



Relationship between Consumer Behavior and Success of Urban Agriculture



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ABSTRACT

Consumers prefer locally grown food products. One source that provides local food is urban agriculture, the farming in and around cities. A number of urban farmers are selling their products directly to consumers. In addition, consumers have the option to grow their own food on certain urban farms. Given this, we investigate how likely consumers are to purchase or grow their own food at urban farms and what determines this likelihood. Given that millennials are a key stakeholder of sustainable consumption and those with the greatest increase in numbers of food gardeners, we conducted an online survey with over 300 Generation Y respondents. We investigate whether young consumers perceive the health impacts and environmental benefits provided by urban agriculture, and what attitudes they hold towards this source of produce. Empirical results show that both psychological and personal factors affect consumer intentions to participate in urban agriculture. Among others, subjective knowledge regarding urban agriculture and a generally favorable attitude towards urban farms increases the likelihood to buy and grow produce at urban farms. Female and older consumers are more likely to grow their own produce. These findings can be used by stakeholders in urban agriculture to design target-oriented marketing activities.

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1. Introduction

Consumer demand for local food continues to grow (e.g., Thilmany et al., 2008; Adams and Salois, 2010; Grebitus et al., 2013a; Meas et al., 2015; Feldmann and Hamm, 2015; Pyburn et al., 2016). By 2014 local food sales in the U.S. reached about \$12 billion with an expected increase to \$20 billion by the year 2019 (USDA, 2016). In response to this, housing development builders and cities started to incorporate local food production and points of sale into new and established communities (Hughes and Boys, 2015), catering to the approximately 82% of the population in the United States who are living in urban areas (World Bank, 2016¹).

The practice of “growing, processing, and distributing of food and other products through intensive plant cultivation and animal husbandry in and around cities” is called urban agriculture² (Bailkey and Nasr, 1999). Regarding the distribution of food, about 8% or 163,675 of all U.S. farms sell their food using direct-to-consumer marketing (e.g.,

farmers' markets, roadside stands, directly to restaurants), with 70% out of the 8% selling their food exclusively using such channels, e.g., Community Supported Agriculture (ERS, 2015). These producers are competing with national grocers such as Whole Foods and Kroger, who are partnering with local farmers to offer products at their stores that are grown within the state lines. For example, Walmart sources 20% of fresh fruits and vegetables in-state and Wegmans sells 30% of locally grown produce (King et al., 2010). It follows that urban farmers, who choose to sell directly, need to understand what drives consumers to purchase produce at the farm in order to effectively and efficiently market their products.

Knowing more about key drivers might also enable stakeholders to increase the share of citizens that take part in urban agriculture. This is valuable because urban agriculture provides a number of additional benefits, such as, contributing to food security, supporting healthy dietary patterns (e.g., Warren et al., 2015; Zezza and Tasciotti, 2010), and improving local ecology and sustainability (e.g., Wakefield et al., 2007). Given these benefits, it seems of interest not only from a business standpoint but also from a societal standpoint to further investigate underlying reasons that drive individuals to participate in urban agriculture.

Previous literature on participation in urban agriculture has mainly focused on developing countries. For example, Warren et al. (2015) provide a comprehensive review of the literature that investigates the relationship between urban agriculture and nutrition (food security,

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¹ <http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>, last accessed 15/15/2017.

² According to the FAO (2007) “urban agriculture (UA) is a dynamic concept that comprises a variety of livelihood systems ranging from subsistence production and processing at the household level to more commercialized agriculture. It takes place in different locations and under varying socioeconomic conditions and political regimes (FAO, 2007, p. V).”

nutrition status and variety). Studies referring to developed countries investigated the social missions of urban agriculture focusing on the urban farms, i.e., growers (Dimitri et al., 2016), assessed the needs of urban farmers who face limited resources (Surls et al., 2015), and analyzed the impact of community gardens on communities using mainly exploratory methods (e.g., Armstrong, 2000; Firth et al., 2011; Wakefield et al., 2007). Hence, there seems to be a gap in the literature regarding quantitative research in developed countries that focuses on the urban agriculture consumer. We aim to extend the literature by analyzing consumer behavior as it relates to urban agriculture as an outlet for food.

The objective of our study is to evaluate success factors of urban agriculture participation. In this regard, we focus particularly on the future consumer, the Generation Y. As pointed out by Hume (2010), one key stakeholder group of sustainable behavior is comprised of young consumers, the Generation Y or Millennials. This generation is not only educated, but also environmentally aware without actively behaving in a pro-environmental manner. They seem to be compassionate but not willing to act upon it (McCrandle Research, 2007). It follows, that we need to investigate what affects their behavior in order to develop strategies that encourage them to put their beliefs into action.

In order to analyze how urban farms can be successful, it is important to understand determinants of consumer behavior that are likely to influence shopper habits, when it comes to produce purchase behavior. Behavioral concepts, such as, perception, subjective knowledge and attitudes, play an important role for purchase decision making (e.g., Howard and Sheth, 1969). To start with, consumers have to be able to perceive urban agriculture as a viable source of produce. In this regard, making them aware that urban farms are a source for local food can lead to positive perception, given that purchasing foods from urban farms provides firsthand knowledge on the origin of the products and truly is locally produced food. Apart from the perception, consumers need to be knowledgeable about urban farms. Without having any knowledge about urban agriculture, as a potential source of local produce and other benefits associated with it, consumers are hypothesized to be less likely to purchase produce from an urban farm. Furthermore, consumers need to hold positive attitudes towards urban agriculture in order to actually make a purchase. This leads to the following research questions:

- 1) How do consumers perceive urban agriculture?
- 2) Do consumers feel knowledgeable when it comes to urban agriculture?
- 3) Do consumers hold positive attitudes towards urban agriculture?
- 4) Are consumers likely to buy produce from an urban farm, and how is this influenced by behavioral aspects?

In addition to urban farms serving as a point of sale for local produce, they also offer citizens the opportunity to grow their own food. When individuals actively participate in growing their own food at the urban farm, they are likely to experience an improvement in health and their communities are more developed (e.g., Wakefield et al., 2007). For example, community gardens promote physical, mental and social health as they, among others, restore attention, reduce stress, evoke positive emotions and lead to social integration (Abraham et al., 2010). This suggests that growing their own food may improve their lifestyle by being more physically active and mentally and emotionally relaxed. Similarly, community gardening promotes social health and community cohesion in form of stable relationships, which also contributes to a healthy lifestyle (Wakefield et al., 2007; Abraham et al., 2010). This is important, given the increase in obesity and sedentary lifestyles, particularly in children and young adults (e.g., Caballero, 2007; Sahoo et al., 2015). Therefore, gardening, i.e., growing food, can play a part in improving one's wellbeing. In addition to the physical component of gardening, nutrition education by means of learning about food production and processing comes more naturally when growing food. At the same time, growing produce encourages fruit and vegetable consumption,

since it familiarizes the growers with the foods that might be less present otherwise (Libman, 2007). In general, an improved access to food and nutrition is related to community gardens (Wakefield et al., 2007). This leads to the final research question:

- 5) Are consumers likely to grow their own produce, and how is this influenced by behavioral aspects?

As pointed out above, we focus on Generation Y because Millennials are a key stakeholder of sustainable consumption (Hume, 2010). Furthermore, they account for the greatest increase in numbers of food gardeners (NGA, 2014). Hence, understanding the behavior of Millennials towards urban agriculture, in other words investigating the determinants of purchasing food at an urban farm or growing food at an urban farm, promises insight into long-term success factors of urban agriculture.

Against this background, the aim of this study is to investigate the impact of consumer perception, knowledge and attitudes towards the *likelihood to purchase* produce from urban farms and the *likelihood to grow* their own produce at urban farms. Fig. 1 displays this relationship between the questions:

2. Conceptual Framework

In order to answer our research questions we apply Howard and Sheth's (1969) theory of buyer behavior. The authors state that stimuli, perceptual constructs and learning constructs, lead to the outputs of attention, comprehension, attitudes, intention and ultimately purchase behavior. According to Howard and Sheth (1969), attention influences comprehension, which impacts attitudes, which affects intention and then purchase behavior. In this regard, attention is a necessity for perception (Orquin and Mueller Loose, 2013). Given that Kroeber-Riel and Weinberg (2003) show that perception influences related product evaluation and purchase decision making, and considering that Shapiro (1970) links perceived quality to purchase likelihood, we apply the concept of perception, rather than attention, in our study, and refer to purchase likelihood as final concept, rather than considering the actual purchase decision. Comprehension can be reflected by its synonym knowledge. In this regard, multiple frameworks (e.g., Ajzen, 1991) have shown that attitudes and knowledge determine intention, which can be expressed as likelihood of purchase.

Taking these theories into account, we arrive at a conceptual model that serves as foundation for our research. We address the influence of the psychological constructs perception, knowledge and attitudes on both, the likelihood to purchase produce from and the likelihood to grow produce at urban farms. We also include personal factors as determinants of this likelihood based on Steenkamp (1989). Steenkamp (1989) displays in his conceptual model of quality perception the influence of personal factors on perceived quality and it seems reasonable to assume a similar influence of several personal factors on intentions, i.e., purchase and growing likelihood. Hence, as Fig. 2 shows, we distinguish between psychological and personal factors, as determinants of consumer behavior related to urban agriculture.

In the following, we will provide the theoretical background on the psychological constructs and will discuss related empirical findings. Afterwards, we will discuss the methods used to measure the respective constructs and factors. Specifically, we use mixed methods research with the approach of concurrent nested research, conducting one data collection with a predominantly quantitative approach but also including a qualitative data collection (FoodRisC, 2017). While the qualitative data regards perception, the quantitative data regard knowledge, attitudes, socio-demographics, produce purchase frequency and intentions. Though we do not mix the data in a traditional way during the analysis (e.g., including the perception data in the bivariate ordered probit model used to determine what affects the intention), the design allows

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