Community or Market?: The Implications of Alternative Institutional Logics for IT Use in Community Supported Agriculture Programs (CSAs)

Completed Research Paper

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Abstract

One way that information technology (IT) can potentially contribute to improving sustainability, supporting economic development, and improving individual and collective well-being is by changing how food is produced, distributed and consumed. With growing interest in alternative or local food systems, there is the potential for IT to play a significant role in supporting the development of environmental, economically, and socially sustainable food production and distribution. However, moving from the conventional global food system, in which the corporate-market logic is dominant, to the local food systems, in which a variety of institutional logics coexist presents particular challenges for IS practitioners and scholars. Using data from a national survey of local food producers, this study shows how different logics can result in different profiles of IT use and complex outcomes.

Keywords (Required)

Community Supported Agriculture, local food, Information Technology, communities, Institutional Logics.

Introduction

One way that information technology (IT) can potentially contribute to improving sustainability, support economic development, and improve individual and collective well-being is by changing how food is produced, distributed and consumed. Food is a critical aspect of our economies, communities, and daily lives. Reliable provision of food is central to the security and well-being of all communities (Pinstrup-Andersen 2009). The activities associated with the production and consumption of food have significant environmental impacts. Production and distribution of food requires a significant use of energy, land, and other resources (Canning, et al. 2010). Consumption of food is an activity that directly affects the health and well-being of every human on the planet. Individuals and families spend a significant proportion of their available time and money on the acquisition, preparation, and consumption of food. Whether it is seen as a pervasive commercial activity, a critical infrastructure need, or a mundane, ubiquitous daily chore, how we produce and consume food has significant implications for the sustainability and success of any community.

Within any community, the production, distribution, and consumption of food is supported by its food systems which consists of a diverse set of organizations, relationships, practices, social structures, and activities. (Hinrichs and Lyson 2007). Although food itself is not an information good, the nature of food systems is such that information plays a central role in their functioning. However, as with any sociotechnical system, understanding how (and if) information technology might be deployed to improve the sustainability of food production and consumption must account for the diversity and interconnectedness of the underlying food systems.

In the U.S., community food systems combine two highly distinct subsystems: the conventional (or global) food system and the alternative (or local) food system. The conventional food system consists of larger, corporate organizations that produce commoditized food products and distribute them on a global scale. The global food system, which is most visible in the form of branded processed food, multi-national corporations, and chain retailers, is built on a relatively homogenous institutional logic (Thornton, Ocasio, and Lounsbury 2012) that combines standardization, routinization, and economies of scale to provide high volumes of food at low prices through arms-length mass markets.

In contrast, the alternative or local food system within a community consists of organizations and infrastructure that operate with specific communities, producing and distributing products within a bounded geographic region. These organizations are typically much smaller and more diverse, with a focus on taking advantage of local conditions and knowledge to meet unique community demands. Organizations in local food systems also draw on a much broader set of institutional logics (Thornton, Ocasio, and Lounsbury 2012), including family farms, non-profit community organizations, and privately owned small businesses. As a result, these organizations are often structured differently, pursue different strategies, and use significantly different practices than those operating in the global food system.

While it remains unclear whether global or local food systems have lower environmental impacts (Coley, Howard, and Winter 2009), they each contribute to community sustainability in different ways. Conventional food systems excel at providing low cost food at scale. Local food systems introduce variety, make better use of local resources, and provide community members with greater control of their food supply. Hence, understanding how IT can be deployed in both global and local food systems is important to realizing its potential to increase the overall sustainability of community food systems.

Conventional food systems rely on information technologies that are well known within the IS research literature. Enterprise systems, such as enterprise resource planning (ERP) and supply chain management (SCM) systems, are routinely used to support management of multi-national operations and coordinate the logistics of global supply chains. Marketing efforts are supported by business intelligence applications and data warehouse infrastructures. Websites, search optimization, and social media are all used to support brand development and advertising. Although the organizations involved in conventional food systems are not identical to the service and digital product firms that are the focus of many IS studies, they make use of many of the same practices, systems, and technologies. As such, existing IS research can be reasonably expected to provide useful insights for how IT might shape or affect global food systems.

In contrast, it is less clear how (or if) information technology will be used within local food systems. Small organizations that operate on a limited scale within a specifically-bounded region may not benefit from information technologies that require significant initial investment to reduce subsequent costs. Strategies that focus on extreme adaptation to local resources and demand may not be well-supported by systems that assume standardization and routinization. Diverse organizational identities, missions, and logics also mean that information technologies developed for management of transactions within arms-length consumer marketplaces may or may not be acceptable. Although participants in local food systems face many significant challenges that IT might be used to address, the distinctive features of their organizations and the larger systems they inhabit makes the role and impact of IT in this context is less clear (Butler, Ridings, and Pike 2009).

In this paper we focus on developing a conceptual framework for characterizing the ways in which IT might be used to support local food systems. We begin with a discussion of the logistical, transactional, and institutional challenges faced by producers seeking to operate within local food systems in the United States. We then consider how one approach, that of running a Community Supported Agriculture program (CSA), can help local food producers address those challenges and how IT, in general, and social media, in particular, might support local food producers' efforts to run successful CSAs. Then, using data

from a national survey of local organizations running CSAs, we characterize how technology is used and the potential implications of that technology for the CSA, the producer, and for the associated food systems. We then conclude with a discussion of the implications of this work for practitioners interested in using IT to support local food systems and IS researchers interested in sustainability and IT, more generally.

Local Food Systems, CSA and IT

Locally produced and consumed food is a small, but rapidly growing part of U.S. agriculture. In the larger picture of the U.S. food supply, locally sourced food remains a niche market which is heavily dependent on direct-to-consumer sales. U.S. local food distribution accounted for $1.2 billion in direct-to-consumer sales according to the 2007 Census of Agriculture, increasing 49% from 2002 to 2007 (Martinez et al. 2010). Yet the percentage of all agricultural sales that is direct-to-consumer in the 2007 Agricultural Census was only 0.4%. As a result, many of the potential benefits of local food for local sustainability are still to be realized.

Most farms providing local food are small, with more than 35% having less than $50,000 in annual sales (Martinez et al. 2010). They also very short supply chains, often relying heavily on direct-to-consumer distribution channels. While the small scale is a highly desirable feature for many consumers, it creates particular challenges for the producers involved in local food systems. Producers encounter significant transaction and learning costs associated with selling within a local marketplace (Ostrom 2007). Small farms often struggle with problems such as limited capacity, lack of infrastructure, the need for appropriate feedback mechanisms to ensure product quality, inability to provide year round availability, and limited farmer expertise and training with consumer marketing (King et al. 2010). Beyond the logistical and transactional challenges, producers operating within local food systems also face significant ambiguity with regard to the values and expectations of different stakeholders (Allen and Hinrichs 2007), with consumers expecting them to simultaneously act as environmental stewards, educators, friends, community developers, and low-cost producers of distinctive artisanal products. In the absence of a dominant institutional logic, even the basic act of deciding how to present the products and services becomes potentially problematic (Thornton, Ocasio, and Lounsbury 2012). Whether at the level of individual producer or system-wide, local food systems face significant challenges that must be overcome if the hoped for benefits are to be realized (Hinrichs and Barnham 2007).

Community Supported Agriculture Programs (CSAs)

One increasingly common approach that local food producers are using to address these challenges is Community Supported Agriculture programs (CSAs). CSAs are direct-to-consumer arrangements in which consumers pay in advance for a subscription (or "share") consisting of regular distributions of food (i.e. a "CSA box"). Instead of engaging consumers in a series of essentially independent transactions, the CSA operator sells "shares" in the harvest in the beginning of the season, locking in the customers upfront, and delivering the products throughout the season. There are many variations in how CSAs are organized and managed. CSAs may run for a limited period of time or the entire year. Distribution may be weekly, monthly, or sporadic. Shares may be limited to a single type of food or include a variety. Products may come from a single producer or be aggregated from several sources. CSA boxes may be delivered or made available at one or more locations for pickup by the consumers.

While there are many variations on the basic model, CSAs all involve a common structure in which there is an ongoing relationship between the consumers and the CSA provider. At a minimum, this relationship is reflected in the complex exchange that separates payment from receipt of the food distribution. By selling the shares up front, the CSA provider benefits by obtaining working capital while the consumer benefits by locking in fresh food deliveries over a period of time. As in any relationship, at least in theory, the CSA provider and the consumer jointly share risk and benefit. Some CSAs go beyond this basic level and engage in other activities specifically designed to strengthen the consumer-CSA relationship. For example, many CSAs offer their members the opportunity to work directly on the farm or to participate in other local community events. Whether it is a transactional relationship or something more relational, relationship formation and maintenance are central to the CSA-approach to direct-to-consumer distribution of local food.

