

## Article

# Explanatory Analysis of Factors Influencing the Support for Sustainable Food Production and Distribution Systems: Results from a Rural Canadian Community

Sahand Ashtab \*  and Robert Campbell 

Shannon School of Business, Cape Breton University, 1250 Grand Lake Rd., Sydney, NS B1P 6L2, Canada; robert\_campbell@cbu.ca

\* Correspondence: sahand\_ashtab@cbu.ca

**Abstract:** Investigating the viability of alternative food networks (AFNs) is more important than before because of the disruptions in global supply chains and evolving resident composition in different regions. In this regard, this paper reports on findings of a project aimed at identifying factors influencing support for local, sustainable food production, and distribution systems. In the first phase, local residents and international students in Cape Breton, Canada, were surveyed prior to the onset of the coronavirus disease 2019 (COVID-19) pandemic to assess their attitudes and values relative to shopping at farmers markets and buying local. In the second phase, mid-pandemic, text mining of Twitter data was used to gauge sentiments related to these same activities. The results of our explanatory analysis suggest that the top two factors influencing decisions to buy local farm products were food attributes and supporting community economic development. In contrast to previous studies, we included an alternate sample group, namely, international students, and explored the relevance of the social aspect of buying local, e.g., meeting the farmer. Among our findings from the application of a logistics regression model to our survey data (N = 125) is the suggestion that the senior non-international student residents of the Cape Breton Island were more probable to be in the category of consumers whose perception of an authentic buy-local experience was limited to distribution channels that allowed for the social aspect of buying local, e.g., meeting the farmer.

**Keywords:** alternative food networks; sustainable; short supply chain; food networks; rural; local; consumer motivations; community economic development; COVID-19 pandemic; environmental and social dimensions



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## 1. Introduction

For decades, direct farmer-to-consumer markets have provided the opportunity for selling more locally grown products [1] and made fresh produce accessible to consumers. The term ‘local’ may be defined by politically constructed boundaries and may suggest a variety of implications, such as environmental sustainability or availability of healthier food [2]. It is unclear to what extent this channel of food distribution is in direct competition with the large-scale centralized food production and distribution stream, given that it has not been able to offer the convenience of access to a variety of products all year round or serve as a one-stop outlet for all the needs of consumers. Despite this, the number of miles a product travels to get to market is a growing concern for ecologically concerned consumers [3], and consumers are becoming more interested in knowing about the origins of their food and how it is produced [4]. The development and emergence of alternative food networks (AFNs), which encompass the three pillars of sustainability [5], has allowed consumers to not only have access to fresh and locally produced products but also be part of a multifaceted movement toward the sustainable production, consumption, and distribution of food products. Furthermore, AFNs have lessened the concerns related

to the disappearance of local food networks brought about by the growth of global and centralized food distribution networks [6,7].

Farmers' markets, farm gate sales, stands, kiosks, U-picks, and community-supported agriculture [8] are forms of AFNs. The last two decades have shown increased interest in these direct channels, coupled with an increase in the number of farmers' markets in different regions, including North America and Europe. Specifically, the number of farmers' markets increased by approximately 30% from the year 2008 to the year 2014 in Canada [9]. In the same year, it was reported that there were 800 farmers' markets in the United Kingdom [10]. These direct channels of distribution allow for the delivery of fresher products [11] and connect consumers and farmers while reducing the distance that a food product needs to travel to reach the final consumer [12]. Direct buying marks a transition from being passive end-users to being proactive citizen-consumers, representing a new type of relationship between the suppliers and consumers of food [13], and is a pushback against global food networks [14]. AFNs draw the participants closer; however, while contributing to the redistribution of power across the food chain, structural changes on a greater scale may not be certain [15]. While a foundational change in the food system may not be certain, Nakandala and Lau [12] suggested that harmonious upstream and downstream collaborations in urban food systems can be leveraged for sustainability. In an earlier study, Fischer [16] reported that effective communication has an impact on trust formation in agri-food chains between buyers and suppliers, indirectly reinforcing the positive collaboration history.

The main areas of research on AFNs aim to understand the perceptions and consumer motivations for buying sustainable agricultural products (e.g., [17,18]), exploring the correlation between consumers' demographics and engagement in buy-local activities (e.g., [19]), consumer perspective and attitude toward participation in AFNs (e.g., [20,21]), political and ethical commitment of consumers to raise awareness of environmental sustainability and supporting rural community economic development (e.g., [22]), rural development through diversifying income for small- and medium-sized farms (e.g., [23]), and organizational perspective and development of short food supply chains through the means of trust and cooperation (e.g., [24]).

Jablonski et al. [25] addressed the need to study and understand local food markets in remote rural communities, which may face different challenges than the local food markets in close proximity to urban centers. Kemkes and Akerman [26] discussed the dynamic nature of demand for local food in rural areas due to changing circumstances, emergent motivations, and different social identities. However, there is a paucity of information in the literature regarding consumers' motivations to engage in buy-local activities in rural communities with changing demographics and emergent identities. In this regard, this study aimed to contribute to the literature on understanding consumer motivations for buying sustainable agricultural products [14,19] given the changing circumstances and emergent identities in rural communities. We accomplished this through a survey of the residents of Cape Breton Island, including international students, in the province of Nova Scotia, Canada, to understand the most important attributes, values, and demographic characteristics that influence consumers' decision to buy local, as well as how they would like to buy local in remote rural communities. The latter contributes to the literature on the further mobilization of locally produced food products [26].

Ashtab et al. [27] identified a set of attributes and values that influence consumers' decisions to buy local and report on the disparity that exists in different regions on the significance level of each attribute and motivating factor. One of these influential factors is the social aspect of buying local, e.g., meeting with farmers and vendors. The significance of this influential factor is in its impact on the selection of a channel to buy local. With the emergence of the COVID-19 pandemic, consumers had to switch to online ordering with a direct-to-your-door delivery system to access fresh local products safely. As a consequence, a question arises as to whether the convenience of shopping online will replace the significance of the social aspect of buying local in farmers' markets. Subsequently, another gap in

the literature involves investigating the impact of COVID-19 on the viability of farmers' markets after the pandemic is over given their long-standing role in rural community economic development. In this regard, we deployed a text-mining technique to collect information on positive and negative sentiments toward farmers' markets, as well as on attributes that consumers talk about on social media, to shed light on consumers' desire to resume engaging in buy-local activities. The adoption of this methodology not only allowed us to collect information from a wide range of consumers interested in engaging in buy-local activities but also provided an effective alternate means for collecting data from customers in the midst of a pandemic. In summary, the following outlines the contributions of this paper to the literature:

1. We utilized a text-mining technique to collect information on the positive and negative sentiments toward farmers' markets during the COVID-19 pandemic to shed light on the viability of farmers' markets once pandemic-related restrictions have been lifted.
2. We developed a logistics regression model to investigate whether any of the demographic attributes and societal variables influenced consumers' decisions regarding the selection of a channel to buy local.
3. Given the significance of investigating AFNs in remote rural communities, we surveyed farmers' market customers on Cape Breton Island, Nova Scotia, Canada, to provide insights from values and attributes that influenced their decision to buy local and engage in sustainable food production and distribution systems, thereby contributing to rural community economic development.
4. Given the changing circumstances and demographics in different regions, as well as emerging values and identities, we also survey international students studying in Cape Breton—an increasing part of the population segment across different regions—to shed light on the values that motivated them to engage in buy-local activities.

The rest of the paper is structured as follows. A literature review on the demographic attributes of those engaged in buying local is presented in Section 2. Section 3 provides a theoretical framework followed by an explanation of the research methodology in Section 4. The results of our analysis are provided in Section 5, followed by discussions and a conclusion in Section 6.

## 2. Literature Review

The focus of much of the relevant literature has primarily been on trying to establish the relationship between demographic attributes, such as gender, age, religion, education, household size, and ethnicity, and engaging in buy-local activities.

From a gender standpoint, a body of research suggests that the majority of consumers participating in buying local are female [14,19,28–32]. In contrast, Onianwa et al. [33] suggested that men are slightly more likely than women to engage in farmer-to-consumer direct markets.

There is quite a range of findings in the literature regarding the age of consumers who participate in buying local. In one series of studies, the average age of consumers who buy local farm products is reported to be forty years [17], forty-one years [30], and forty-six years [33]. In other studies, the age of the majority of consumers participating in buying local is reported to be in the early fifties [28,34], over forty-five years [35], and over fifty years [36]. Elsewhere, the majority of participants were reported as less than thirty-four years old [31], between thirty-five and fifty-four years old [37], and between twenty-five and forty-four years old [32]. In another study, averaged over five European countries, the majority of participants were reported to be between eighteen and twenty-nine, and fifty and sixty-four years old [38]. There are even cases where participants from other age ranges, i.e., between their twenties and thirties, are reported to be among the consumers who choose to buy local in direct farmer-to-consumer markets [31,35,36].

Wolf et al. [32] reported that the educational level of the majority of participants was college graduate and some college. Zander and Hamm [38] reported that the education level of the majority, in terms of years of schooling, was 12 years and more. On a scale of

1 representing above high school and 0 representing high school graduate and less, the average score for the educational level of the participants was reported to be 0.5953 [33] and 0.8019 [30]. Gumirakiza et al. [29] reported the average score for the respondents' level of education to be 4.4 on the scale of 1 (middle school), 2 (high school), 3 (some college), 4 (2-year associate degree), 5 (4-year college degree), and 6 (graduate). The majority of participants were reported to have professional occupations when compared to the rest of the population in their respective cities [35]. In contrast, Zepeda and Li [39] suggested that age, gender, and educational level are not dominant factors in affecting whether consumers buy local food.

While household income is positively related to consumers' expenditures [40], the relationship between income and shopping for local food from direct-to-consumer venues has been inconsistent. Weatherell et al. [37] suggested that consumers with high income levels are more comfortable with affording the costs associated with buying local for its perceived benefits. A number of research papers have stated that the income levels of the participants are generally above the average compared to the regional income levels [28,29,41]. Nearly 60% [35] and more than 48% [32] of the participants were reported to have medium or high incomes. Onianwa et al. [30] suggested that on a scale of 1 representing a household income of \$25,000 and above, and 0 otherwise, the mean score was reported to be 0.9027. While this was close to 1, it is not necessarily an indication of upper-middle-class level household incomes for shoppers. In contrast, the household income level of consumers was reported to be low in another study [17]. With a different approach, Onianwa et al. [33] suggested that the income factor by itself was not a significant factor; however, an increase in the household income of families with children increased the likelihood of shopping at direct farmer-to-consumer markets by three percent. Zepeda and Li [39] suggested that households with a high income are considerably less likely to buy local food and that this behavior is associated with a number of factors, such as the opportunity cost of time to go to farm stands or a farmers' market for shopping, or the desire to shop at more upscale shopping outlets, or perhaps the high frequency of eating out. Likewise, Thilmany et al. [42] suggested that income is not a significant factor in influencing consumers' shopping behavior in direct-to-consumer centers. The conflicting findings on the relationship between household income and buying local were also reported in Nie and Zepeda [43], while suggesting that having a low income is likely to be a barrier to being able to purchase local or organic foods.

### 3. Theoretical Framework

While a set of core attributes and values influence consumers' decisions to buy local farm products, there may be a difference between the ranking of the attributes in terms of the order of importance to consumers. Bean and Sharp [44] suggested that, contrary to a group of participants who are interested in both local and organic attributes, there exists a subpopulation that is interested in the local but not organic attribute. Bellows et al. [45] discussed attitudes toward organic, local, U.S.-grown, GM-free, and other food attributes. Onozaka and McFadden [46] suggested new programs related to organics, value-added marketing programs, and regional food hubs for government agencies and policymakers. According to Feagan and Morris [47], attributes such as supporting the local economy, social interaction when buying local, knowledge of vendors, and food freshness are more strongly held as factors that motivate consumers to buy local than other attributes, such as organic production and 'food-miles' concerns. Alonso and O'Neill [48], in an exploration of the buy-local experience from visitors' perspectives, suggested that visitors want more vendors selling a variety of products in different seasons that are not limited to the summer season.

There is a variety of attributes and values that influence consumers' decisions to buy local farm products. Among them are quality, taste, freshness, meeting the farmers, taking the family out, supporting local farmers and community economic development, feeling a part of the community, and supporting sustainable and environmentally friendly food production/distribution systems. Brown [11] reported quality/freshness to be the most

important factor when buying fresh fruits and vegetables. Lyon et al. [36] suggested that good quality is the number one reason for shopping at a farmers' market. Schneider [49] reported quality and taste as the most important factors when making food purchase decisions. Likewise, Gumirakiza et al. [29] suggested that the primary motivation of consumers is purchasing fresh produce. In another study, some participants reported having access to local food with low traveled food miles to be the primary reason for making local food choices, and for some other participants, the key reason was reported to be the quality of the produce [35]. Freshness and short transport were reported to be associated with local food production in Roininen et al. [50] as well. The top two rated factors that affect consumers' decisions of where to buy produce from were reported to be freshness and appearance of the produce, respectively [30]. In a different study, while the ideology of localism and supporting local farmers was highlighted, only a few people reported being committed to local-only buying behavior, with most of the respondents indicating conventional purchasing habits [51]. When participants were asked why they preferred to go to farmers' markets, the top two reasons were reported to be liking the food and freshness [52].

Investigating the order and significance level of values and motivating factors that influence consumers to buy local is important because it also concerns the selection of a channel by consumers to engage in buy-local activities. For example, if the social interaction aspect of buying local, e.g., meeting with farmers, is not a priority to certain customers, they can access fresh products and support community economic development by ordering fresh local products online and receive the products at their doorstep. This phenomenon is specifically of interest amid the COVID-19 pandemic when consumers had to switch to an online ordering system to access fresh local products safely. In this context, our study aimed at understanding the motivations of consumers and determining the top attributes and values that influence their decision to buy local before and after the COVID-19 pandemic. The sample (N = 125) used in the before-COVID-19 pandemic study included an emerging segment in our communities, i.e., international students, who lived on Cape Breton Island. The sample used for the amid-COVID-19 pandemic study comprised 1221 entries (i.e., N = 1221) to gain insights into the collective sentiments and attitudes toward farmers' markets, which will determine their viability after the pandemic is over.

#### *Case of Cape Breton Island*

There are different channels for buying local farm products on Cape Breton Island. One channel is the Cape Breton Farmers' Market that has been in operation for almost three decades and operates as a not-for-profit co-operative that facilitates economic growth in the Cape Breton Regional Municipality. New e-commerce platforms, e.g., Cape Breton Food Hub, have also emerged in the past few years to connect suppliers with customers by employing an order-online-and-pickup model, improving access to locally produced products and supporting local producers. While these channels of distribution for locally produced products are contributing to the creation of a healthy food system and supporting the local economy, they are offering a different form of accessibility. The distinct difference between these two channels is the social aspect of buying local. Knowing that consumers care about how their purchased food is grown [53] and that the social interaction is a factor in buying local [47], some may associate an authentic buy-local experience with physically seeing the product, as well as meeting with the farmer to ask questions about the origin of the product and how it was made. On the other hand, some consumers may be satisfied with reading about the origin of the product and how it was made on a website. In this context, our study aimed at identifying the profile of consumers whose perception of an authentic buy-local experience was limited to the distribution channels that allowed for the social aspect of buying local, e.g., meeting farmers.

In this study, the most important attributes and values that influenced consumers' behavior to buy local were classified into four categories: social (e.g., meeting farmers, social-



izing with friends, family outing, interacting with farmers to build trust), supporting community economic development (e.g., supporting local farmers, supporting local economy), food attributes (e.g., quality, freshness, healthy, safe to consume, nutritious), and environmental sustainability (supporting environmentally friendly food production/distribution systems). We considered the participants' statuses, i.e., international student or local permanent resident, in the analysis of the factors that influence consumers' decisions to buy local farm products. This consideration was due to the growing number of international students in Canada and globally in recent years.

#### 4. Research Methodology

##### 4.1. Pre-Pandemic Survey

Convenience sampling was used to randomly involve participants from different segments of the community. A total of 93 shoppers at the farmers' market, as well as 59 international students in Sydney on Cape Breton Island, were surveyed on the values and attributes that influenced their decision to buy local farm products. From the total of 152 completed surveys, 2 were not signed and 25 were not complete; therefore, a total of 125 completed surveys were used for the analysis. The timeline for the surveys was from April 2018 to November 2018. The participants came from diverse backgrounds, i.e., 12 different countries.

Data were collected on the age, gender, nationality, and status of the participants. Participants in the study were asked to determine the most important attribute(s) among the categories defined above that influenced their decision to buy farm products from local farmers. Participants could rank more than one attribute as an important one that influenced their decision to buy local farm products. In order to find out about the importance of the social aspect of buying local, e.g., meeting the farmer, the participants were also asked what they perceived to be an authentic buy-local experience.

A logistic regression model in XLMiner was used to analyze the correlations between the demographic variables, i.e., consumers' status, gender, and age, as well as the societal variables, i.e., care for environmental sustainability, social, community economic development, food attributes, and selection of a channel to buy local farm products.

##### 4.2. Mid-Pandemic Twitter Analysis

In an effort to gauge public sentiment regarding farmers' markets under pandemic conditions, we turned to social media. A sample of posts from Twitter was collected on 1 October 2020 using the rtweet package within R. The most recent 5000 posts in English, both tweets and retweets, that included the hashtag #farmersmarket were requested. The request returned data on 1221 distinct entries distributed across the 90 variables that are characteristic of the Twitter API.

As a first step in the analysis, the data were filtered to extract the text column in order to examine the content of the posts. The text elements were cleaned to convert the capital letters and remove extra spaces, punctuation, URLs, stopwords (e.g., the, and, is, are, etc.), and symbols. The cleaned text was then used to generate two charts (Figures 1 and 2). For the first chart, word frequencies were calculated and ranked, and the top 25 words were extracted for display. For the second chart, the terms in the tweets were merged with those found in the 'bing' lexicon [54] to extract the common terms. The lexicon consists of 6787 words categorized as either expressing positive or negative sentiment. The top terms for each sentiment are displayed.

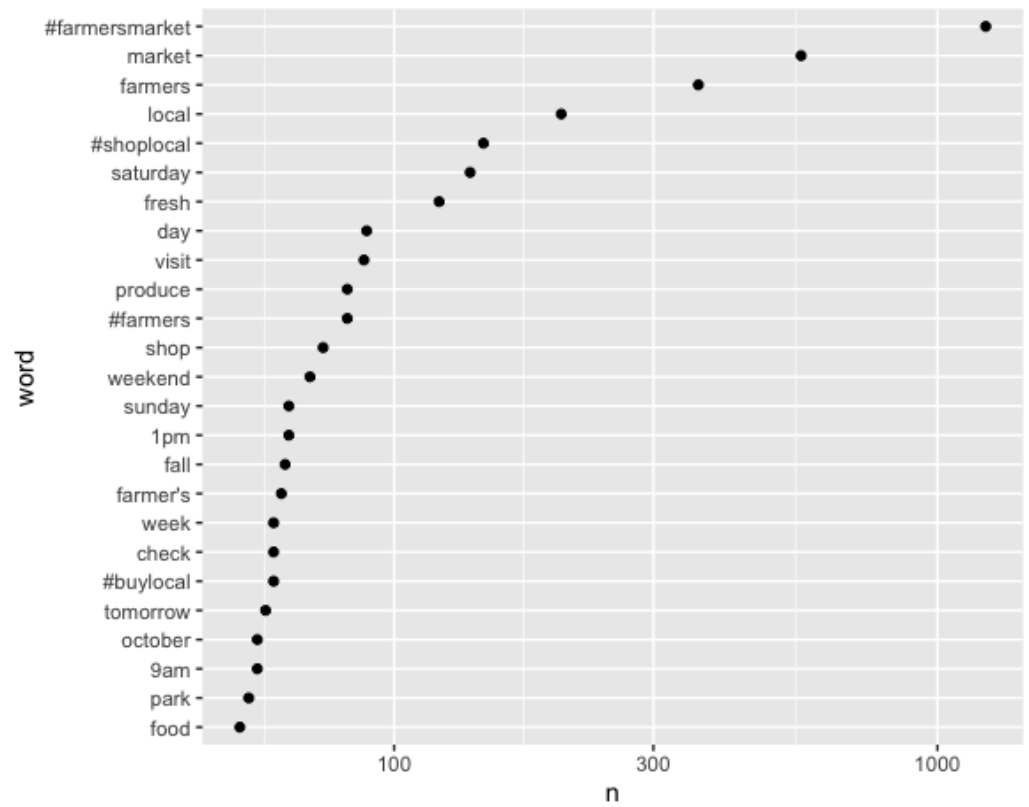


Figure 1. Word frequencies that were associated with farmers’ markets.

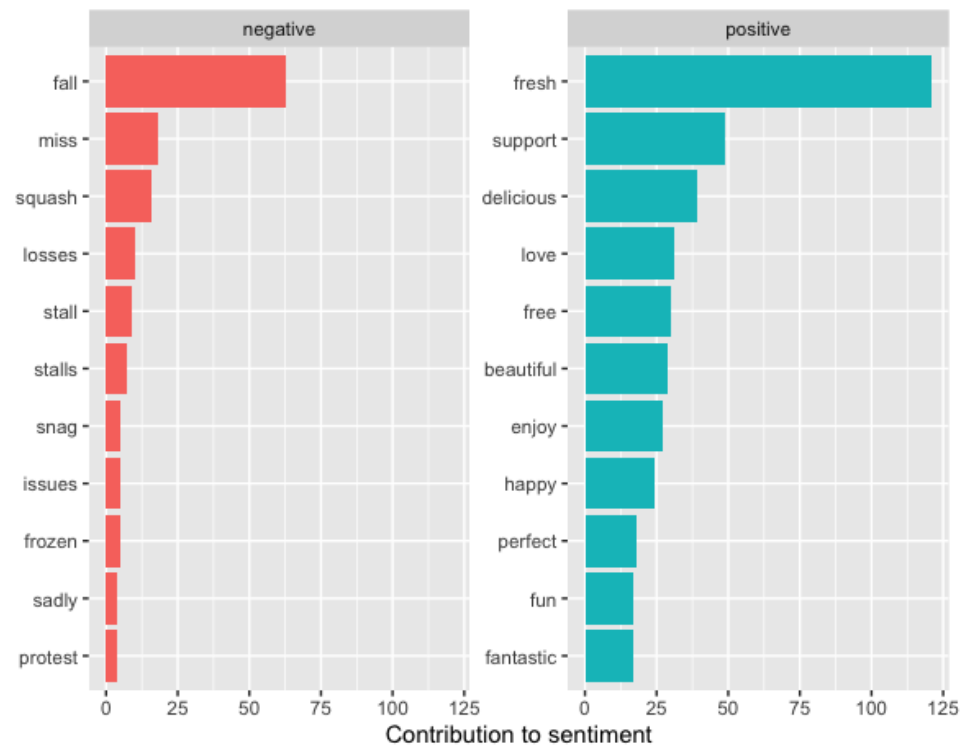


Figure 2. Positive and negative sentiments about farmers’ markets.

## 5. Results

### 5.1. Pre-Pandemic Survey

Table 1 provides a summary of the characteristic of the sample. A total of 73 participants (58%) ranked food attributes, 65 participants (52%) ranked support community economic development, 49 participants (39%) ranked the social aspect, and 44 participants (35%) ranked environmental sustainability as the most important attribute that influenced their decision to buy local.

**Table 1.** Characteristics of the sample (N = 125).

Characteristics	Classes	Quantity	Percentage
Gender	Female	56	44.8
	Male	69	55.2
Age (years)	18–25	48	38.4
	26–35	27	21.6
	36–45	9	7.20
	46–55	11	8.80
	56–65	14	11.2
	66–75	14	11.2
	76–85	2	1.60
Status	International student	58	46.4
	Canadian local resident	67	53.6
Country of citizenship	Canada	67	53.6
	India	15	12.0
	Egypt	14	11.2
	China	13	10.4
	Vietnam	4	3.20
	Other	7	5.60
	Did not mention	5	4.00
Attributes that influence consumers' decision	Food attributes	73	58
	Support CED	65	52
	Social	49	39
	Environmental sustainability	44	35
Is an authentic buy-local experience limited to channels that allow for the social aspect of buying local?	Yes	54	43.2
	No	71	56.8

As 49 participants (39%) chose more than one attribute as the most important attribute, the summation of the percentages did not equal 100%. This also indicated that a considerable percentage of consumers perceived more than one attribute or value as the most important motivating factor to buy local while the top two motivating factors to buy local were related to food attributes and supporting community economic development. Further, we were interested in exploring the correlation between the variables that influenced the consumers' decision to select a channel to buy local. We investigated the correlation between the consumers' perceptions of an authentic buy-local experience (dependent variable) and demographic and societal variables (independent variables). XLMiner software's feature selection helped to identify the most important or relevant variables for model fitting based on their significance. Information on the variables' significance levels is provided in Table 2. The age median, i.e., the midpoint for each age range, and international student variables were identified by XLMiner's feature selection as the key independent variables. Consequently, we chose the age median and international student as independent variables and consumers' perceptions of an authentic buy local experience being limited to channels that allowed for the social aspect of buying local as the dependent variable. Table 3 provides information on the coefficients of the independent



variables, 95% confidence intervals (CIs) for the estimated values, standard errors (SEs), and *p*-values. The R-squared value for the logistic regression model was 0.038322342.

**Table 2.** Information on variables' significance.

Variable	$\chi^2$ : Stat	$\chi^2$ : <i>p</i> -Value
Age median	13.48528335	0.035945204
Social	0.003860885	0.950454515
Support CED	1.113727713	0.29127306
Food attributes	0.863078355	0.352878667
Environmental sustainability	0.140657722	0.707628021
International student	2.156607081	0.141957844
Gender	0.004860078	0.94442109

**Table 3.** Information on independent variables in model fitting.

Variable	Estimate	CI: Lower	CI: Higher	SE	<i>p</i> -Value
Age median	0.030366741	0.001173453	0.059560029	0.014894808	0.041475316
International student	−1.297379129	−2.1831242	−0.411634058	0.451919055	0.004094061

This fitted model indicates that the senior non-international student residents of Cape Breton Island are more probable to be in the category of consumers whose perception of an authentic buy-local experience was limited to distribution channels that allowed for the social aspect of buying local, e.g., meeting the farmer. We recognize that the statistically significant independent variables were what differentiated two distinct segments of the community included in the sample, and there were no other significant independent variables. In order to gain insights from each segment, we broke down the original sample into two sub-samples, with one sample representing the permanent residents of Cape Breton Island ( $N = 67$ ) and one sample representing the international students ( $N = 58$ ). Table 4 presents the most important attributes to local permanent residents of Cape Breton Island as well as the international students.

**Table 4.** Information on two distinct samples.

Characteristics	Sample 1 ( $N = 67$ )	Sample 2 ( $N = 58$ )
	Canadian Permanent Resident	International Student
Food attributes	25 (Yes)	48 (Yes)
Support CED	40 (Yes)	25 (Yes)
Social	19 (Yes)	30 (Yes)
Environmental sustainability	15 (Yes)	29 (Yes)
Is an authentic buy-local experience limited to channels that allow for the social aspect of buying local?	33 (Yes)	21 (Yes)
Gender	37 (Female)	19 (Female)
	15–25	543
	26–35	1314
	36–45	90
Age	46–55	110
	56–65	140
	66–75	140
	≥76	20

## 5.2. Mid-Pandemic Twitter Analysis

Figure 1 suggests a strong association between the farmers' markets and buying local, as well as a strong association between the farmers' markets and the weekend. The mention of the terms 'fall' and 'october,' reflect not only the date of the data collection but may also suggest a concern for the impact of time-of-year on buy-local and farmers market activity.

The terms in Figure 2 associated with positive sentiment appear to be associated with the three themes: the quality of the food available at farmers markets (e.g., 'fresh,' 'delicious,' 'beautiful'), the desire to support local farmers (e.g., 'support'), and feeling good about the experience (e.g., 'love,' 'enjoy,' 'happy'). With respect to negative sentiment, the primary association appeared to be an expression of sadness associated with the closing of the farmers' market at the end of the season (e.g., 'fall,' 'miss,' 'sadly'). There also appeared to be some concern regarding the loss of crops associated with poor weather conditions (e.g., losses, frozen). While it is difficult to determine an accurate interpretation associated with the terms 'stall,' 'stalls,' 'issues,' and 'protest,' we might speculate that these potentially reflected administrative matters associated with the management of farmers' markets under the current pandemic conditions. Similarly, the term 'squash' is rather ambiguous here, as it can represent a fall vegetable as a noun but indicates an action of crushing or flattening as a verb.

## 6. Discussion and Conclusions

Similar to past research conducted on determining the most important attributes and values that influence consumers' decisions to buy local [11,35,36], the findings of this study, based on text mining and explanatory analysis of surveys, demonstrated that the number one attribute that influenced consumers' decisions to buy local farm products was associated with food attributes (e.g., quality, freshness, healthy, safe to consume, nutritious). While, in past research, supporting local farmers and community economic development has been reported as a value that motivates consumers to buy local [22,27,47,51], it has not necessarily been cited as the second most important value, unlike the results suggested by our study. This perhaps could be because of the existence of a stronger sense of community in smaller and rather remote rural areas versus bigger and larger ones. We recommend that more research in this regard has to be carried out to investigate why supporting community economic development may be cited as a more important value for consumers in shopping local in some areas than in others. Moreover, the sentiment analysis of consumers who would like to engage in buy-local activities suggested the desirability and potential viability of farmers' markets after the COVID-19 pandemic.

On the three matters of mobilization and increasing demand for locally produced products in remote rural communities [25,26], whether consumers care about how their purchased food is grown [53], and whether consumers are becoming more interested in knowing about the origin of their food and how it is produced [4], our study suggested that neither gender nor any of the societal variables influenced the consumers' decisions regarding the selection of a channel to buy local.

Jablonski et al. [25] addressed the need to study and understand local food markets in remote rural communities. Ashtab et al. [27] identified a set of attributes and values that influenced consumers' decisions to buy local [55] and reported on the disparity that exists in different regions on the significance level of each attribute and motivating factor. The social aspect of buying local, e.g., the interaction between farmers and customers, has been presented in the literature in the general context of consumers and producers (e.g., [56,57]). Given the changing circumstances and demographics, and emerging values and identities [26] in remote rural communities, we involved an emerging new segment in our communities, i.e., international students, in our sample. While our sample size was small, the results offer insight into the attributes that are important to international students in buying local, with the first being food attributes, followed by social and environmental sustainability factors. Furthermore, among our findings was the suggestion that senior non-international student residents (i.e., local permanent residents of Cape Breton Island)

were more likely to fall into the category of consumers whose perception of an authentic buy-local experience was limited to distribution channels that allowed for the social aspect of buying local, e.g., meeting the farmer. While this finding supported the viability of farmers' markets after the COVID-19 pandemic, it also indicated that e-commerce platforms can be deployed further to involve more customers in AFNs and maximize the mobilization of locally produced products in remote rural communities.

In conclusion, while acknowledging the preliminary nature of our research, we suggest that this study sheds light on the collective sentiments of consumers toward farmers' markets, both during and potentially after the COVID-19 pandemic, and improves our understanding of the attributes and values that are important to international students regarding shopping at farmers markets and buying local. It also suggests the potential viability of farmers' markets after the COVID-19 pandemic. Furthermore, the findings from both our survey and our text-mining approaches indicate that the top two drivers for buying local were related to food attributes and supporting community economic development.

Our study has limitations. Future work can contribute to the further mobilization of locally produced food products by analyzing larger sample sizes of local permanent residents versus emerging new segments in communities in different regions, e.g., international students, to determine whether there exists a meaningful difference between their attitudes and values regarding shopping at farmers markets and buying local, as well as their preferences for the selection of a channel to engage in buy-local activities.

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## References

1. Pearson, D.; Henryks, J.; Trott, A.; Jones, P.; Parker, G.; Dumaresq, D.; Dyball, R. Local food: Understanding consumer motivations in innovative retail formats. *Br. Food J.* **2001**, *113*, 886–899. [[CrossRef](#)]
2. Selfa, T.; Qazi, J. Place, taste, or face to face? Understanding producer consumer networks in “local” food systems in Washington State. *Agric. Hum. Values* **2005**, *22*, 451–464. [[CrossRef](#)]
3. Monteiro, C.A.; Levy, R.B.; Claro, R.M.; Castro, I.R.R.D.; Cannon, G. A new classification of foods based on the extent and purpose of their processing. *Cad. Saude Publica* **2010**, *26*, 2039–2049. [[CrossRef](#)]
4. Seyfang, G. Avoiding Asda? Exploring consumer motivations in local organic food networks. *Local Environ.* **2008**, *13*, 187–201. [[CrossRef](#)]
5. Jarzebowski, S.; Bourlakis, M.; Bezat-Jarzebowska, A. Short Food Supply Chains (SFSC) as Local and Sustainable Systems. *Sustainability* **2020**, *12*, 4715. [[CrossRef](#)]
6. Abate, G. Local food economies: Driving forces, challenges, and future prospects. *J. Hunger Environ. Nutr.* **2008**, *3*, 384–399. [[CrossRef](#)]
7. Brinkley, C. The Small World of the Alternative Food Network. *Sustainability* **2018**, *10*, 2921. [[CrossRef](#)]
8. Hinrichs, C.C. Embeddedness and local food systems: Notes on two types of direct agricultural market. *J. Rural Stud.* **2000**, *16*, 295–303. [[CrossRef](#)]
9. Greenbelt Farmers Market Network. Tracking Market Farmer and Vendor Performance 2009–2015. 2015. Available online: <https://www.greenbeltmarkets.ca/wp-content/uploads/resources/2016-Tracking-Market-Farmer-Report-web.pdf> (accessed on 30 April 2021).
10. Miller, A. Making Markets Mainstream. 2014. Available online: <https://sustainablefoodtrust.org/articles/farmers-market-moving-it-mainstream/> (accessed on 30 April 2021).

11. Brown, C. Consumers' preferences for locally produced food: A study in southeast Missouri. *Am. J. Altern. Agric.* **2003**, *18*, 213–224. [[CrossRef](#)]
12. Nakandala, D.; Lau, H.C.W. Innovative adoption of hybrid supply chain strategies in urban local fresh food supply chain. *Supply Chain Manag. Int. J.* **2018**, *24*, 241–255. [[CrossRef](#)]
13. Renting, H.; Schermer, M.; Rossi, A. Building food democracy: Exploring civic food networks and newly emerging forms of food citizenship. *Int. J. Soc. Agric. Food* **2012**, *19*, 289–307.
14. Johnson, N.R.; Endres, A.B. Small producer, big hurdles: Barriers facing producers of local foods. *Hamline J. Public Law Policy* **2011**, *33*, 49–122.
15. Lamine, C.; Darolt, M.C.; Brandenburg, A. The civic and social dimensions of food production and distribution in alternative food networks in France and Southern Brazil. *Int. J. Soc. Agric. Food* **2012**, *19*, 383–401.
16. Fischer, C. Trust and communication in European agri-food chains. *Supply Chain Manag. Int. J.* **2013**, *18*, 208–218. [[CrossRef](#)]
17. