

THE CONTRIBUTION OF FARM STAND, FARMERS MARKET, AND COMMUNITY SUPPORTED AGRICULTURE TO THE COMMUNITY AND ENVIRONMENT

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Abstract

Local food system links scattered issues including food safety and quality, carbon footprint, community development, and socially responsible purchasing and is considered as the key to solve these issues. In this paper, farm stands, farmers markets, and CSA are comprehensively studied as the most important entities in local food system. This paper provides an in depth review of CSA including its definition and history, types, mechanism, operations, benefits, as well as obstacles and challenges. The paper also reviews food system and food miles, then links local food system to the contribution to the community and environment. A deep understanding of individual social responsibility as the ultimate motivation of the movement of promotion and adoption of local food is presented. The consumption of local food and the operation of local food system reduce food miles. As a result, they reduce the carbon emissions associated with the production, distribution, and consumption of local food. This paper closely examines the reasons contributing to the success of local food system and lessons learned from various studies. Not only focusing on the United States, this paper shares experience from different countries including Japan, France, Hungary, Italy, Argentina, and Canada. It is undoubtable that local food system has so many benefits. However, it also experiences some issues with community development. It is also important to admit the fact that local transportation system associated with local food system may not always be as efficient as conventional systems. Other important issues include the production method, packaging considerations, and personal dietary choices. It is important to understand that local food system benefits the environment might be limited or under certain condition.

Key words: farm stand, farmers market, community supported agriculture, food system, local food system, social responsibility, food miles, greenhouse gas emission, carbon footprint, sustainability

1. INTRODUCTION

In recent years, there has been an increasing attention given to food safety and quality, carbon footprint, community development, and socially responsible purchasing. They seem to be scattered issues, however, they are all connected through local food system including community supported agriculture (CSA). Local food system consists a pathway of food from its production and processing to distribution and consumption. Farm stands, farmers markets, and CSA are all examples of local food system. It was stated in a Report to Congress published in 2015 that both participation in local food system and sales (both direct-to-consumer and intermediated marketing channels) had been increasing (Low, et al., 2015). Consumers' willingness to pay for food with more safety and better quality is one of the many motivations contributed to the growth of local food system, which is also supported by the food safety regulations. The purchase at local farm stands, farmers markets, and CSA would contribute to the local economic development in the community. Additionally, the purchase would reduce food miles travelled from point of growing to point of consuming therefore reduce the environmental impacts occurred within this whole process.

With a much closer look, there are many more benefits of local food system. First, Local food system makes local food become visible in public spaces and educates consumers on the potential of local food as well as its seasonal limitations. This is one of the most important purpose of local food system – education. Second, local food system also attracts a greater variety of local consumers, which will ultimately strengthen local food system operation. For example, farmers markets serve as business incubator and they increase the density of local food networks and relations, which is an important development to expand the reach of local food system (Gillespie, et al., 2007). Third, all the economic

interactions occurring in a local food system are combined with social interactions in the community, which represents the social benefits of local food system.

The research of local food system and its benefits to the community is not new, such as Feenstra's study published in 1997. The author studied community's food system that uses ecologically sound production and distribution practices. The local food system was economically viable for farmers and consumers and could enhance social equity and democracy for all members of the community (Feenstra, 1997). But there was a lack of the connection between local food system and the environment.

This paper focuses on the contribution of local food system including farm stands, farmers markets, and CSA to the community as well as to the environment. The motivation of the study is to understand the relationship of individual social responsibility and reducing food miles and carbon footprint. The success and lessons of local food system are reviewed in the paper to objectively evaluate their impacts. Specifically, experience of local food system from all the world is also comprehensively studied. The paper ends with concluding comments and future research directions.