However, while CSAs provide a framework that food providers can use to address the challenges of operating within a local food system, there is a fundamental ambiguity within this framework. On one hand, CSAs are simply a set of contractual and logistical practices that can be used to organize interactions with consumers in a marketplace. From this perspective, the primary factor that matters in the effective functioning of the relationship is the match between the needs of the customers and the products and services that the CSA provider is able to offer. While there is some need for "trust" and some level of "commitment," the basis for these are entirely derived from the contractual agreement and the perceived fit between the provided products and the consumers' wants and needs. CSAs are important because they provide a useful logistical model for arranging the market transactions between local producers and consumers.

On the other hand, for some providers a CSA is more than just specific contractual and logistical practices. For these providers offering a CSA involves engaging the participating individuals not as consumers, but as members of an active community. Adopting this approach leads organizations to offer the opportunity for participants to be involved in the production of the food (or in some cases require it), run events at which participants can meet one another, and actively seek to develop interpersonal relationships between specific employees and individual participants. More than just a particular way of arranging the logistics of a market exchange, this approach to offering a CSA puts the CSA provider into the role of building and supporting a relational community.

Whether a provider adopts a CSA as a framework for organizing market exchanges or as an alternative to the market logic, existing research suggests that the elements of a CSA approach, both alone and in conjunction with supporting IT, will have significant benefits. Traditional supply chain management practices as well as collaborative engagement have been shown to increase economic performance, and thus have a positive impact in the overall development of markets (Zacharia et al. 2011). This research suggests that the short producer-to-consumer supply chain in the local food system could also be improved through the application of both transactional and relational management practices. These practices build commitment to the farmer, resulting in better relational and operational outcomes, and ultimately strengthening the local food system. Case studies have shown that local producers may receive higher revenues per unit and retain a larger share of the retail price (King et al. 2010), indicating that local farmers can be successful if they can manage the increased logistical requirements associated with a CSA.

CSAs and Information Technology

While operating a CSA helps to address some of the problems associated with local food systems, farmers and other organizations running CSAs are subject to other challenges. A balance must be reached between logistical complexity and operational flexibility. Even when interested, consumers must be educated to be able to work with different logistical arrangements and unfamiliar food products. Expectations of "high-touch" service and interpersonal contact creates significant operational challenges and costs. In addition, or perhaps because of these challenges, CSAs are also subject to high customer turnover, making management and logistics even more challenging (Brown and Millet 2008).

While there has been some research exploring the best practices for production and marketing of local food, the potential role that information technology could have on the viability of CSA-operation has not yet been explored. Practically, CSA providers have a variety of needs that must be met if the overall system is to work efficiently and effectively. Information technology (and information systems more generally) have the potential to provide useful tools to help address many of the transactional, logistical, and relational challenges faced by local food producers (Butler et al. 2009). However, how different information technologies are used or should be used remains unclear.

For IS researchers, examining how information technologies are used by CSA providers has the potential to better understand the role that institutional logics (Thornton, Ocasio, and Lounsbury 2012) play in the use and impact of information technology. If a CSA provider is operating their CSA primarily as a contractual arrangement for market transaction with a set of consumers, it it likely that certain technologies and systems will be both more appealing and more useful for them. On the other hand, if the CSA operator sees their role as that of community manager or facilitator, it is likely that other technologies will be of greater interest.

Moreover, the nature of existing and emerging online technologies provides further opportunity to understand the role of alternative logics in the use and impact of IT. Since the late 1990's it has been recognized that internet-based technologies have the potential to support direct-to-consumer transactions. In both the research literature (e.g. Sarkar et al. 1995) and the popular and trade press, there are numerous examples of online or e-commerce applications that are recognized as transformative. Hence, it is expected that technologies that support aspects of consumer transactions will have a positive impact on the operation of CSAs.

However, just as CSAs can be looked at in different ways, so can information technology. Liang et al. (2011) state that social media refers to an emerging class of technologies that are creating new communities, economic venues, and research opportunities. "Social commerce" is a fundamental shift from production, product, and consumers to interaction, relationships, and active participation. From this perspective, social media technologies are tools that go beyond the logistical and transactional problems by providing support for the development of interpersonal relationships, trust, and communities. Hence, it is expected that CSA operators that approach the CSA not as a market exchange, but rather as a community-based relationship will be more likely to make use of and benefit from social media technologies.

