms and firms, which benefit from technological efficiencies and economies of scale, have grown to outcompete smaller players (Lyson et al., 2008; USDA NASS, 2019). As these trends continue, it has become increasingly difficult for small and mid-sized farmers to find markets appropriate for the volumes these farmers can provide, at a price that sufficient for them to remain viable (Lerman, 2012).

Small retailers are challenged by distributors who require large-volume orders or refuse out-of-the-way deliveries, and by retail regulations written with larger businesses in mind (Bailey, 2010). Moreover, changing transportation patterns, facilitated by expanded road networks and near-universal automobile ownership, have affected rural shopping habits (Bailey, 2010; Jilcott et al., 2010; Stoffle, 1972). Further, the spread of national supermarket chains, dollar stores, and e-commerce has undercut prices and altered consumer shopping habits, forcing rural grocery store closures (Donahue, 2018; Rothstein, 2019). For example, between 1995 and 2005, the number of Iowa grocery stores decreased by almost half, while grocery supercenters increased by 175% (O'Brien, 2008).

Many rural residents living in agricultural communities lack access to the foods grown in their communities (McEntee, & Agyeman, 2010; L. Morton & Blanchard, 2007). As more rural retailers go out of business, local residents experience diminished access to a diverse array of healthy foods and consequently consume fewer fruits and vegetables (Andreyeva et al., 2011; Hanson et al., 2019; Rose & Richards, 2004; Timperio et al., 2008; Zenk, Schulz, & Odoms-Young, 2009). Further, lack of a healthy diet resulting from living in food deserts is associated with obesity and chronic diseases, both of which are higher in rural settings (Bodor, Rice, Farley, Swalm, & Rose, 2010; Moore, Diez Roux, Nettleton, & Jacobs, 2008; Morland, Diez Roux, & Wing, 2006; O'Malley, Gustat, Rice, & Johnson, 2013; Rose & Richards, 2004).

Generally thought of as an umbrella term, alternative food networks (AFN) were developed

to counteract the diverse social, economic, and ecological externalities of a globalized food system (Valchuis et al., 2015). Compared to foods in traditional supply chains, AFN foods aim for better nutritional quality and taste, use sustainable growing practices or animal welfare standards, and prioritize community economic well-being, farmer livelihoods, and environmental stewardship (Murdoch, Marsden, & Banks, 2000; Sage, 2003; Selfa & Qazi, 2005; Sitaker, Kolodinsky, Jilcott Pitts, & Seguin, 2014; Valchuis et al., 2015). AFN efforts to re-localize and re-orient priorities within local food systems have taken many forms, including DTC channels like farmers markets, farm stands, and CSA arrangements. DTC channels have also been used to address healthy food access in urban communities with some success (Cohen & Derryk, 2011; Freedman et al., 2016). Yet, despite rapid growth over the past few decades, DTC sales appear to be leveling off as markets have become saturated, and farmers are looking for strategies to expand to new markets (Woods, Ernst, & Tropp, 2017).

In an attempt to capture new markets and overcome the constraints of DTC markets, some farms have begun to explore sales through VBSCs (sometimes called "value chains"), an AFN distribution innovation that emphasizes relationships, fairness, and equitable distribution of power across the supply chain. VBSCs seek to broaden local product distribution beyond DTC channels, conveying embedded product attributes while retaining the connection between farmers and consumers (Conner, Izumi, Liquori, & Hamm, 2012; Porter, 1985). The VBSC concept, originally conceived in business literature and later extended to agri-food systems (Stevenson, & Pirog, 2013), is described as:

a network of business enterprises operating in wholesale markets, moving goods differentiated by . . . production practices (e.g., organic and pesticide-free), adherence to specific ethics (e.g., humane animal treatment or fair trade), origin in a particular location (e.g., local or a region known for the product), or the identity of the farm or ranch from which it came. (Lerman, 2012, pp. 4–5)

The “values” in VBSCs refer to both the quality of products sold and the values reflected in the operational decisions about the way product moves through the supply chain (Block et al., 2008; Hoshide, 2007; Stevenson & Pirog, 2013). In an ideal VBSC, farms, businesses, and institutions engage in collaborative partnerships characterized by shared values, trust, transparency, and shared governance (Bloom & Hinrichs, 2011; Conner et al., 2012; Renting, Marsden, & Banks, 2003; Stevenson & Pirog, 2013). Like other AFN models (farmers markets and CSAs), VBSCs seek to offer potential price premiums over commodity markets (Conner, Campbell-Arvai, & Hamm, 2008; Diamond & Barham, 2011; Hoshide, 2007; Jablonski, Perez-Burgos, & Gómez, 2011) and include goals that extend beyond profit maximization (Conner et al., 2012; Lerman, 2012). The difference is that they bring in the intermediaries with similar values to effectively market and distribute the product (Bloom & Hinrichs, 2011; Stevenson & Pirog, 2008).