2. LITERATURE REVIEW

2.1 Community Supported Agriculture

Community supported agriculture was originated in Japan and reached Europe in the 1960s (Schnell, 2007). In the mid-1960s, a group of women who felt disappointed with loss of farmers and farmland to growing cities instituted an exchange program with a local farming family. The group of women promised to support the farm while the farmer promised to provide them vegetables and fruits in return. This simple agreement called "teikei" in Japanese became the basis of CSA. The word "teikei" has a vivid translation as "food with the farmer's face on it" (Henderson & Van En, 2007). The first CSA in the United States was established in the Berkshire Mountains of Massachusetts in 1985 (Henderson & Van En, 2007). Indian Line Farm in Massachusetts and Temple-Wilton Community Farm in New Hampshire were the first two CSA farms in the United States (McFadden, 2004). The common notion of these two farms is that production would be sharer oriented and sharers should shoulder some of the upfront seasonal costs (Nost, 2014). Small CSA farms may be only an acre with one or two farmers working on the farm, while large CSA farms go up to hundreds of acres. During the past thirty years, the growth of CSA in the United States has been significant. The most recent census according to the U.S. Department of Agriculture (USDA) shows there are 12,617 CSA farms in 2012 (USDA, 2014). Typically, there are more CSA farms in progressive, urban, as well as middle and upper income areas (Schnell, 2007).

There are three types of CSA with different levels of member involvement. In the first type of CSA, the farmer who owns the land and the equipment does all of the farming and harvesting work. The only member involvement is purchasing a share. In the second type, CSA members work on the farm as part of their payment for produce. In the third type, there is no single proprietor but a community form of ownership with multiple owners and workers with a stake. It requires a commitment from members who contribute a lot of time to the farm and help not only with the farming and harvesting but also in the organization of the farm and the program (Stephens, 2009).

The mechanism of CSA builds on direct relationship of consumers and farmers based on purchasing a weekly "share" (also known as membership or subscription) of locally grown vegetables and fruits throughout a certain time period (LocalHarvest, 2018). The concept of "share" in CSA also means the risks associated with harvesting will be shared by CSA members. Moreover, most CSA shares are sold prior to harvest for CSA to hedge against the risks even more. Such a setup guarantees farmers financial support and enables many small scale farms to operate or even to thrive. There are two types of CSA shares: shareholder and subscription (Schnell, 2007). In shareholder CSA farms, consumers share the harvest as well as the risks. In good years, consumers receive more farm produce than the amount in a bad year. The shareholder CSA is a successful business model for risk hedging, but the other type – subscription CSA is more popular. In subscription model, farms may purchase produce shortage from elsewhere in a bad year situation in order to provide their customers the guaranteed quantity. Sproul and

Kropp categorized CSA contracts into four types including yield contracts, weight contracts, debit contracts, and you-pick contracts (Sproul & Kropp, 2015).

Because CSA bypasses middle people, it is beyond being a simple economic exchange (Schnell, 2007) and is considered as a direct marketing strategy (Brown & Miller, 2008; Sproul & Kropp, 2015). Community supported agriculture provides local residents/consumers a variety of goods including vegetables, fruits, flowers, eggs, honey, and meat (Brown & Miller, 2008) depending on the type, location, and growing season. Some CSA farms even offer value added products such as bread, sauerkraut, or tomato sauce (Schnell, 2007). Throughout the season, consumers usually pick up their share at the farm or a farm stand/farmers market weekly or bi-weekly; but some CSA farms deliver directly to consumers' homes or some other convenient locations (Sproul, et al., 2015). Some CSA farms grow exclusively for their customers, but more common are those who sell their produce at farmers markets and to local places such as restaurants.

There are so many benefits CSA could offer. Community supported agriculture provides locally grown produce, promotes small businesses in the community, and helps to cover production costs for farmers. It offers a way to rethink of the relationship among food, economics, and community, moves towards ecological sustainability, and attempts to disengage from the global supermarket and to reestablish vital local agricultural economies (Henderson & Van En, 2007). Consumers believe local food is healthier, it helps build the community, the ecosystem services of local farms should be supported, farmland should be retained and supported, and connection to an agrarian way of life is desirable (Hamm, 2008).