What is unclear from the arguments made above is whether or not the use and impact of IT in CSA operation is subject to a strong fit principle. It is expected that CSAs will all use and be affected by information technologies that facilitate the execution of transactions and exchanges (because they all involve these activities). It is also expected that CSAs that take a community-relationship approach will be more likely to use and benefit from social media technologies that support the formation and maintenance of interpersonal relationships. However, it remains unclear how (or if) social media technologies might be used by and impact CSAs that operate with a minimally-relational market logic.

Methods

To examine how the logic adopted by the CSA providers who are more focused on community-relationships interact with the use and impact of different information technologies (transactional or social/relational), data was used from a larger national survey of CSA providers. This survey, which was conducted in December 2012-January 2013, included a range of questions about the CSA practices, the degree to which the respondent takes a relational approach to running the CSA (a multi-item scale), technology used/capabilities provided, and various CSA and organizational outcomes (financial, turnover, number of CSA participants, provider satisfaction with the CSA, etc.). This survey was implemented using Qualtrics, a web-based survey platform, and was distributed to all the individuals who are registered as CSA providers with LocalHarvest.com, a national (U.S.) online directory of local food providers. The 46-item survey was sent to all CSA providers with an active listing in the LocalHarvest mailing list (N = 4,384).

858 surveys were completed and upon review, 819 were deemed to be valid (i.e. completed, agreed to Institutional Review Board terms, reported having a CSA, took longer than five minutes to complete the survey, and was a unique response based on IP address and zip code). The overall response rate was 18.7%. Respondents were distributed throughout the United States, consistent with the known distribution of farms and local food providers. The types of organizations were varied, as expected, with 613 (74.8%) reporting that they were best described as a sole proprietorship or LLC, 71 (8.7%) as a corporation, 58 (7.1%) as a partnership, 42 (5.1%) as a non-profit, 15 (1.8%) as a cooperative, and 14 (1.7%) identified as 'other.' The respondents had offered the CSA for an average of 3.5 years, with a range of being in their first year to having a CSA for more than 15 years. The CSAs had an average of 50 subscribers, with some CSAs having fewer than 10 and others having more than 501 subscribers.

The CSA portion of the respondents' income was an average of 41% to 55%, suggesting that the CSA constituted as significant activities for their organizations. 76 (9.3%) reported that the CSA income was less than 10%, 124 (15.21) said it was 10-25%, 107 (13.1%) said it was 26-40%, 92 (11.2%) said it was 41-55%, 92 (11.2%) said it was 56-70%, 75 (9.2%) said it was 71-85%, and 136 (16.6%) said it was more than 85% of their overall farming/food-related income. Overall, while still subject to limitations that will be discussed below, the respondents reflected the type and variety of organizations that were expected among CSA providers who are operating within local food systems.

Results

The degree to which CSA operators adopted a community-relationship approach to their CSA was assessed using a multi-item measure adapted from Homburg, Mèuller, and Klarmann (2011). The resulting scale had sufficient internal validity (α = 0.864) and distribution (Mean: 5.86, Std. Dev: 0.944) to be suitable for use.

Following a model of information technology focused on affordances (Gibson 1977), technologies used by the respondents were assessed by asking a series of yes/no questions with the prompts "Online or through e-mail, my CSA members can:" (for transactional technologies) and "Through my farm's web presence, my CSA members can:" (for social/relational technologies). Subjects were also asked to indicate whether they used specific platforms, such as Twitter, Facebook, third-party directories, etc.

Overall, use of the different transactional and social/relational technologies varied significantly among the respondents (Figure 1 and Figure 2). Among the transactional technologies, a significant majority (>60%) of respondents reported that they use technologies that allow CSA participants to sign up, find information about pickup times and locations, change contact information, and receive notification and information about the contents of their next CSA box. In contrast, less than 20% of respondents report using technology that would allow CSA participants to select the contents of their next CSA box online.

Similarly, there was a significant variation with respect to the social/relational technologies that CSA operators use. More than 70% reported that they have technology that allows CSA participants to contact the CSA coordinator, get news about the farm or CSA, and make suggestions. But less than 10% reported that they use the technology to run online events or allow participants to create public profiles.

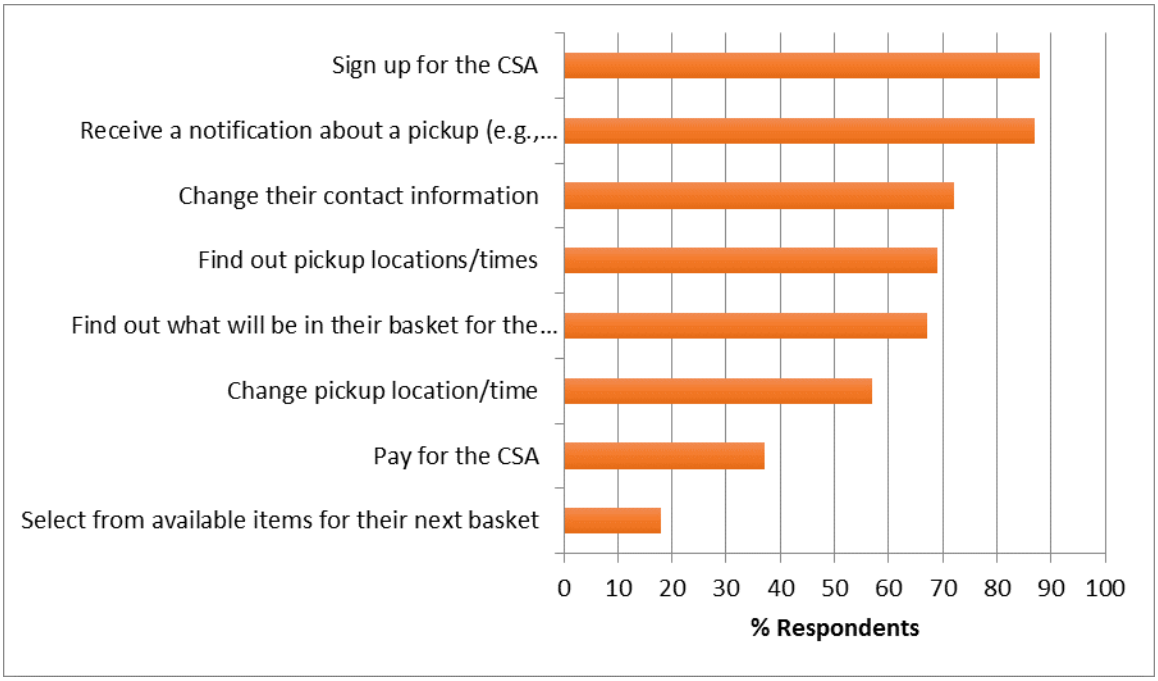

Figure 1: Proportion of Respondents Reporting Use of Each Transactional Technology (n = 812)

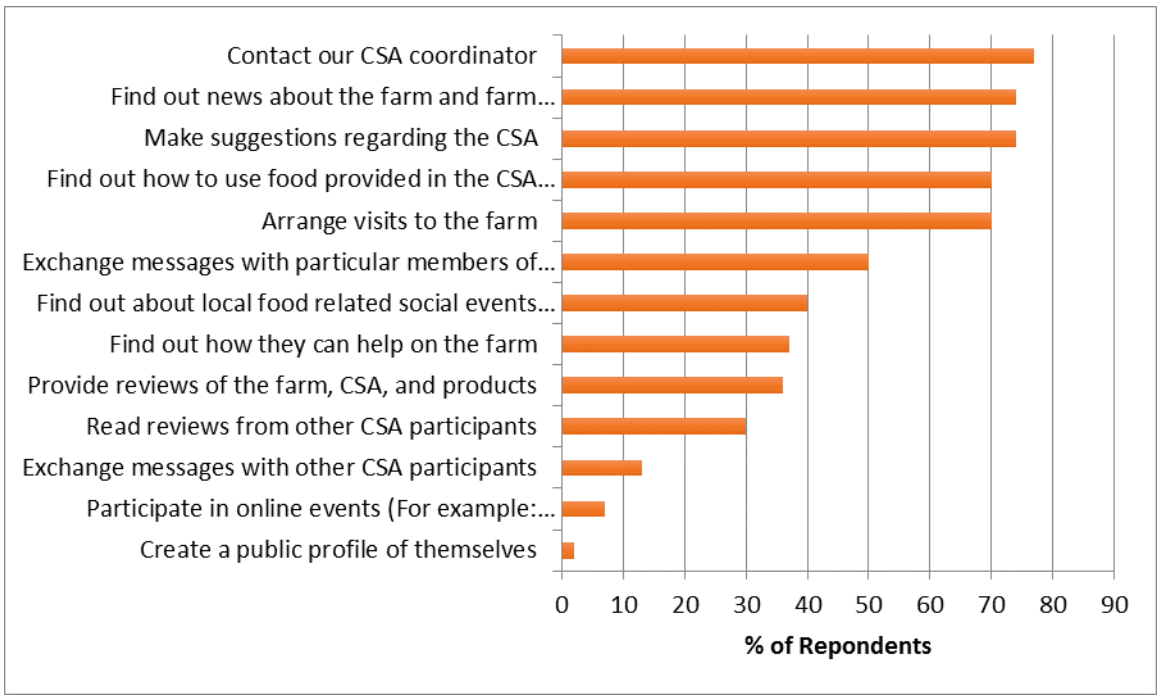

Figure 2: Proportion of Respondents Reporting Use of Each Transactional Technology (n = 812)

To examine the relationship between the logic adopted by the CSA operators and their use of transactional and relational technologies, MANOVA analysis was conducted. The individual technology items (listed in Figures 1 and 2) were the dependent variables and a categorical variable capturing the degree community-relational focus [low (bottom 20%), moderate (20% - 80%), and high (top 20%)] was the independent variable. In both cases, the models were overall significant. For the transactional, 2 of the 8 items were significant, while for the social/relational technology items, 7 of 13 items were significantly different (Table 1). Overall these results are consistent with the expectation that CSA operators who take a stronger community-relational approach will be more likely to adopt social/relational technologies (and that the effect of different logics will not be prominent for transactional technologies).

Transactional Technologies

- Sign up for the CSA
- Pay for the CSA
- Change their contact information
- **Receive a notification about a pickup (e.g., email, text)**
- Find out what will be in their basket for the next pickup
- **Select from available items for their next basket**
- Find out pickup locations/times
- Change pickup location/time

Social/Relational Technologies

- Contact our CSA coordinator
- **Exchange messages with particular members of our farm and/or family**
- **Find out about local food related social events and activities**
- **Make suggestions regarding the CSA**
- **Arrange visits to the farm**
- **Participate in online events (For example: Webinars or discussion sessions)**

- **Find out how they can help on the farm**
- Create a public profile of themselves
- Find out how to use food provided in the CSA basket
- Read reviews from other CSA participants
- **Provide reviews of the farm, CSA, and products**
- Exchange messages with other CSA participants
- Find out news about the farm and farm employees

Bolded items were significant at p <= 0.05 or better

Table 1: MANOVA results for CSA Relational Approach and Technology Use

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ANOVA analysis of specific technology items on CSA participant turnover and participant growth (a particularly salient outcome for CSA operators) found that among the transactional technologies, those that facilitated participant joining (signing up, getting basic information about pick times, etc.) were positively associated with both year-to-year growth in CSA participants and turnover. In contrast, transactional activities associated with helping current participants use the CSA (notifications and selection of items), were associated with lower turnover. This result, while at first puzzling, is consistent with prior results found for online and offline communities (Butler 2001), suggesting that CSAs may be subject to a complex hybrid logic that combines market transactions and community dynamics.

Discussion

As with any study, there are limitations to the work presented here that must be taken into account when interpreting the empirical findings. The use of a web-based survey and e-mail mailing list necessarily excludes CSA operators that have chosen not to use online technologies at all. Thus, while the sample allows us to characterize the use and impact of transactional and relational technologies among those with basic digital capabilities, additional work is needed to understand how (and if) the CSA operators' approach varies among those who have chosen not to use the basic technology platforms. Similarly, with a response rate of approximately 18% it is possible that there are other biases in the sample that may affect the generalizability of the results. Finally, as with any study of a specific population of organizations, future research is needed to determine how and whether the arguments made here about local food providers, CSAs, and IT might apply in other organizational and institutional contexts.

However, these limitations notwithstanding, the findings of this study have several implications for both practitioners and IS researchers. For CSA operators, local food producers, and others interested in supporting sustainable local food systems, these results suggests that while there is some value to considering IT use, it is important to take into account the adopters' general approach to CSAs and local food when doing so. Local food producers who have a more market-driven approach will be more inclined to adopt (and more able to benefit from) transactional technologies, while organizations that have a more community-relational approach are more likely to adopt and benefit from a combination of transactional and social technologies.

For IS research interested in sustainability and social media, it reminds us that not all organizations will be willing to adopt or able to benefit from the capabilities offered by emerging technologies. Although additional research needed to characterize the full extent of this phenomenon, the findings of this study provide an initial suggestion that congruence of the institutional logic adopted by the organization and the institutional logic instantiated in the technology is an important, and yet often unrecognized, factor in the use and impact of complex information technologies.

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