In addition to creating new opportunities for smaller farms, VBSCs can address the geographic and cultural barriers rural consumers may face with DTC venues, as demonstrated in farm to school supply chains (Conner & Garnett, 2016; Jablonski et al., 2011; Lerman, 2012). Despite the potential benefits, however, achieving fair and affordable pricing (Abatekassa & Peterson, 2011; Cohen & Derryk, 2011; Feenstra, Allen, Hardesty, Ohmart, & Perez, 2011; Zajfen, 2008) and meeting consumer demand (Bloom & Hinrichs, 2011) can still pose challenges.

Overall, most VBSC research has examined sales to institutional markets or market intermediaries such as co-ops or food hubs. F3B is an example of a very short VBSC, one that can bring broad benefits (health, farm, and rural store viability), but whose relationships and nuances have not been well studied.

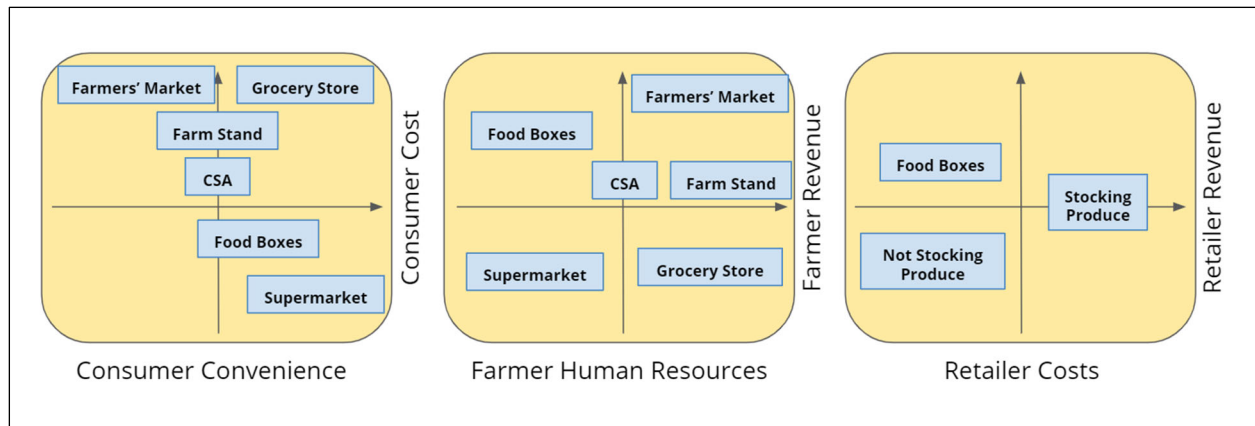
Farm Fresh Food Boxes: Addressing Challenges in the Food System

The Farm Fresh Food Box (F3B) is a market innovation that combines features of the DTC model with characteristics of VBSCs, to expand producer sales, stabilize rural retail outlets, and

improve rural food access. In F3B, farms sell CSA-style boxes of fresh food through familiar, convenient retail venues (gas stations, general stores, and convenience stores), where boxes are ordered and picked up on a week-to-week-basis. As in a CSA, the farmer is responsible for setting box size and price, determining box contents, packing, and delivering. Retailers are responsible for managing orders, collecting payments, and overseeing pick-up by customers. Farmers and retailers work together to market F3B at point of sale and in the community. For farmers, F3B offers an opportunity to earn revenue and reach a new audience for their products. Retailers benefit from being able to offer customers a selection of fresh produce, without investing in perishable stock, space, or cooling equipment; they may also see increased foot traffic and collateral sales. Customers benefit through increased access to a variety of fresh, healthy local foods, without the long-term commitment and up-front expense, in convenient locations along usual travel routes. F3B's potential social benefits include new connections between farmers and retailers and the revitalization of retail sites as community gathering places. As shown in Figure 1, F3B has the potential to fill a new market niche that compares favorably with similar models with respect to benefits to consumers, farmers, and retailers.

We developed a conceptual framework to locate F3B on the spectrum of food system market channels, from DTC to VBSCs to traditional supply chains (Figure 2). The framework uses three primary themes from the literature to characterize agricultural supply chains: relationships, communication of differentiated food values, and food environment (Bloom & Hinrichs, 2011; Conner et al., 2012; Valchuis et al., 2015). These dimensions incorporate ideas from two existing frameworks: the VBSC framework, which describes the elements and indicators of food system value chains (Bloom & Hinrichs, 2011; Conner et al., 2012) and the stacked beliefs framework, which outlines common trade-offs and barriers that affect people's willingness and ability to participate in alternative food systems (Valchuis et al., 2015).

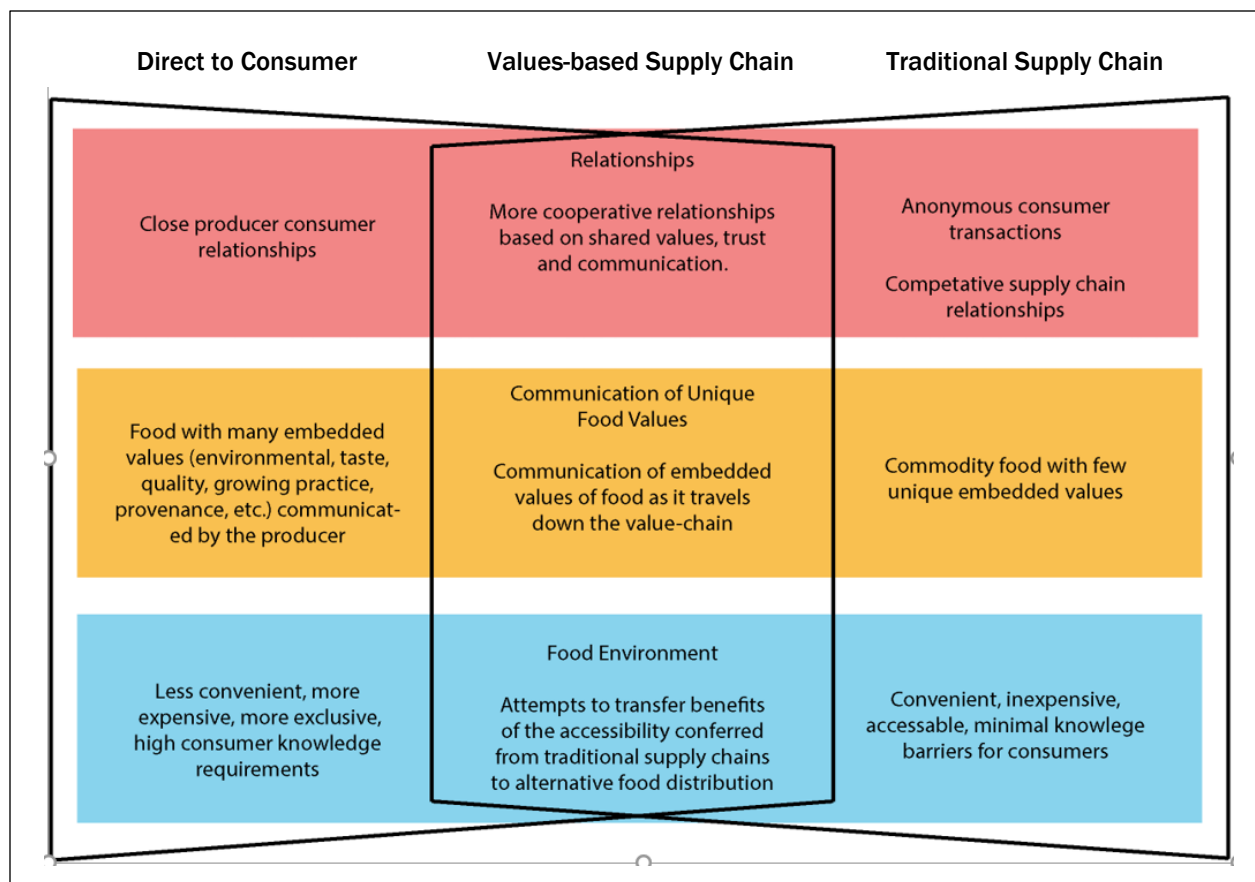
In our framework, F3B is situated between DTC and VBSCs (Figure 2). F3B has some charac-

Figure 1. Comparison of Different Alternative Food Systems Models for Consumers, Farmers, and Retailers

teristics of DTC: the farmer is responsible for growing, packing, pricing, and distributing the food, and retains ownership of the product until it is purchased by the consumer. Yet F3B decidedly has characteristics of a (very short) VBSC, in that F3B is more convenient than a CSA and requires

more communication, coordination, and shared decision-making between the farmer and retailer to organize logistics and convey embedded values.

Comparing F3B relationship characteristics to those of the three models shown in our framework, we first note that F3B inserts an additional

Figure 2. Comparison of Direct-to-Consumer, Values-Based, and Traditional Food Supply Chains

actor (the retailer) between the producer-consumer dyad of the DTC model. Introducing a CSA-style product (F3B) into the context of a short VBSC necessitates building new collaborative relationships between partners who have not worked together before. New partners must find ways to relate to one another beyond a purely transactional basis, as actors would in a traditional supply chain. In this analysis, we examine F3B partner-retailer relationships in terms of the following qualities: shared values; shared decision-making; and trust, transparency, and communication (Bloom & Hinrichs, 2011; Conner et al., 2012).

Next, we consider the communication of unique food values to the consumer. In DTC venues, the farmer interacts directly with consumers to communicate product differentiation (Conner, Dewitt, Inwood, & Archer, 2015; Lasley & Lobao, 1991; Lyson & Welsh, 2005; Schmidt, Kolodinsky, DeSisto, & Conte, 2011). While traditional supply chains market food that is uniform and interchangeable, VBSCs actively support product differentiation, as partners work closely with one another to communicate the unique identity of the food as it travels down the supply chain (Conner et al., 2012; USDA, 2015). In our analysis, we explore how retailers represented the unique attributes of foods sold through F3B to the end consumer, and the extent to which the identity of participating farms was conveyed.

