A CONCEPTUAL MODEL OF FOOD HUB PERFORMANCE

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ABSTRACT

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A food hub is an emerging organizational form in the U.S. agri-food sector. While the food hub literature continues to advance, most of the studies have traditionally been descriptive in nature or highlighted best practices. Little is known about the dynamics of food hubs, including their network structure and how they create and capture value for their participants. This paper develops a conceptual model of food hub performance (i.e. business profitability and sustainability). We propose that a food hub is a collective entrepreneurial venture that carries out its activities through a network of small- and medium-sized farms and food entities. The implicit hypothesis of the model is that entrepreneurship carried out by networks of allied partners will create a strategy to enhance profitability of these small- and medium-sized businesses that participate and support rural communities that support the network. Rather than choosing an individual, farm-level strategy that may require significant investment in further processing or other value-added activities, collective entrepreneurial networks create opportunities through: (1) The development of shared identity and access to markets/resources (i.e. organizational legitimacy), (2) low-cost mimicry of large scale/scope (i.e. efficiency), (3) innovation such as the development of brands and brand-like organizational resources, and (4) risk mitigation. The conceptual model explicitly identifies variables – both relational (i.e. network specific) and attribute (i.e. organization specific) – and develops research propositions that may be used for further analysis of the performance of food hubs. It primarily focuses on the farm-to-business/institutional category of food hubs.
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I. INTRODUCTION

Over the last two decades, the demand for locally produced food has grown steadily among consumers in the United States (Matson et al., 2013). Most often consumers associate locally produced food with freshness, health attributes, as well as various social, environmental, and economic benefits such as environmentally friendly production practices, and support for local communities and economies (Darby et al., 2008; Day-Farnsworth et al., 2009; Pirog and Bregendahl, 2012; Barham et al., 2012). Furthermore, many consumers are willing to pay premiums for products branded as “local” (Day-Farnsworth et al., 2009). In addition to multiplying direct-to-consumer marketing channels (e.g. farmers markets and Community Supported Agriculture), the growing demand for locally produced food also created incentives for food retailers, institutions (e.g. schools and hospitals), and foodservice companies to seek efficient and feasible ways to integrate locally produced food into their operations as a differentiation strategy to meet consumer demands (Cantrell and Heuer, 2014).

The participation of small- and medium-sized farm and food entities is essential to meeting the demand for local foods. However, these organizations face significant barriers limiting their ability to consistently deliver the quantity and product quality standards required by food retailers, institutions (e.g. schools and hospitals) and foodservice companies. These barriers include: lack of economies of scale and scope, costly food safety requirements (ZumBrunnen et al., 2015), and limited access or lack of infrastructure (Merrigan, 2012; Pirog and Bregendahl, 2012). These barriers limit the ability of small- and medium-sized farm and food entities to respond to the growing demand for locally produced food and to participate successfully (Lakes, 2012).
The abovementioned trends and challenges led to the emergence of new type of organization in the U.S. agri-food system – food hubs. The most widely accepted definition of a food hub is provided by National Food Hub Collaboration according to which “a regional food hub is 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” (Barham et. al, 2012, p. 4). The main business practices of food hubs include: “(1) Recruiting producers and developing producer networks, (2) identifying, branding, and marketing differentiated farm products, (3) managing infrastructure to transform, pack, and transport farm products, and (4) negotiating with buyers to secure a fair return for the producers” (Diamond and Barham, 2012, p. 1).

According to Matson et al. (2013), food hubs carry out various functions including facilitating market access to local foods, information flow and sharing among various stakeholders, risk reduction, transportation and distribution activities, brokerage services, increasing market share by bundling and extending the product offering season, maintaining stronger consumer-producer connections as well as providing technical assistance to producers. On the other hand, food hubs also face some constraints which include access to capital, liability (including tort risk and contract risk), local food handling and processing capacity as well as human resources capacity (e.g. hiring and retaining people who are trained in record keeping, financial management and accounting). Pirog and Bregendahl (2012) state that the unique characteristics of food hubs are that they are committed to small- and medium-sized farmers, utilize different product differentiation strategies, and focus on positive local economic, social, and environmental impacts. Food hubs also help overcome local hunger and address issues related to fresh produce access in some regions (i.e. food deserts) (Lakes, 2012). As Barham et al. (2012) state, the three
main roles of regional food hubs include: (1) Increasing market access to local and regional producers; (2) complementing and adding considerable value to the current food distribution system; and (3) having economic (e.g. job creation and increase in production), social (e.g. increased access to healthy food and support to rural workforce development), and environmental (e.g. using sustainable production practices and reducing energy use) impacts within local communities.

Schmit et al. (2013) examined the economic impact of regional food hubs by estimating the multiplier effects of a change in final demand for food hub products. The results show that “for every additional dollar of final demand for food hub products (and no opportunity cost), an additional $0.82 is generated in related industrial sectors” (Schmit et al., 2013, p. 3). On the other hand, there was a decrease in the demand for other wholesale products ($0.11) due to the $1 increase in final demand of food hub products.

According to Cantrell and Heuer (2014), food hubs have potential to be long-term partners with retail, institutional, and foodservice buyers since they offer supply-chain solutions such as addressing issues of packaging and quality control, food safety, seasonality, consistency, and transportation. The authors state that food hubs have shown to be one of the critical intermediaries promoting the growth of small- and medium-sized farm and food entities’ supply potentials which, in turn, strengthens local and regional food systems. Food hubs create multiple benefits for local producers (e.g. an economic opportunity to expand their production and utilize the products successfully), consumers (e.g. gaining access to local and regional foods), and the local economy (e.g. job creation and more of the retail food dollars circulating in the local economy). Therefore, food hubs are defined as follows: (1) Narrowly in terms of market
efficiency functions, and (2) more expansive definitions that incorporate food hubs into wider visions of building sustainable food systems and communities (Barham et. al, 2012).

Food hubs are classified by two main principles – by the primary market they serve and by their legal business structure (Barham et al., 2012). One of the classifications of food hubs is based on their function in terms of the primary market they serve. These markets are farm-to-business/institutional models (i.e. sales to wholesale buyers such as food cooperatives, grocery stores, institutional, and foodservice companies), farm-to-consumer models (i.e. sells directly to final consumers), and hybrid models (i.e. sells both to wholesale buyers and directly to final consumers). The findings of the 2011 National Food Hub Collaboration’s online survey indicate that out of 168 regional food hubs 42% were identifies as the farm-to-business/institution (F2B) model, 36% as the farm-to-consumer (F2C) model, and 22% as the hybrid model (Barham et al., 2012).

Food hubs are also classified based on their legal business structures which includes nonprofit organizations, privately held food hubs (e.g. limited liability corporations), cooperatives, and publicly held food hubs (e.g. city-owned public markets or farmers markets that carry out food hub activities) (Barham et al., 2012). The findings of the 2013 National Food Hub Collaboration’s survey indicate that of 107 food hubs 47% were identified as for-profit organizations, 34% as nonprofits, 13% as cooperatives, 4% as publicly owned and 2% did not fall into any of these categories (Fischer et al., 2013).

While there has been considerable growth in literature on food hubs, most of the studies are traditionally descriptive in nature (Schmit et al., 2013) or highlight best practices (e.g. Cantrell and Heuer, 2014). Little is known about the dynamics of food hubs, including their network
structures, and how they create and capture value for their participants. If food hubs are to be sustainable, leading to increased profitability and competitiveness of small- and medium-sized farm and food entities, it is essential to identify and analyze major factors affecting their performance (i.e. business profitability and sustainability).

This research paper aims to develop a conceptual model of food hub performance. The conceptual model is developed based on extensive literature review on economics, entrepreneurship, food marketing, social networks and food hubs.

We propose that a food hub is a collective entrepreneurial venture that carries out its activities through a network of small- and medium-sized farm and food entities. The implicit hypothesis of the model is that entrepreneurship that is carried out by networks of allied partners will create a strategy to enhance profitability of small- and medium-sized businesses that participate in it and support rural communities that support the network. Rather than choosing an individual farm-level strategy that may require significant investments in further processing or other value-added activities, collective entrepreneurial networks create opportunities through: (1) The development of shared identity and access to market/resources (i.e. organizational legitimacy), (2) low-cost mimicry of large scale/scope (i.e. efficiency), (3) innovation such as the development of brands and brand-like organizational resources, and (4) risk mitigation (Figure 5). The conceptual model is depicted in Figure 5. It explicitly identifies variables – both relational (i.e. network specific) and attribute (i.e. organization specific) – and develops testable hypothesis on food hub performance. It primarily focuses on farm-to-business/institutional category of food hubs. The research hypotheses proposed by the conceptual model will serve as framework for conducting future empirical analysis (both qualitative and quantitative) of food hub performance.
II. A CONCEPTUAL MODEL OF FOOD HUB PERFORMANCE

The proposed conceptual model of food hub performance is developed based on extensive literature review on economics, entrepreneurship, food marketing, social networks, and food hubs. This approach is employed taking into consideration the emerging stage of food hubs as new type of organizations in the agri-food sector. According to our conceptual model (Figure 5), food hub performance is mainly driven by the following four mechanisms: (1) Organizational legitimacy, (2) efficiency), (3) innovation, and (4) risk mitigation. These mechanisms, in turn, are affected by food hub specific relational (i.e. network specific) and attribute (i.e. organization specific) variables.

1. Organizational Legitimacy and Performance

In the organizational studies literature it is well established that organizational legitimacy is positively associated with organizational success such as access to strategic resources and superior performance (Deephouse and Suchman, 2008; Diez-Martin et al., 2013). Zimmerman and Zeitz (2002) argue that organizational legitimacy is critical for obtaining key resources for newly established ventures and facilitating their growth. The authors also argue that, through strategic actions, legitimacy can be enhanced.

Previous research offers a number of varying definitions of legitimacy. For instance, Suchman (1995, p. 574) defines legitimacy as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions.” According to Foreman et al. (2012, 184), legitimacy is “a
judgment of the appropriateness of the organization as an example of a social type, form, category, or role. It constitutes an external stakeholder evaluation of the organization based on certain identity-related expectations.” Ruef and Scott (1998, p. 880) argue that legitimacy of an organization is determined by “those observers of the organization who assess its conformity to a specific standard or model.”

The most widely known legitimacy types are the ones proposed by Suchman (1995) including pragmatic, moral, and cognitive legitimacy, and Scott (1995) including regulative, normative, and cognitive legitimacy (Foreman et al., 2012). Ueberbacher (2014) argues that pragmatic legitimacy has been relatively under-researched so far. In this study, we refer to the four types of legitimacy: regulative, pragmatic, moral/normative, and cognitive.

Regulative legitimacy “is derived from regulations, rules, standards, and expectations created by governments, credentialing associations, professional bodies, and even powerful organizations (such as those manufacturing companies requiring their suppliers to have some sort of “quality” certification)” (Zimmerman and Zeitz, 2002, p. 418). When the organization addresses these expectations, it signals legitimacy to its wider range of stakeholders.

Pragmatic legitimacy “rests on the self-interested calculations of an organization’s most immediate audiences” (Suchman, 1995, p. 578). It is established from the “organization’s surroundings when the stakeholder support originates in the perception that the organization is being receptive and helps them further their own interests, not necessarily because the organization achieves its goals” (Diez-Martin et al., 2013, p. 1956). That is, stakeholders are asking the question of “does this benefit me?” (Foreman et al., 2012, p.184).
Moral/normative legitimacy “reflects a positive normative evaluation of the organization and its activities. Unlike pragmatic legitimacy, moral legitimacy rests not on judgments about whether a given activity benefits the evaluator, but rather on judgments about whether the activity is the “right thing to do”, i.e. whether the activity effectively promotes societal welfare, as defined by the audience’s socially constructed value system” (Suchman, 1995, p. 579).

Finally, cognitive legitimacy is reflected when the organization “exhibits desirability and acceptance by developing methods, concepts, and ideas that are commonly accepted and considered useful and desirable by professionals and experts in its surrounding environment” (Diez-Martin et al., 2013, p. 957). While deciding whether or not to support the organization, audiences ask the question of “is this how it usually is?” (Foreman et al., 2012, p. 184).

According to Suchman (1995, p. 592), “need for collective action becomes even more apparent in gaining cognitive legitimacy. In the cognitive realm, such collective action usually takes the form of either popularization (promoting comprehensibility by explicating new cultural formulations) or standardization.”

By distinguishing new venture legitimacy from a new venture legitimation process, Ueberbacher (2014, p. 8) highlights research streams that have focused on “new venture characteristics that yield legitimacy” and “strategic practices of new ventures to acquire legitimacy.” Delmar and Shane (2004) argue that the creation of legitimacy through strategic actions is critical for enhancing survival of new ventures as well as facilitating other activities organized by a firm.

Suchman (1995) proposed a selection of strategies for gaining legitimacy known as the conformance-selection-manipulation framework. A few years later, Zimmerman and Zeitz (2002) revised the framework to include creation as another mechanism for gaining legitimacy.
(i.e. the conformance-selection-manipulation-creation framework). Since food hubs are emerging type of organization gaining legitimacy is the primary focus for them. We employ the conformance-selection-manipulation-creation framework to develop hypotheses on strategies aimed at gaining legitimacy for food hubs which, in turn, affect organizational performance. These strategies are known as food hub legitimation strategies.

Each of the strategies specified in the conformance-selection-manipulation-creation framework can be employed (simultaneously or sequentially) to gain different types of legitimacy.

Conformance strategies aim at positioning the organization within a “preexisting institutional regime” (Suchman, 1995, p. 587). For instance, conformance strategy can be employed to gain pragmatic legitimacy (e.g. by responding to the needs of stakeholders, co-opting constituents, building reputation), moral legitimacy (e.g. by producing proper outcomes, being embedded in institutions, offering symbolic displays), cognitive legitimacy (e.g. by mimicking the standards, formalizing and/or professionalizing operations), and regulative legitimacy (e.g. by confirming to the laws, obtaining professional certification) (Suchman, 1995; Zimmerman and Zeitz, 2002).

Selection strategies aim at locating the organization in an environment that “will grant the organization legitimacy ‘as is’ without demanding many changes in return” (Suchman, 1995, p. 589). For instance, selection strategy can be employed to gain pragmatic legitimacy (e.g. by locating an organization in friendly audiences or recruiting friendly co-optees), moral legitimacy (e.g. by selecting the domain of an organization or defining goals), and cognitive legitimacy (e.g. by seeking certification) (Suchman, 1995; Zimmerman and Zeitz, 2002).

Manipulation strategies aim at intervening in a cultural environment in order to “develop bases specifically tailored to the distinctive needs of the organization” (Suchman, 1995, p. 591). For
instance, manipulation strategy can be employed to gain pragmatic legitimacy (e.g. by advertising products and image of an organization), moral legitimacy (e.g. by undertaking persuasive actions), and cognitive legitimacy (e.g. by popularizing or standardizing new models) (Suchman, 1995; Zimmerman and Zeitz, 2002).

Finally, creation strategies aim at creating specific social context such as rules, norms, models, values, and beliefs in an environment where an organization operates. For instance, creation strategy can be employed to gain moral legitimacy (e.g. by developing norms and values), and cognitive legitimacy (e.g. by creating new operating practices, models) and regulative legitimacy (e.g. by creating regulations, rules that would benefit the organization) (Zimmerman and Zeitz, 2002).

Diez-Martin et al. (2013) argue that not all types (or dimensions) of legitimacy have the same effect on organizational success, i.e. depending on a particular organization’s activity sector, the abovementioned legitimacy types have different impact on an organization. Diez-Martin et al. (2013, p. 1954) further suggest that “managers should analyze legitimacy, in their own activity sector, to identify the most useful types of legitimacy.”

Previous research has shown that different types of legitimacy affect an organization’s performance (e.g. performance measured by stakeholder support, stock market unsystematic risk, acquisition of investment capital, etc.) positively in various ways. Choi and Shepherd (2005) examined the role of legitimacy in generating stakeholder support (i.e. the likelihood of committing to a long-term relationship with an organization) in information technology (IT) organizations. They found out that one of the key factors determining an organization’s stakeholder support was originated through cognitive legitimacy. In particular, the more
cognitively legitimate primary stakeholders (e.g. customers, suppliers, investors) perceived an organization to be, the greater the likelihood that they would support the organization. Bansal and Clelland (2004) examined the role of legitimacy in stock market risk in 100 firms in 5 year period. They found that firms possessing higher environmental legitimacy in the context of natural environment experienced lower unsystematic risk (i.e. “the variability in a firm’s stock price associated with events that primarily affect only that firm”) in the stock market (Bansal and Clelland, 2004, p. 93). Deeds et al. (2004) assessed the impact of legitimacy on the acquisition of investment capital in 106 initial public offering (IPO) biotechnology ventures over 13 year period. The results show that the higher the cognitive legitimacy of IPO biotechnology ventures, the greater the flow of financial resources (i.e. investment capital) into that venture. For IPO firms, one of the key measures of performance is the acquisition of investment capital from its potential investors.

As an organization whose primary function is to aggregate, distribute, and market food products, a food hub seeks to establish a strong buyer base. Therefore, in this paper, we view a food hub’s ability to get access to wholesale markets as an indicator of organizational legitimacy which can be expressed in the number and diversity of partnerships with wholesale/institutional buyers.

According to our conceptual model, organizational legitimacy is one of the major drivers of food hub performance.

**H1:** Food hubs that have higher organizational legitimacy have greater performance.

In organizational studies literature, it is well established that legitimacy can be gained, maintained, and repaired (Suchman, 1995). In this study, we identify specific strategies that food hubs may employ to gain legitimacy (Figure 1).
**Figure 1: Organizational Legitimacy and Performance**

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<tr>
<th>Variables</th>
<th>Value Creation</th>
<th>Performance</th>
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<td>Seasonality of product offerings (V2)</td>
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<td>Infrastructure capacity (V3)</td>
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<td>Ties to government support institutions/org. supporting ‘local’ (V5)</td>
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<td>Collective identity of food hub (V6)</td>
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**Management team (V1)**

Human resources such as founders and managers of a food hub, particularly in key functional areas, are an important factor for gaining legitimacy. As Suchman (1995, p. 585) states, “managerial initiatives can make a substantial difference in the extent to which organizational activities are perceived as desirable, proper, and appropriate within any given cultural context.” This particularly refers to legitimacy management activities which are substantially based on strategic communication with an organization’s various stakeholders aimed at “gaining, maintaining, and repairing” legitimacy. Zimmerman and Zeitz (2002, p. 424) proposed that

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1 “V” stands for “variable”
“hiring top managers with desirable experience and education credentials” establishes cognitive legitimacy among the stakeholders of an organization.

Some studies have focused on the role of an organization’s top managers, founders or board of directors’ social capital for its legitimacy. Certo (2003) found that initial public offering (IPO) firms that had boards of directors perceived as prestigious by investors were also perceived as more legitimate organizations. In turn, this reduced an IPO’s liability of market newness and improved its stock performance. Cohen and Dean (2005) found that in situations when investors tend to avoid opportunistic behavior of an IPO firm’s ex-ante owners, an IPO firm’s top managers’ legitimacy has critical positive impact on investors’ decisions to invest.

Like IPO firms, food hubs also suffer from liability of market newness while trying to establish their wholesale/institutional buyer base. Therefore, we expect that founders and managers of a food hub will affect wholesale/institutional buyers’ decisions to partner with a food hub.

One typical constraint faced by food hubs is a lack of skilled management. This is because hiring and retaining individuals skilled in areas such as “record-keeping, accounting, and financial management” is a challenge for food hubs (Matson et al., 2013, p. 37). This issue is particularly prevalent in producer-owned organizations where “key managers may have extensive knowledge on production agriculture but be less knowledgeable on business management” (Matson et al., 2013, p. 37). Some food hubs prefer hiring professional managers, instead of relying on volunteers or interns, which they think is more cost effective. Some of the responsibilities of key managers include “pre-season planning, and pricing and distribution, which allows producers to concentrate on production” (Matson et al., 2013, p. 38).
Findings of the 2013 National Food Hub Survey show that one of the ongoing challenges for food hubs is in the areas of managing growth as well as keeping a balance between supply and demand. The results state that this challenge can be mitigated through “increased technical assistance with management and logistics” (Fischer et al., 2015, p. 5).

According to the conformance-selection-manipulation-creation framework, conformance strategy is implemented in various ways depending on the type of legitimacy the organization seeks to gain (Suchman, 1995). Food hubs may implement a conformance strategy to gain cognitive legitimacy by hiring managers who have managerial experience and education.

**H1a:** Food hubs hiring managers in key functional areas who have managerial backgrounds and experiences have higher legitimacy.

**Seasonality of product offerings (i.e. number of months products are available) (V2)**

Food hubs may also implement conformance strategy to gain pragmatic legitimacy. In particular, they may show willingness to be responsive to various needs and interests of their buyers (i.e. conform) (Suchman, 1995) such as making efforts to extend seasonality of their offerings (Matson et al., 2013), as well as customizing product offerings (e.g. special package type and size for schools, and asking producers to grow special varieties of produce for restaurants).

Diamond and Barham (2012) found that for food hubs a vital part of building and sustaining relations with their buyers is to offer products with year-round availability. By extending the availability of product offerings, food hubs conform to their customers’ needs of having consistent supply of products. One of the factors that can hinder supply consistency is seasonality of production. However, food hubs can use different mechanisms to overcome the seasonality issue. Among the main mechanisms to extend seasonality of products are:
availability of greenhouse production, variety of product lines, acres of production, number of producers, variety of offered local food, and buying from “outsiders” (Matson et al., 2013).

**H1b:** The greater the number of months products are available in a food hub, the higher is its legitimacy.

**Infrastructure (V3)**

Conformance strategy can also be implemented to gain cognitive legitimacy. One of the common strategies is to “professionalize operations” of a new venture (Suchman, 1995, p. 600). Adapting professional infrastructure practices (e.g. refrigerated trucks, warehouse) to aggregate and deliver food products is among the key functional areas of food hubs (Barham et al., 2012). Establishing a reliable infrastructure serves as a basis for assuring timely delivery and safety of food products. This is an important factor that potentially affects the willingness of buyers to partner with a food hub.

**H1c:** Food hubs adapting professional infrastructure practices have higher legitimacy.

**Certification and/or source-identifying labels of food products (V4)**

Conformance strategy can also be implemented to gain regulative legitimacy. As Zimmerman and Zeitz (2002, p. 424) argue, regulative legitimacy is gained by “adhering to government rules and regulations.” Among the well-known strategies to gain regulative legitimacy is acquiring certification (Shane and Foo, 1999). Since the main functions of food hubs include aggregation, distribution, and marketing of source-identified food products examples of strategies to gain regulative legitimacy may include negotiating with producers to have production certification for products supplied to food hubs (Barham et al., 2012; Matson et al., 2013) or creating source-
identifying labels. For instance, *GROWN Locally* is a food hub that plans to initiate a “post-harvest handling program” (which may involve third-party certification) for some of its members who are small-scale operations and have financial difficulties adapting to food safety certification processes (Matson et al., 2013, p. 30). The U.P. Food Exchange, which is another food hub, implemented a pilot study to achieve Group GAP (i.e. Good Agricultural Practices) certification for small-scale farms as an alternative to individual certification. This initiative aims at offering a cost-effective certification alternative for small-scale farms that intend to produce food products for commercial purposes (ZumBrunnen et al., 2015). These strategies to source food products with explicit certification and labels will signal legitimacy to a food hub’s wide range of stakeholders, including its buyers.

**H1d:** Food hubs that source products from producers having certification of production practices have higher legitimacy.

**H1e:** Food hubs offering products with source-identifying labels have higher legitimacy.

**Ties to government support institutions and organizations supporting local food initiatives (V5)**

Conformance strategy can also be implemented to gain normative legitimacy. One of the common strategies to gain normative legitimacy is to be embedded in institutions (i.e. making efforts to “embed new structures and practices” of a new venture “in networks of already legitimate institutions” (Suchman, 1995, p. 558) – networks consisting of “ties between new venture personnel and individuals, organizations, and associations outside the firm” (Zimmerman and Zeitz, 2002, p. 419). The role of symbolic actions and impression management becomes very
relevant in implementing this strategy (Zott and Huy, 2007). Research has shown that new ventures also gain normative legitimacy by being associated with organizations already possessing high legitimacy (i.e. “external legitimacy of ties themselves”) (Baum and Oliver, 1991, p. 187).

Government support institutions and organizations involved in the local foods movement are among key stakeholders of food hubs. Being affiliated with these organizations may help food hubs mitigate their liability of market newness.

**H1f**: Food hubs that have ties to government support institutions and organizations supporting local food initiatives have higher legitimacy.

**Collective identity of food hub (V6)**

A number of studies have shown that organizations gain cognitive legitimacy when their managers create a strong collective identity for their ventures (Lounsbury and Glynn, 2001; Weber et al., 2008). By doing this they mitigate ambiguity among their stakeholders. Lounsbury and Glynn (2001, p. 545) argue that “entrepreneurial stories facilitate the crafting of a new venture identity that serves as a touchstone upon which legitimacy may be conferred by investors, competitors, and consumers, opening access to new capital and market opportunities.” Weber et al. (2008, pp. 546-547) argue that creation of “collective producer identities” is critical for establishing a legitimate organization “in previously nonexistent market segments” as well as for “institutionalization of the market category.”

**H1g**: Food hubs that have a strong collective identity have higher legitimacy.
Size of the producer group (V7)

A number of studies have emphasized the role of the size of an organization on its cognitive legitimacy. In particular, larger organizations are perceived to have greater cognitive legitimacy (Caroll and Delacroix, 1982; Aldrich and Auster, 1986; Shane and Foo, 1999). The size of an organization is operationalized in various ways such as number of units in the franchise firm’s value chain. Firms with greater size are perceived by stakeholders as being able to raise capital much easier and being more sustainable in the long-run (Shane and Foo, 1999). In this study, we operationalize the size of a food hub by its number of producers in its supply network.

We expect that one of the key factors affecting wholesale/institutional buyers’ willingness to partner with a food hub is the size of the producer group (i.e. number of producers supplying to food hub) which can signal supply consistency and scale (i.e. supply potential of food hub). Size of the producer group is one of the strong indicators of a food hub’s supply potential.

_H1h: The greater the number of producers supplying to a food hub, the higher is its legitimacy._

2. Efficiency and Performance

In general, a firm in any industry can achieve two types of production economies – economies of scale and economies of scope (Clark, 1988). A particular good or service’s production process exhibits economies of scale if the average cost per unit of output decreases as total output increases. Economies of scope occur if a firm achieves savings as a result of increasing the variety of goods and services it produces. Economies of scale and scope are major determinants
of the horizontal boundaries of firms (i.e. product and service quantities and varieties a firm produces) and may arise “at any point in the production process, from acquisition and use of raw inputs to distribution and retailing” (Besanko et al., 2013, p. 63). Thus, economies of scale and scope lead to decreases in costs of production which, in turn, are a source of higher returns of a firm.

According to our conceptual model, one of the major drivers of performance in a food hub is the organization’s ability to achieve economies of scale and scope (i.e. efficiency). As mentioned previously, the core activity of a food hub is to manage the aggregation, distribution, and marketing of source-identified food products (Barham et al., 2012). In fact, results from the 2013 National Food Hub Survey show that 82% of the food hub respondents offer aggregation services, 63% of food hubs offer transportation services, and 84% of food hubs offer distribution services (Fischer et al., 2013). Economies of scale may occur in each of these services. In particular, economies of scale in the product aggregation process may occur when average costs of aggregation per unit of product decrease as the total volume of products procured from small- and medium-sized farm and food entities increase. Economies of scale in the product distribution process may occur when average costs of distribution per unit of product decrease as the total volume of products traded to food hub customers increase.

In the case of food hubs, economies of scope may occur in both the product aggregation and the distribution processes. In particular, economies of scope in the product aggregation process occurs when a food hub achieves savings as the variety of products procured from small- and medium-sized farm and food entities increases. Economies of scale in the product distribution process may occur when a food hub achieves savings as a result of increasing the variety of products traded to its customers. Thus, when a food hub achieves economies of scale and scope
in the product aggregation and distribution processes, this will allow achieving savings in these processes which, in turn, will lead to greater performance of a food hub.

**H2: Food hubs that achieve economies of scale and scope have greater performance.**

Besanko et al. (2013) identify six sources of economies of scale and scope: (1) Economics of density, (2) purchasing, (3) advertising, (4) research and development, (5) physical properties of production, and (6) inventories. The first four sources of economies of scale and scope rely entirely or in part on the spreading of fixed costs, whereas the last two sources do not. The identification of sources of economies of scope and scale are essential for a firm in order to formulate and assess its competitive strategy (Besanko et al.; 2013). In this study, we have identified specific variables that may affect efficiency in food hubs (Figure 2).

**Figure 2: Efficiency and Performance**

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<thead>
<tr>
<th>Variables</th>
<th>Value Creation</th>
<th>Performance</th>
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<tbody>
<tr>
<td>Varieties of products that food hub agrees to buy (V8)</td>
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<td>Efficiency (profitability and sustainability)</td>
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<tr>
<td>Range of customer base (V9)</td>
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<tr>
<td>Geographic density of producers (V10)</td>
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<td>Geographic density of customers (V11)</td>
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A food hub carries out its activities through a network of allied partners such as small- and medium-sized farm and food entities, as well as wholesale, institutional and, in some cases,
direct retail customers. For a food hub, one of the main sources of economies of scale and scope is the density of their network.

**Varieties of products that food hub agrees to buy (V8) and range of customer base (V9)**

According to (Besanko et al., 2013, p. 71), cost savings may arise “within a transportation network due to a greater geographic density of customers. The savings may result from increasing the number of customers using a given network.” Since most food hubs carry out both product aggregation and distribution services, dense networks of producers and customers may result in cost savings in both processes. That is, savings may result as a food hub increases the number of producers supplying the food hub or the number of customers served by the food hub over a given route. One of the strategies that food hubs may use to increase the number of producer-suppliers in a given geographic area is to increase the variety of products it agrees to buy. This will potentially enable more producers to join as a supplier to the food hub in a given geographic region. Thus, the food hub will benefit from economies of density to achieve lower costs in the producer-supplier network. On the other hand, in order to increase the number of customers in a given geographic region, a food hub may identify and establish strategic relationships with wider range of customers instead of a limited range of customers. Previous research has shown that one of the major challenges faced by food hubs is organizing the distribution of products to its diverse consumers (e.g. schools, retail grocery stores) in an economically viable manner (Diamond and Barham, 2012).

**H2a:** Food hubs trading a greater variety of food products are more efficient.

**H2b:** Food hubs supplying to a wider range of customers are more efficient.
Geographic density of producers (V10) and customers (V11)

According to Besanko et al. (2013, p. 71), “saving can also result from reducing the size of the area, and therefore reducing the cost of the network, while maintaining the same number of customers.” A food hub that operates in a densely populated urban area has lower unit costs of distribution than a food hub selling the same amount of products in more sparsely populated suburbs.

\textbf{H2c: Food hubs operating in areas that have greater geographic density of producers are more efficient.}

\textbf{H2d: Food hubs operating in areas that have greater geographic density of customers are more efficient.}

3. Innovation and Performance

Innovation is another driver of the performance of food hubs. Previous research has shown that innovation improves organizational performance (Subramanian and Nilakanta, 1996). Cooke (2009) juxtapositioned five innovation categories proposed by Schumpeter (1975). Five categories of innovation are proposed by Schumpeter (1975). These categories include: (1) product innovation, (2) process innovation, (3) organizational innovation, (4) region innovation, and (5) input innovation. Among these categories of innovation, food hubs focus on process innovation; that is, implementing the process of marketing and distributing food products through collaboration with a network of allied partners. These partners include: small- and medium-sized farm and food entities, retail, institutional and foodservice companies and other
partners. Hunger and Wheelen (2014, p. 108) defined this collaborative type of innovation as “open innovation” according to which a particular firm uses “alliances and connections with corporate, government, academic labs, and even consumers” in order to create new products and processes. This is similar to the “partnering with others to innovate” option when a firm initiates collaborations to develop innovative products, services, processes and technology, capabilities/competencies, supply chain relationships, or markets (Peterson and Ross, 2014, p.17).

In the case of food hubs, process innovation is implemented most directly by “introducing new methods of distribution” and “of marketing” (Ruef, 2010, p. 172). Hence, we define innovation of a food hub as the new methods it uses to market locally produced food such as branding local products (Day-Farnsworth et al., 2009) or the structure of its network of allied partners (e.g. farm and food entities, retail and institutional buyers, etc.). Therefore, in this paper we operationalize innovation by the introduction of new: (a) source-identifying labels, (b) brands, and (3) varieties grown/made by producers and offered by a food hub. Innovations such as offering products with source-identifying labels or brands may allow food hubs to generate higher profits, particularly when U.S. consumers are willing to pay premiums for products labeled or branded as local (Day-Farnsworth et al., 2009). Similarly, food hubs that offer new varieties of products to pursue niche markets may, in turn, generate higher returns.

**H3: Foods hubs that innovate more have greater performance.**

In this study, we have identified specific variables that may affect innovation in a food hub (Figure 3).
Figure 3: Innovation and Performance

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<thead>
<tr>
<th>Variables</th>
<th>Value Creation</th>
<th>Performance</th>
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<tbody>
<tr>
<td>Network composition (V12a)</td>
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<td>Business (profitability</td>
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<td>Resources (V12b)</td>
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<td>and sustainability)</td>
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<td>Assistance provided to</td>
<td>Innovation</td>
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<td>producers by food hub (V13)</td>
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<td>Size of the producer group</td>
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**Network composition (V12a) and resources (V12b)**

A number of studies have indicated the impact of a firm’s ego-network structure and composition on its innovativeness (Shan, Walker, and Kogut, 1994; Podolny and Stuart, 1995; Powel, Koput, and Smith-Doerr, 1996; Ahuja, 2000; McDermott et al., 2009). Ahuja (2000, p. 425) found that a firm’s network, particularly “its direct ties and indirect ties both have a positive impact on innovation.” McDermott et al. (2009, p. 1270) argue that “the ability of a firm to access a variety of knowledge resources and, in turn, innovate depends on its being tied not simply to any or many organizations and institutions, but rather to those that act as social and knowledge bridges between previously isolated producer communities.”

As Cohen and Levinthal (1990) further state, in some cases outside sources of knowledge are essential for firms to innovate. In the case of food hubs, network ties (i.e. relations) with organizations serving as knowledge or information sources for food hubs are another key factor for innovation. This includes relations with government support institutions, farmer organizations and other organizations serving as knowledge bridges.
**H3a:** The more diverse a food hub’s network is, the more likely a food hub is to innovate.

**H3b:** The greater the ability of a food hub to access resources (e.g. knowledge) through its network, the more likely the food hub is to innovate.

**Assistance provided to producers by food hub (V13)**

Previous literature shows that assistance provided to small- and medium-sized ventures particularly impacted those ventures and entrepreneurs who had less experience with industry (Lovgren, 2014). Food hubs providing assistance (e.g. technical or education/training) to its producer-suppliers create new opportunities for its producers to come up with higher-quality products that are competent enough to be labeled or branded for commercial purposes.

For instance, Allen Market Place (which incorporates both the Allen Farmers Market and Allen Market Place’s Exchange, which is a food hub) offers farmers and food businesses that grow or process food products for commercial purposes access to “free or low-cost services in the following topics: business planning, business management, business marketing, food safety, and product innovation” (Allen Market Place’s e-newsletter, 2015). Allen Market Place offers these services through partnering with experts in the abovementioned areas. Thus, providing assistance (direct or indirect) to its producer-suppliers increases the potential of a food hub to introduce novel product varieties, labeled and/or branded products.

**H3c:** The greater the assistance (e.g. education/training) provided by the food hub to producer-suppliers, the more likely the food hub is to innovate.
Size of the producer group (V14)

According to Ruef (2010), innovation in an entrepreneurial group is highly determined by the size of the entrepreneurial group. In particular, “large entrepreneurial groups tend to be more innovative than small teams or solo business founders” (Ruef, 2010, p. 168). Ruef (2010, p. 168) further states that this argument is based on the logic that “for innovations, a less individualistic perspective is called for, since ideas are often produced in collaborative discussion or actively among sets of entrepreneurs, rather than through independent startup activities.” In case of food hubs, having greater number of producers supplying to a food hub increases the potential to introduce new varieties, labeled and/or branded products.

\textbf{H3d: The greater the size of the producer group, the more likely the food hub is to innovate.}

4. Risk Mitigation and Performance

According to our conceptual model, one of the drivers of food hub performance is risk mitigation. In this context, mitigating risk on the buyers’ side is a key factor in gaining access to wholesale/institutional markets (Matson et al., 2013). In particular, food hubs which are able to mitigate risks for their buyers may have more and longer term partnerships with their buyers (e.g. retailers, institutions, and foodservice companies) and thus achieve greater performance.

\textbf{H4: Food hubs that mitigate risk for their buyers have greater performance.}

In this study, we have identified specific variables that may affect risk mitigation of food hubs (Figure 4).
Seasonality of product offerings (i.e. number of months products available) (V15)

Most often, wholesale/food service buyers create a separate market segment for locally produced food as part of implementing a differentiation strategy. It is, therefore, particularly important that these buyers meet the specific expectations and demands of customers in this niche. Through a partnership with a food hub, it is less risky for wholesale/food service buyers to start a differentiation strategy of locally produced food since a food hub may extend seasonality of product offerings compared to individual small- and medium-sized farms and food entities.

**H4a: The greater the number of months products are available from a food hub, the more likely it is for the food hub to have greater numbers of and long-term buyers.**

Size of the producer group (V16)

As Matson et al. (2013) state, size of the producer group (i.e. number of producers supplying to a food hub) plays a key role in a buyer’s decision to collaborate with a food hub. The reason is that when a food hub relies on a “very limited number of suppliers for a particular product” this
creates a risk for the buyer (Matson et al., 2013, p. 36). If producers supplying to a food hub are not able to meet the production goals, then the food hub will have a shortage of products to supply to its own end customers. Matson et al. (2013, p. 36) further state that “mitigating this risk often involves spreading production over multiple producers, where possible.” Therefore, the greater the size of the producer group of a food hub, the less risky it is for wholesale and institutional buyers to rely on it.

**H4b:** The greater the size of the producer group of the food hub, the more likely it is to have greater number of and long-term buyers.

**Quality standards required by food hub (V17)**

Quality standards, especially those related to food safety, are a critical aspect of any buyer’s decision to buy from a particular supplier. While food safety requirements may be more complicated to coordinate in the case of partnering with individual small- and medium-sized farm and food entities (which creates additional risk for the buyer), it is less risky to buy from food hubs since the latter are likely to have already established whether products have met specific quality and food safety requirements.

**H4c:** Food hubs that have well-established food safety standards and practices for the products they source are more likely to have greater number of buyers.
III. CONCLUSION

Over the last two decades the increasing demand for locally produced food among consumers in the United States has led to the reemphasis of regional food systems and the emergence of new organizational structures to coordinate these food systems. One specific new food system innovation has been the introduction of organizations known as food hubs. Food hubs serve as marketing channels that actively manage the flow of food products primarily from local and regional producers to retailers, institutions (e.g. schools and hospitals), and foodservice companies. If food hubs are to be sustainable, leading to increased profitability and competitiveness of small- and medium-sized farm and food entities, it is essential to identify and analyze major factors affecting their own performance (i.e. business profitability and sustainability).

This study aimed to develop a conceptual model of food hub performance. This model is depicted in Figure 5. According to the model, a food hub is a collective entrepreneurial venture that carries out its activities through a network of small- and medium-sized farm and food entities. The implicit hypothesis of the model is that entrepreneurship that is carried out by networks of allied partners will create a strategy to enhance profitability of small- and medium-sized businesses that participate in it and support rural communities that support the network. Rather than choosing an individual farm-level strategy that may require significant investments in further processing or other value-added activities, collective entrepreneurial networks create opportunities through: (1) The development of shared identity and access to market/resources (i.e. organizational legitimacy), (2) low-cost mimicry of large scale/scope (i.e. efficiency), (3) innovation such as the development of brands and brand-like organizational resources, and (4)
risk mitigation. In the conceptual model, we explicitly identified variables – both relational (i.e. network specific) and attribute (i.e. organization specific) – and developed testable hypothesis on food hub performance. The research hypotheses proposed by the conceptual model will serve as framework for conducting future empirical analysis (both qualitative and quantitative) of food hub performance.
REFERENCES


Figure 5: A Conceptual Model of Food Hub Performance

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<thead>
<tr>
<th>Variables</th>
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<th>Performance</th>
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<tr>
<td>Management team (V1)</td>
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<td>Seasonality of product offerings (V2)</td>
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<td>Infrastructure capacity (V3)</td>
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<td>Certification/source-identifying labels (V4)</td>
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<td>Ties to government support institutions/org, supporting ‘local’ (V5)</td>
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<td>Collective identity of food hub (V6)</td>
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<td>Size of the producer group (V7)</td>
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<td>Assistance provided to producers by food hub (V13)</td>
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