Meanwhile, CSA has some obstacles and challenges. Weather discrepancies, land security, improper facilities, labor shortage, and administrative complexities are among common issues of CSA. It is also difficult to always provide guaranteed quantity (or not enough of specific produce, too much produce, etc.) and maintain high quality produce. For some CSA farms, it might be a little challenging to market in order to gain public interest and participation. The CSA movement is primarily farmer driven and the farmers are actively looking for new social forms (Lamb, 1994). Consumers, on the other hand, often have other alternatives. In fact, they need to obtain the rest of the food and possibly all their food during the time outside growing season through traditional outlets such as supermarkets. Even though consumers develop a social connection with CSA, they might hesitate to bond with traditional outlets in a socially responsible manner. Lamb also pointed out that one of the greatest challenges is to develop an ongoing educational process so that farmers and consumers can relearn what it means to be responsible to the greater community, which would develop a more conscious relation to broader social problems and issues (Lamb, 1994).

2.2 Food System and Food Miles

More broadly, a food system consists of the production, processing, distribution, sales, purchasing, preparation, consumption, and waste disposal pathways of food (Pirog, et al., 2001), which includes CSA, farmers markets, farm stands, on-farm sales, pick-your-own operations, production/processing/retail enterprises, and sales to hotels, restaurants, bed and breakfast inns, and institutions. Typically, the origin of food is far from the consumers. It is estimated that the meals in the United States travel about 1,500 miles to get from farm to plate (CUESA, 2018). For example, lettuce travels about 2,055 miles and tomatoes travel approximately 1,369 miles. Food mile is defined as the distance travelled by food from where it is originated (grown or raised) to where it is purchased by consumers (Pirog, et al., 2001).

As a complex system, food system always has opportunities for improvement. But it requires a thorough understanding of the relationships between agricultural production practices, processing and distribution activities, and food consumption behaviors. The following steps/activities were recommended to improve the food system: (1) compile data on the community food system, (2) analyze connections between food and other planning concerns, (3) assess the impact of current planning on the local food system, (4) integrate food security into community goals, and (5) educate future planners about food system issues (Pothukuchi & Kaufman, 2000). It seems almost obvious that food system localization (on the community level) provides a strategy to seek for an improvement. Additionally, as early as twenty years ago, Henderson pointed out that in the United States, a social movement approach

underscores the diverse forms of mobilization contributing to common efforts to relocalize the food and agricultural system (Henderson, 1998). The movement of “eat locally” (or “local eating”) educates consumers to be conscious of where and how the food was grown or raised. Although “local” is an ambiguous term and has been criticized by many scholars as insufficiently precise, the basic idea is to know the origin of food and shorten the distance food travels (Schnell, 2013).

Schnell claimed in his study that along with farmers markets, CSA has become one of the most popular and widespread means of local food consumption (Schnell, 2013). By creating local food economics, CSA along with farm stands and farmers markets connect farms, farmers, and consumers within the food system. Community supported agriculture, especially tries to change the food system into a more economically and socially just, and environmentally sustainable one; it has a real contribution to make to a broader reenvisioning of the American food system (Schnell, 2007). As parts of an entire food system, it is undoubtable that farm stands, farmers markets, and CSA all have great potential to reduce food miles. The reduced food miles would reduce the environmental impacts especially greenhouse gas (GHG) emissions.

2.3 Local Food System, Community, and Environment

To summarize the previous section, food system localization has great potential in reducing food miles and GHG emissions. This establishes the connection between local food system and the environment, which is a more obvious positive relationship.

In this study, attention has been given to such “local food system” which consists of farm stands, farmers markets, and CSA. Farm stands are typically owned by individuals and located at or near farms. It can be a permanent or semi-permanent set up, or something as small as a few roadside tables with crates and baskets. On the other hand, a farmers market, is often in a more central environment (urban or suburban) and usually run by the town or city with farmers, growers, and other vendors’ participation. It provides an important place for community members to obtain fresh produce and to gather at a temporary location on a periodical and/or recurrent basis during the local growing season. The detailed description and literature review of CSA was provided in Section 2.1.