The final theme we consider is the environment in which the food is sold and how this affects the viability of the VBSC in that location. It is widely understood that consumers value convenience, location, and price when buying and preparing food (Pole & Kumar, 2015; Sitaker, McGuirt, Wang, Kolodinsky, & Seguin, 2019; Tropp, 2013). Price and convenience have been cited as trade-offs in AFN participation (Valchuis et al., 2015), which F3B was designed to address by providing lower prices than farmers markets and selling through gas stations, convenience stores, and “country stores.” However, participation in AFNs is hampered by consumers’ lack of knowledge about nutrition, cooking, and local food systems (Valchuis et al., 2015). Thus, siting F3B in a market venue that mainly serves clientele with limited food knowledge might offset its price and convenience

advantages over the DTC environment.

In this analysis we are curious to understand (1) the degree to which F3B farmers and retailers developed relationships characterized by common values, good communication, and shared decision making; (2) how relationship quality affected the movement of embedded values down the VBSC; and (3) whether F3B price, convenience, and communication of embedded values were sufficient to attract shoppers in rural retail sites.

Setting and Methods

Setting

The F3B project is a tristate collaboration of extension and research partners from the University of Vermont (UVM), Washington State University (WSU), The Evergreen State College (TESC), and the University of California (U.C.). In the spring of 2017, each state’s extension partner identified at least three farmer-retailer pairs to trial a full-season F3B pilot project. Though California was unable to complete the pilot due to wildfires in the region, recruitment efforts successfully enrolled three farms and three retailers in Vermont and three farms and four retailers in Washington. Over the course of the season, one Washington farm ended its partnership with one of its two retailers due to low sales. The results presented below are from six farmer-retailer pairs, three in Vermont and three in Washington State.

Extension partners invited interested producers to participate, then reached out to recruit neighboring retailers. Prior to the start of the season, extension helped each farmer-retailer pair determine project logistics, which included setting mutually agreed-upon days for taking and delivering orders, and determining how retailers would track orders and payments and communicate this to farmers. Farms set the box sizes and price. Extension provided tailored marketing materials, which were adapted in consultation with the farmer-retailer pair to meet local requirements. Extension also provided ongoing technical support throughout the season.

The specific logistical and marketing elements varied by location, community demographics, and store culture. Overall, farms were small and

independently owned and sold through at least one DTC market channel. Some farms also raised animals for meat and sold through wholesale markets. Three of the retailers had gas stations at their stores, two were independent general stores, and one was a farm and feed store. The stock of merchandise varied from items typically found in a “convenience store” (gas station) to very few items for human consumption (farm and feed store), to a wide variety of merchandise, including food items (general store).

Methods

The extension and research teams collaboratively developed research instruments to assess project facilitators, challenges, and outcomes. The data collection instruments used in the wider project included firmographic surveys, tracking spreadsheets, and semistructured qualitative interviews. This paper uses data from the qualitative interviews.

The preseason firmographic surveys, administered online through the web application LimeSurvey, included descriptive questions about each partner’s business. F3B partners recorded quantitative, logistic, and descriptive information on tracking spreadsheets throughout the season. Guides for the semistructured interviews were developed collaboratively by the research and extension teams (Wengraf, 2001) with questions about partners’ motivations, values, and experiences with the F3B project. The qualitative interview guide was piloted with two non-participating farmers.

Six farmer and six retailer interviews were conducted between November 2017 and March 2018. All interviews were conducted over the phone, recorded, transcribed verbatim by a third-party contractor into Microsoft Word, and de-identified. Transcripts were structurally coded according to the interview guide. The research team developed a codebook made of collated themes from the VBSC framework and the stacked beliefs framework (Bloom, & Hinrichs, 2011; Conner et al., 2012; Valchuis et al., 2015). Two of the transcripts were independently coded according to this framework using the qualitative data analysis software NVivo version 11 (QSR International Pty

Ltd, 2015) by two researchers. Differences in data interpretation were discussed and resolved by the research team through consensus, with intercoder comparisons yielding a kappa coefficient of 0.85 or greater (Hanson et al., 2019). The remaining interviews were coded by one researcher according to the agreed-upon standard. Results were discussed by state (e.g., Washington [WA]), respondent number (e.g., 4), and whether the respondent was a farmer or retailer.

Results

Below, we present results regarding indicators of relationship quality, communication of embedded value, and food environment. We then compare these with extant research to assess whether F3B behaves like a DTC, a VBSC, or a traditional supply chain.

Relationships

To assess farmer-retailer relationships, we considered the three characteristics shown in Figure 2: shared values, communication, and trust and transparency.

Shared values and mutual regard

During postseason interviews, farm-retailer pairs demonstrated alignment of some values, as expected among partners in a VBSC, and divergence for other values.

Farmers articulated social values that were intertwined with their farm’s business goals. Farmers saw their core business as growing high-quality products with exceptional taste that provide nutritional benefits to customers. Yet this was combined with environmental values, as evidenced by farmers’ use of organic or sustainable production practices. Five F3B farmers included social values when they described their mission to grow high-quality food in a way that

maintain[s] the health of the land, ourselves, and our workers, and provide[s] a nutritious source of food for people in the community. (Vermont2 [VT2] Farmer)

For participating farmers, F3B was seen as a way to help community members gain better access

to healthy foods, while also expanding their customer base. Two farmers (VT1 and VT2) specifically mentioned wanting to make fresh produce more accessible for low-income community members.

For retailers, the main focus was maintaining their business. Washington retailers perceived their stores as filling a niche for local customers who wanted a go-to place for convenience items. Vermont retailers saw their stores as essential or “anchor” businesses, but also said they served as a community gathering place, or “a hub for people” (VT4A Retailer). Additionally, two Vermont retailers said part of their motivation to try F3B was to support other local businesses, as evidenced by their commitment to carrying locally made products:

We like to try to make an effort to help grow, you know, a local business, or in this case, a local farm, which is a business. (VT2B Retailer)

Further, while most retailers expressed no opinions or support for sustainable cultivation practices or land stewardship, one Washington retailer said their previous CSA membership deepened their appreciation of the embedded value of local foods, which motivates them to try F3B;

... bringing small farmers together with other people in the community is great. (WA1B Retailer)

Farmers and retailers shared the belief that F3B had the potential to benefit their business. Farmers saw F3B as a way to expand their customer base, and retailers saw F3B as a low-risk way to expand their selection of fresh produce while bringing people into the store. Both cared about the contributions their business made to the welfare of the community. Four farmer-retailer pairs expressed positive feelings about their relationship and about one another, even when they described challenges in their working relationships. The other two F3B farmer-retailer pairs faced more challenges, as described in the following sections.

Fair, stable pricing of value-differentiated products

Commitment to fair pricing reflects a willingness to distribute profit and risk equitably, a value that distinguishes VBSCs from traditional supply chains. Shared decision-making also indicates co-creation and innovation of new models and partnership styles.

Retailers and farmers seemed equally committed to ensuring the mutual benefit of the F3B venue. Retailers were willing to go the extra distance to ensure success for farmers by paying for extra advertising or purchasing extra display boxes:

... for, like our pump toppers and some of our signage, it was us [that paid for it] ... We do that a lot for a lot of things and whether it benefits us or not down the road. We like to try to make an effort to help grow, you know, a local business, or in this case, a local farm, which is a business. (VT2B Retailer)

Farmers seemed less clear on how F3B would benefit retailers, as evidenced by their lack of comment on the topic. For example, while F3B clearly expanded farmers' existing markets, allowing them to receive prices less than DTC but higher than wholesale, the benefit of ancillary sales for retailers was not guaranteed. However, one retailer felt that advertising F3B on social media

... got some people, maybe, more aware of our store. (WA1B Retailer)

and another felt that F3B

... had the potential to change the local public's perception of us as a place to buy produce. (VT4A Retailer)

In postseason interviews, farmers and retailers noted that although they believed F3B had the potential to be profitable, it had not yet done so in its first pilot as an innovation. Given the early stage in the project and low box sales, this may have created an imbalance in financial benefits for farmers and retailers, as the direct financial reward for retailers was delayed. While retailers did not report dissatisfaction with the lack of direct and

immediate benefit, the burden of risk may have been disproportionately allocated, indicating that F3B performed below the VBSC ideal.

Trust, transparency, and communication

The depth and quality of farmer-retailer partnerships varied greatly, despite the presence of common values (the support for wider food access and sale of locally produced products). Many relationships appeared underdeveloped, as indicated by reports of insufficient communication, poor relationship quality, and discrepancies in how each within a retailer-farmer pair viewed their relationship. In most cases, the partnership would have benefited from a closer working relationship and more consistent communication.

For example, despite mutual regard between partners, one farmer was disheartened by the retailer's casual attitude toward regular communication, which interfered with the farmer's workflow. The retailer characterized the relationship as positive, never realizing the extent of the farmer's frustration:

The biggest thing was that [the retailer] doesn't communicate over email, and so he [would] . . . stop by the farm to tell us that there was an order, or something like that. Like, he didn't give, he didn't call us or email. (VT1 Farmer)

Oh, very good. We've been doing business back and forth here, probably, for the last couple years or so, anyways. . . . Actually, they were very accommodating, because if I had somebody that couldn't be here for the day for the pick-up, I could run up and . . . they'd put a box together for me. (VT1A Retailer)

In another example, the farmer had an appreciation for the retailer's energy, enthusiasm, and communication skills, saying that things went smoothly,

. . . once we ironed out who emailed who, when. (VT2 Farmer)

Yet this farmer's retail partner described their relationship as "nonexistent." Both partners

reported issues that arose during the season that were never addressed, which both attributed to a failure in communication. The retailer perceived the coordination of box logistics to be weak, a critical issue that could have been resolved through ongoing collaboration between the partners.

At the site with the fewest F3B sales, both parties described a poor relationship experience. The farmer felt that store employees found F3B burdensome, and said they had minimal interactions with the owner. The farmer wished the retailer had taken time to get to know the farm at the beginning of the season,

. . . because they don't really know anything about us. (WA2 Farmer)

This farmer's impression was confirmed in the interview with the retailer, who appeared to have little sense of who the farmer was or the farmer's role in the project. When asked whether they coordinated F3B logistics with the farmer each week, the retailer said:

I think they were coming and change the sign. I'm not sure if they called in or they came. (WA2A Retailer)

Further, when asked whether they had met the farmer, they said:

Let me think. I can say I don't remember, maybe I did. (WA2A Retailer)

The site with the most F3B sales was also where the farmer-retailer pair expressed mutual, positive feelings about one another. The farmer spoke at length about the quality of their relationship with the retailer and its critical role in the success of their F3B enterprise. Congruently, the retail partner described the relationship as "real easy" and the farmer as "very accommodating." As the farmer summarized,

. . . the relationship between a grower, a retailer and the people who actually eat. . . . It can make or break it. (WA1 Farmer)

In summary, four out of six farmer-retailer pairs held mutual regard for one another, acknowledging good intent and shared values. Yet some partners never met and did not co-determine their workflow or logistics. The inability to establish good communication initially seemed to make it difficult for some farmer-retail pairs to solve problems together as they arose throughout the season. In general, many F3B partnerships were not sufficiently developed to display the team approach to adaptive management through continuous co-learning that is characteristic of VBSCs.

Communication of Embedded Food Values

Successful DTC food marketing requires communicating to consumers those product qualities that distinguish it from conventionally grown foods: superior taste, certifications, growing practices, and other attributes. Traditionally, DTC venues depend on producer-consumer relationships to convey these values. However, in value-chain models, all intermediaries along the chain are responsible for communicating embedded values. Below, we consider F3B product attributes, the way in which they were marketed, and the extent to which retailers conveyed farm identity and embedded values.

Farm attributes

Participating F3B farms were small- to mid-sized operations growing diversified vegetables, either organically certified or using organic practices. Farmers valued land stewardship and community involvement, and some said the superior taste of their food was a key selling point, believing that “once folks taste it, they become regular customers.” Additionally, farmers believed their customers wanted to support them because customers valued the freshness and quality of their product and sustainable cultivation practices used to grow it.

People are looking for what they see as a healthier product. We’re known for quality, so people appreciate that freshness and that quality. And then a big part of it is, they really wanna support local. (VT2 Farmer)

Marketing efforts

Nearly all retailers and farmers identified marketing as an area for improvement. Most used only the sandwich boards and in-store posters provided by extension, sometimes augmented by social media. Yet some failed to follow through on even these simple methods: one retailer chose not to use the outdoor sandwich board, and another declined to display the poster. A further challenge was that it was hard for customers to see what they were buying since the box, being sold by pre-order, typically had no display sample. However, some stores decided to display an empty F3B box, and one retailer purchased F3B boxes in advance to display for same-day purchase (VT4A).

One retailer supplied additional printed materials and advertisements on their gas pumps but felt that critical marketing days were sometimes lost during the presale period, due to farmer delays in communicating the box contents for the upcoming week.

I’ve been doing this for years between wine and beer, and we learned that most people don’t shop wine for main brands or anything like that; they’re shopping labels. . . . [commenting on the lack of visible vegetables during the time of sale] Execution is by far the most important part of trying to grow (sell) something. (VT2B Retailer)

Similarly, two retailers who advertised through a television segment and print article also felt their efforts were less impactful because they were not timed to coincide with the availability of the F3B (VT2B, WA2A).

Finally, one of the most successful retailers (WA1) stressed that repeated messaging was sometimes necessary for potential customers to fully grasp the F3B concept:

I think, you know, a lot of people didn’t know what it was. They didn’t really understand what it was and how it worked, and people would see the sign and . . . our board that we would have listed every week with the stuff on it, but they still didn’t really understand it . . . and then after a while people kind of asked

questions about it. . . . I think the reaction was pretty good once people started figuring out what it was. (WA1B Retailer)

Retailer representation of embedded values

In postseason interviews, four of the six farms mentioned the importance of the retailer's commitment to representing the embedded value of F3B food.

But really it always has a lot to do with store personnel. You know, the store manager, or store personnel, they've gotta be excited about it, or it's just gonna be, like, you know, a sack of potatoes in the back room for them. And I do know, by experience in selling to other stores . . . if you get one buyer who's into it, sales really spike up. (VT4 Farmer)

WA1 attributed their success to the retailer's authentic relationship with customers as well as a "mom and pop" ambiance that was conducive to buying whole foods, more so than an overstimulating convenience store.

. . . the folks who run that store, it's very much still a kind of country mom-and-pop store, which, despite a lot of people trying to create that sort of image as a marketing tool, like, as a genuine thing . . . so I think a lot of the credit would go towards them and just the people they are, and the way they're able to structure and operate their business, and the people that they have to run it for them. (WA1 Farmer)

However, F3B farmer-retailer pairs displayed great weakness in conveying embedded values to the customer, a key characteristic of VBSCs. This ties back to retailers' lack of familiarity with farm identity and product values to poor communication between partners. Retailers also appeared to lack a full understanding of their role in marketing F3B to customers, all of which resulted in a dilution of the embedded value as it moved down the VBSC.

I think the challenge was that a relationship between our retailer and us wasn't really established, wasn't really strong. And so that proba-

bly affects, I think, the ability for them to both, say, want to market it and know how, because maybe they needed a better story about who we are and who our farm is. (WA2 Farmer)

Another farmer similarly felt the retailer did not understand her farm's story and sensed that the retailer considered the project to be burdensome. This retailer seemed to view F3B as just another interchangeable product, as in a traditional supply chain.

Like I said before, you need to have more products in there for the price. Check what prices are around, like all the supermarkets now, they carry organic food and they are way cheaper. (WA2A Retailer)

Food Environment

Lastly, we considered how F3B performed in the surrounding food environment in terms of price, convenience, and consumer knowledge of how to use seasonal, whole foods.

Price

Many F3B farmers believed that the high price of their food was a real or perceived barrier for some consumers. For example, farm VT2 noted that many of their products were more expensive than similar items of lower quality sold at supermarkets, and farm VT4 partially subsidized their box to make it more affordable. WA3 voiced the sentiment of the remaining F3B farms by saying that they had priced food to be as affordable as possible, without entirely sacrificing profitability. As F3B farmers were the partner in control of pricing, they were also the partner who bore more risk when reducing their profit margins.

The tension between price and farmer profitability may have been amplified by selling F3B outside of traditional DTC venues, where higher prices are expected and accepted. F3B were frequently sold in convenience stores where pricing on most items was reportedly above supermarket prices but still less than DTC pricing (Figure 1).

This is an area where farmer and retailer values seemed to diverge. Farmers wanted their product to be accessible to a wide variety of consumers but

needed to balance that with a reasonable return on food that entailed higher costs of production. For retailers, affordability was stated as a valued attribute:

We're trying to be a place where . . . people recognize our prices are reasonable. (VT4A Retailer)

Yet the fact that most convenience stores charge higher prices compared to supermarkets suggests that retailers also cared about balancing affordability with a profit margin.

Farmers were also disappointed that F3B was incompatible with SNAP (food stamp) rules because it was a prepaid box sold in retail locations. Farmers noted that allowing farmers markets and CSAs to accept food stamps has enhanced affordability for their consumers and made it easier for farmers to attract low-income customers.

Convenience

We had hypothesized that selling F3B through small rural retail outlets would increase their convenience and accessibility over DTC market channels. Several F3B retailers noted that their customers choose their store for its convenience, and one described their store as “the only option in town.” Five out of six F3B sites had a supermarket within 5 miles (8 km) of the store, but for half of the F3B retailers, the distance to the closest farmers market was 17 miles (27 km) or more (Sitaker et al., 2019). Thus, while most F3B sites were no more convenient than traditional supply-chain competitors, half the retailers were more convenient than DTC. However, any advantages in convenience may have been offset by requiring two trips to the store for F3B pre-order and pick-up, which may have deterred customers.

The one thing that made it difficult is that, you know, I would have some people that would come in and ask about it and they wanted something for me to have available for them right then, not just once a week where they pre-order or anything like that. (WA3A Retailer)

Consumer knowledge

Some farmers and retailers said that a lack of cooking knowledge was a barrier to purchasing F3B. For example, two retailers (VT2B, WA3A) observed that their customers seemed challenged by preparing F3B produce, particularly if it was unfamiliar.

The only thing that I and, like I said, I addressed it with the farmer, is that some of the more unique products, because, you know, some of the just different things, just to throw in ideas, or how to cook or, you know, anything like that because I know some folks were like, “I didn't eat that because I didn't know what to do with it.” (WA3A Retailer)

One farm (VT1) noted that lack of cooking skills and food knowledge were also barriers for their CSA and farmers market customers and described the significant efforts they made to educate their customers in these areas. Yet aside from including recipes in the F3B, there were no formal mechanisms to address this barrier.

Discussion

We posited that F3B moves the distribution and sales of locally grown produce toward a VBSC model while retaining some characteristics of the DTC model. Specifically, we examined the relationship between farmers and retailers, a link not extensively examined in the VBSC literature. Using data from the post-pilot-season interviews with farmers and retailers, we examined indicators of relationship quality, communication of embedded value, and food environment impacts for F3B, and compared these with extant research on DTC and VBSC models. Our findings suggest that F3B did share characteristics with both market strategies and was subject to the myriad challenges and possibilities relative to food distribution and access in each (Bauman, Shideler, Thilmany, Taylor, & Angelo, 2014).

Extant research identifies defining characteristics of VBSCs that are critical to their success, including mutual regard between partners; fair and stable pricing; value differentiation of products; and co-learning, trust, and communication (Bloom,

& Hinrichs, 2011; Conner, Colasanti, Ross, & Smalley, 2010; Conner et al., 2012; Valchuis et al., 2015). Given their shared values and motivations, F3B farmer-retailer relationships resembled those in VBSCs (Conner et al., 2010; Izumi, Wright, & Hamm., 2010; Sage, 2003) more than traditional supply chain relationships. Yet after the pilot year of F3B implementation, some characteristics that F3B needed to perform effectively as a VBSC remained underdeveloped.

For example, F3B partnerships were often marked by a lack of consistent, timely, and effective communication, lack of mutual understanding of one another's business models, and inability to co-adapt in response to challenges throughout the season. Some failed to establish good communication habits early on, as evidenced by lack of collaboration to co-determine project logistics, discuss communication needs and constraints (such as their preference for phone or e-mail, time availability, etc.), or describe the inner workings and values of their businesses to one another. This hampered their ability to develop the shared decision-making practices that characterize VBSCs. The challenges that partners described in postseason interviews were manageable for the most part, but an inability to discuss potential solutions made them hard to overcome.

For most DTC outlets, the relationship established between farmers and customers provided the context for communicating embedded food attributes. Often, these foods were sold for a higher price that reflected additional care for food quality, land, and labor (Conner et al., 2015; Lobao, 1990; Lyson & Welsh, 2005; Schmidt et al., 2011). When shifting from a DTC to an intermediated value-chain model, all actors in the VBSC must become responsible for conveying these less-visible attributes. In F3B, a lack of familiarity with the farm's attributes, confusion about the retailer's role, and generally weak communication contributed to a loss of product differentiation as the food moved down the VBSC.

Failure to effectively communicate embedded values may have undermined F3B marketing efforts in some sites. Valchuis et al. (2015) found that "to elicit participation in the alternative food system, these [consumer] beliefs must outweigh the

barriers" (p. 226) of price, convenience, lack of knowledge, and cultural incongruity. Without insight into the unique attributes of F3B's food that differentiated it from conventional produce, consumers may have lacked the necessary motivation to try F3B if they perceived it as too expensive, inconvenient, elitist, or difficult to cook.

As documented by Valchuis et al. (2015), the F3B pilot showed that cultural setting, level of convenience, and availability of cooking knowledge were relevant factors. Adapting the ordering and pick-up logistics might have created more convenience for consumers while retaining characteristics that make the model favorable for the value-chain partners. Because F3B required two visits to the store for ordering and pick-up, it is possible that the food box was not especially convenient for consumers. Thus, some project sites experimented with stocking additional boxes to offer on-the-spot sales; perhaps more experimentation in this vein could help some consumers overcome these barriers.

Finally, providing information about how to prepare box contents may have enhanced access and retention for F3B. Of the many barriers to F3B, information about how to cook the food might have been the simplest to address. Many F3B farms included customer education in their DTC venues, so it is clear that farmers are aware of this need at the outset. Had the retailers and farmers discussed this challenge, perhaps they might have been able to respond during the season. However, once again, the lack of a foundational relationship seems to have impeded resolution of even this simple issue.

Our findings echo those found in other VBSC research, even though the F3B model is a very short value chain. Foundational to many of these issues is the importance and challenge of building real relationships between actors across the value chain. These challenges can be amplified by differences in work cultures found in alternative and traditional supply chain settings (Clancy & Ruhf, 2010; Lerman, 2012; Zajfen, 2008). Lack of knowledge about how to work within a VBSC partnership has also been found to limit their efficacy and has prompted the involvement of outside actors, like nonprofits and universities, who aim to help

with the formation and functioning of these arrangements (Lerman, 2012).

Implications and Future Research Needs

A few implications emerge from this work. First, relationship-building starts by getting to know one another's businesses, including farm visits, with explicit discussion of values and ground rules for communication agreed upon by both partners before the season starts. During the busy growing season, regular communication is critical even though it is more challenging. Weekly check-ins and preferred communication modes (phone, email, etc.) should be established in the preseason planning meetings.

Second, greater promotion of local products is needed in each store. Emphasis should be placed on the embedded values that justify higher prices, particularly for consumers who are unfamiliar with buying local food through DTC venues. Given the lack of resources farmers and retailers have to devote to promotion, they may wish to ask for technical assistance from extension, academic internships, and nonprofit organizations. The F3B team has developed a toolkit to address marketing and other aspects of model implementation and

now offers an online webinar and three-part short course for interested farmers, retailers, nonprofits, extension, and others wishing to initiate a food box project in their community.¹

Third, the lack of convenience could be addressed by setting up online or phone ordering, holding inventory for on-the-spot purchases, and other mechanisms.

The extent to which the F3B model was able to overcome the inherent challenges of a limited food access environment remained somewhat unclear after the pilot year, requiring more consumer research and model development. Simply stocking fresh produce in new locations, without deep attention to the array of access barriers, is insufficient. As noted by Bloom and Hinrichs (2010), identifying and achieving a price that is affordable to consumers (in reality and perception) and yet also profitable for farmers and retailers is difficult. The pilot for F3B clearly showed that a one-size-fits-all approach would not work for this innovation. More experimentation and research are needed to identify best practices related to relationships, communications, and other aspects, as well as an assessment of transferability to a variety of contexts.

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¹ <https://www.uvm.edu/crs/f3b/webinar-and-short-course-workshops>

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