The social dimension of sustainability is central to the development of local food system, that is local food system offers important community benefits. Farm stands, farmers markets, and CSA provide local residents with fresh produce that regular grocery stores are in lacking of. They also provide the community and the farmers an opportunity of local economic development. Local food system brings the farmers and consumers together to solidify bonds of local identity and solidarity (Lyson, et al., 1995) and is a way to preserve regional farm land and open space, and to enhance the vibrancy of a community.

Community development and environmental sustainability are two closely related goals of local food system. “Local” may not only be a spatial concept nor related to the distance from the source of the food (Schnell, 2013). Local food system ties to the establishment of connections between food production and food consumption in the community. Schnell pointed out that food has become an important part of direct experience and sensory input in shaping people’s experience of place (Schnell, 2013). At the same time, local food system brings the origin of food closer to consumers through farm stands, farmers markets, and CSA, which ultimately reduce food miles and environmental impacts.

There are many complexities of the food system besides just the food miles. It is important to admit the fact that local transportation system associated with local food system may not always be as efficient as conventional systems, depending on the mode of transport and load capacity (Hill, 2008). Other important issues include the production method, packaging considerations, and personal dietary choices. It is important to understand that local food system benefits the environment might be limited or under certain condition.

In this paper, the first research area to explore is the link between local food system (including farm stands, farmers markets, and CSA) and community development. The second search area is to study how the local food system contributes to food miles and associated carbon footprint reduction therefore to benefit the environment.

3. UNDERSTANDING THE RELATIONSHIP OF INDIVIDUAL SOCIAL RESPONSIBILITY AND REDUCING FOOD MILES AND CARBON FOOTPRINT

The literature suggests more attention has been given to corporate social responsibility to battle climate change (McWilliams & Siegel, 2001; Sen & Bhattacharya, 2001; Smith, 2003; Campbell, 2007; Lee, 2008; Aguinis & Glavas, 2012; Carroll, 2015). With growing public concern over climate change, consumers' willingness to lower their carbon footprint has been increasing. Such willingness is viewed as individual's social responsibility for his/her GHG emissions.

Generally, individual social responsibility has long been known as behaviors such as buying green products, donating blood, giving to charities, investing in socially responsible funds, and giving time or even lives for good causes (Bénabou & Tirole, 2010). People driven by genuine and intrinsic altruism all hope to do good and help. But material incentives may come into play, for example, people tend to give to charities if their donations are tax deductible. Another motivation of individual social responsibility is that people have social and self-esteem concerns.

Regardless of the motivation, individual social responsibility has laid the foundation of solving many social problems. Environmental problem is one excellent example. Individual social responsibility has been used in promoting public environmentalism through activities including green consumerism, 3R (reduce, reuse, recycle), and environmental groups (Eden, 1993). The ultimate goal is to reduce the environmental impact through individual behavior or behavior change. Eden pointed out that individual social responsibility is shown to be most significant when an individual believes in the success of his/her pro-environmental behavior and the self is perceived to be a responsible agent compared with other individuals (Eden, 1993).

The increase of GHG emissions is one of the most challenging environmental problems human beings are facing nowadays. Global GHG emissions have increased by 70% between 1970 and 2004 since pre-industrial times (IPCC, 2007). Although the largest contributors are transportation, electricity, and industry (EPA, 2016), there is no doubt all emissions are linked directly or indirectly to human activities. Research has concluded that food, home energy, and transportation together form a large share of most individuals' carbon footprint (Tukker & Jansen, 2006). Food provides a unique opportunity for consumers to reduce their carbon footprint due to its high impact, high degree of personal choice, and a lack of long term "lock-in" effects which limit consumers' day-to-day choices (Hertwich, 2005).

The origin of food could be far from their consumers. In developed, industrial countries, food travels farther to reach consumers because these countries no longer rely on their own farmers to fully supply a number of food items (Pirog & Benjamin, 2003). In the United States, a typical prepared meal on average contains ingredients from at least five countries outside the States. The average food miles in the United States is 1,500 miles (CUESA, 2018). The fact that United States is more urbanized and suburbanized makes people disconnect from the land and farms. Many farmers and consumers are consciously redefining their relationship with food and the land that produces it (Schnell, 2007). Food miles can be used as a marketing strategy to differentiate food provided by the local food system. Mode of transportation (such as truck, plane, rail, and ship) may be incorporated with food miles to provide consumers a clear message of fuel use and its resulted carbon footprint.

There are three types of food systems: conventional, regional, and local (Pirog, et al., 2001). The conventional food system is an integrated retail/wholesale buying system where the produce is from national sources using large semitrailer trucks. The regional food system is built on specific location-based distribution infrastructure where produce is supplied by retailers and wholesalers using large semitrailer and midsize trucks. The local food system represents farmers who market directly to consumers through farmers markets and CSA or through institutional markets such as restaurants, hospitals, and conference centers using small light trucks. Compared to conventional food system, local and regional food systems not only reduce food miles that the fresh or processed food travels from farm to point of sale but also reduce fossil fuel use and GHG emissions released into the atmosphere (Pirog, et al., 2001). The good news is it is possible that local food system combines conventional infrastructure with local production and consumption (Bloom, 2009).

Local food system creates a low carbon community that individuals take the role of citizens rather than consumers (Heiskanen, et al., 2010). In the community, citizens work together with each other to transform their energy infrastructure on the local level. At the same time, low carbon communities have forged links between decarbonization, public participation, and regional development. Through the layers of connection, it is rational to conclude that individual social responsibility provides the motivation of reducing food miles as well as its carbon footprint via local food system.

4. THE SUCCESS AND LESSONS OF LOCAL FOOD SYSTEM

There are many reasons to participate in local food system including (1) freshness/taste/nutritional content; (2) organic or low-input growing methods; (3) ecological sustainability; (4) knowing where food comes from; (5) support of local economies; (6) personal connection with farmer; (7) seasonality; (8) support of small-scale business; (9) community creation/sustenance; (10) connection with place and with local ecology; (11) stewardship of local environment; (12) open space preservation; and (13) reducing carbon footprint (Schnell, 2013).

In addition to producing food, local food system presents opportunities for employment, education, community improvement, and overall self-sufficiency. Through these opportunities, local food system actively encourages relationships with land and food. There are three necessary components that result in an effective local food system: community involvement, financial stability, and productive farming methods (Friedman, et al., 2009).

Regional Food Guide helps consumers choose healthy and seasonally varied food available within a given geographic region, for example, Northeast Regional Food Guide, the first food guide developed for a multi-state region of the United States (Wilkins & Bokaer-Smith, 1996). It recommends choosing a diet with plenty of food produced or processed locally, choosing a variety of fresh fruits and vegetables when they are available from local farmers, choosing a variety of root vegetables during the fall, winter, and early spring, and minimizing the total food mile intake. There is no doubt that local is the key in the guide.

A comprehensive study of farmers markets and CSA in the United States was conducted by Brown and Miller in 2008. The study evaluates the impacts of farmers markets and CSA on farmers, consumers, and communities (Brown & Miller, 2008). Specifically, the study examines the impacts of farmers markets on farms and communities as well as CSA on farmers and consumers. Social benefits for CSA customers was brought up in the study (Brown & Miller, 2008). Consumer social benefits along with other benefits including access to locally grown, fresh products throughout the growing season, improved nutrition, and cost savings were studied in Sproul and Kropp's paper (Sproul & Kropp, 2015).

A survey based study concluded that direct marketing is more legitimate and practiced more widely than originally expected (Ostrom & Jussaume Jr., 2007). Also, both farmers and consumers expressed interests in further expanding their direct market relationships. It is also interesting to learn direct marketing is used as supplement instead of replacement serving as a means of reducing risk and gaining control over uncertainties. The authors also concluded that direct marketing provides an opportunity for those with the right crops in the right places to improve their economic security.

Another more recent survey based study suggested that CSA farms have the potential to positively impact their members' food lifestyle behaviors and health outcomes (Allen IV, et al., 2017). The authors used multiple regressions to determine whose behavior changes were the most significant and found that the members who reported "poor health" prior to joining CSA showed the most change overall.

Rhode Island's local farm – Casey Farm is a successful example of CSA. It clearly demonstrated effective management practices, diversification of farm services, and use of niche marketing strategies (Perrette, 1998). Local food system including CSA offers an innovative way to promote and prioritize open space, rural character, natural resources, regional tourism, historic preservation, sustainable agriculture as well as balanced municipal development.

Also located in New England, Burlington, Vermont based Intervale Community Farm is all about resilience in order to respond to weather related issues such as flooding and short growing season (The Sustainability Institute, 2018). The Fourth Season Project at the farm involved building several greenhouses and adding a cooler to maintain the farm year round. The farm also takes advantage of income generating opportunities other than production. For example, it is working with the University of Vermont Farmer Training program through which the farmers get paid to host participants and give talks. Macias's sociological study of Intervale Community Farm suggested that local food projects should consider promoting programs designed for broader social inclusion including subsidized farmer-to-family coupons (Macias, 2008).

A total of eight case studies were conducted by USDA to examine locations, markets, participating farmers, product mixes, and types of partnership or collaboration. The study focused on the operational details of food value chains which relies on coordination between food producers, distributors, and sellers to achieve common financial and social goals. Some key findings include (1) the level of investment in infrastructure should match the organization's stage of development and marketing capacities, (2) value chain managers must ensure identity preservation from farm to market as a way to establish marketing claims and improve negotiating position with buyers, (3) distribution entities using informal producer networks can adapt to the constantly shifting demands of diversified, niche food markets, and (4) nonprofits and cooperatives can play key roles in value chain development but should recognize its organizational competencies and play to its strengths (Diamond & Berham, 2012).

Another USDA conducted study of fifteen cases focused on the food supply chains both local and mainstream. One challenge of local food system is that local food moves through all three types of supply chains (mainstream, direct market, and intermediated), but the presence of intermediaries makes it difficult to establish and maintain a strong connection for consumers to where, by whom, and how their food was produced (King, et al., 2010). The report pointed out that product aggregation could be used to increase transportation fuel efficiency and outweigh differences in proximity to the consumer.

There are many more success stories to tell the benefits of local food system. Consumer sentiments regarding the food system include lower food quality and safety, greater environmental degradation, and depopulation of some rural areas due to a large farm structure. These sentiments have likely contributed to the increasing interest in local foods among consumers in the United States, which is the core of USDA's umbrella program "Know Your Farmer, Know Your Food" initiative (USDA, 2012). The initiative was established in 2009 to coordinate and highlight activities and authorized programs of USDA agencies focused on promoting local and regional food systems (Brown, et al., 2014). The initiative provides valuable resource documenting the innovation, entrepreneurship, and impact of local food systems across the country. It also drives job growth and keeps farmers on the land and wealth in rural communities. Since then, the number of farm to school programs jumped from 400 in 2004 to over 2,300 in 2011 and the number of operating farmers markets increased from 4,685 in 2008 to over 7,100 in 2011 (USDA, 2012).

As the origination of CSA, Japan's local food movement – chisan-chisho ("locally produced, locally consumed") appeared and sprouted all over Japan in the mid-1990s. The motivation behind this movement was the long-term decline of agriculture and rural community as well as the crisis of food scandals. A study of this grassroots movement revealed the challenge that it has not become a full-fledged citizen-based political mobilization nor address the issue of marginality in the food system although the movement has added some important resources and a conceptual framework (Kimura & Nishiyama, 2008). The authors also pointed out that this movement has been refashioned as a producer movement by government as well as the Japan Agricultural Cooperative, capitalizing on local food's marketing appeal.

Two qualitative surveys were conducted to study whether food miles matter for French consumers. The first survey using focus group found both positive and negative attitudes towards food miles and most consumers are not concerned by food miles and their subsequent environmental impact (Sirieix, et al., 2008). The authors conducted the second study using ten face-to-face interviews and concluded that some consumers purchase local food for other reasons than reducing food miles and buy imported organic food in spite of increased food miles. This study provides different opinions from consumers

that local food system may not work for everyone especially when they value some quality (such as organic) more important.

How do local food system and food supply chain develop in Hungary? Answers are provided in a 2012 study (Balázs, 2012). The relation between farmers and consumers in local food system has been socially, spatially, and culturally outlined. But the study also pointed out that practices in relation to local food are quite complex. The biggest challenge is that there is strong consumer interest in local produce however there is also a lack of availability of such produce.

Ciulla conducted a comprehensive study of agricultural producers from every province in the Italian region of Piemonte (Ciulla, 2012). The study combines with interviews both open and closed questionnaires at public markets, festivals, cooperatives, and farms. In order to increase local food sales, hours, locations, advertising, and the atmosphere of the markets should be improved. Interestingly, the author pointed out that live music could add an enjoyable dimension as well as other activities that retain consumers.

A case study inspired by action research and Social and Cultural Anthropology was conducted at a CSA farm in El Bolson, Argentina (Konrad, 2015). The study combined participant observation with interviews concluded that this farm significantly contributes to the food supply in the community while treating the environment respectfully. The study also concluded that this farm delivers food for thought while strengthening social faculties. Additionally, CSA as spaces of empowerment and potential generators of a paradigm shift, a belief in bottom up grassroot movements was found in this study to overcome the dominant capitalistic paradigm.

Canadian researchers conducted a study of Devon Acres CSA using survey method of farmers and shareholders. The study concluded that the real-world factors and issues influencing CSA evolution are seen to be products of both the local and larger contexts, evident in such areas as shifts in farmer learning and adaptation, differences between beliefs and practices in member volunteer efforts, and changes in farm and resource conditions (Feagan & Henderson, 2009).

Another Canadian and very recent study by Villar conducted a qualitative fieldwork to study the everyday lived experience and perspectives of the owners, agricultural apprentices, and CSA members at a CSA farm in Sparta, ON, Canada (Villar, 2017). It assesses how culturally specific constructions of place, rurality, authenticity, etc., mediate the experiences of CSA members. The study also considers the nature of human, human-animal, and human-environment relations and interdependencies that seems to be central to the success of the CSA farm. The farm provides its members a place that they can experience a nostalgic “re-enchantment” through a perceived closeness to food, farmer, and farm. Farmers committed to using sustainable practices that derive from their own future oriented “enchantment” with the earth and what it produces. This sets the stage for the CSA members to become more attuned to the idea of a “civic” minded agriculture and more committed to an economically, environmentally, and socially sustainable food system (Villar, 2017).

5. CONCLUDING COMMENTS AND FUTURE RESEARCH DIRECTIONS

Local food system links scattered issues including food safety and quality, carbon footprint, community development, and socially responsible purchasing and is considered as the key to solve these issues. In this paper, farm stands, farmers markets, and CSA are comprehensively studied as the most important entities in local food system. This paper provides an in depth review of CSA including its definition and history, types, mechanism, operations, benefits, as well as obstacles and challenges. The paper also reviews food system and food miles, then links local food system to the contribution to the community and environment.

Another contribution of this paper is to provide a deep understanding of individual social responsibility as the ultimate motivation of the movement of promotion and adoption of local food. The consumption of local food and the operation of local food system reduce food miles. Therefore, they reduce the carbon emissions associated with the production, distribution, and consumption of local food.

This paper closely examines the reasons contributing to the success of local food system and lessons learned from various studies. Not only focusing on the United States, this paper shares experience from different countries including Japan, France, Hungary, Italy, Argentina, and Canada.

It is undoubtable that local food system has so many benefits. However, it also experiences some issues with community development. Scaling up (medium sized farms) is one solution of the development of local food system that is to broaden the accessibility of local food while providing alternative revenue streams for troubled family farms. However, there are many logistical, structural, and regulatory barriers. Mount's study suggested an open governance process based on negotiation of accommodations would ensure the viability of local food system (Mount, 2012).

Another development strategy of local food system is the adoption of culinary tourism according to Green and Dougherty. Culinary tourism offers communities new opportunities to integrate tourism and local food system to promote economic development, respond to the demand for quality food and dining experiences, and build on the cultural heritage of the region (Green & Dougherty, 2008). Their study also pointed out the biggest difficulties are low prices and challenging logistics.

Being an apparent counterpoint to globalization, local food system/food system localization is often assumed to be a good, progressive, and desirable process. There are different voices in the literature. Hinrichs pointed out that the spatial content of "local" couldn't always generate the desirable environmental outcomes (Hinrichs, 2003). It is not safe to draw any absolute conclusion local food system would definitely link to environmental benefits.

Local food system reduces food miles, however, the total life-cycle GHG emission associated with food is dominated by the production phase, which is 83% of the average U.S. household's carbon footprint for food consumption (Weber & Matthews, 2008). The final delivery of food is 4% of the total life-cycle GHG emission and the whole transportation represents 11%.

An empirical study of one of UK's largest suppliers of organic produce calculated consumers' total GHG emissions of driving more than four miles to purchase their organic vegetables. The total emission are more than the emissions from the system of cold storage, packing, transport to a regional hub and final transport to customer's doorstep used by large scale vegetable box suppliers (Coley, et al., 2009).

Another study of the relationship between substitution of domestic for imported food and reduction of direct and indirect GHG emissions associated with consumption focused on EU and China (Avetisyan, et al., 2014). The study found that shifting consumption in wealthy countries from imported to domestic livestock products reduces GHG emissions associated with international trade and transportation. However, the emission reduction in transportation is swamped by changes in global emissions due to differences in GHG emissions intensities of production.

Garnett's study found that shifting consumption patterns away from diets rich in GHG intensive meat and dairy foods is necessary to reduce GHG emission (Garnett, 2011). Also, this would be necessary not just in the developed but also, in the longer term, in the developing countries.

In summary, as stated previously in the paper, it is important to admit the fact that local transportation system associated with local food system may not always be as efficient as conventional systems, depending on the mode of transport and load capacity (Hill, 2008). Other important issues include the production method, packaging considerations, and personal dietary choices. It is important to understand that local food system benefits the environment might be limited or under certain condition.

To extend this study, there are many areas drawing the attention. First, the new delivery options (Uber Eats, Amazon Prime Now, etc.) could be the potential partners with local food system. With the existing network and equipment of these new delivery options, it provides local food consumers better accessibility to local food. Consumers do not have to dedicate their time to visit the farms, stands, or markets. Since it is part of the existing delivery set up, it is hard to foresee the environmental impacts (positive or negative). The potential of using real data to conduct environmental impact study is necessary. Another research area is to bring in all three dimensions of sustainability (social, environmental, and economic) to study the impacts of local food system. The economic perspective of local food system has been underestimated in the literature. A pilot case study approach is appropriate

for such research. Furthermore, individual social responsibility is one the most important reasons consumers eat locally, but more attention has been given to corporate social responsibility to battle climate change. It is worth expanding the research horizon to include more examples of individual social responsibility and how they contribute to the community and the environment.

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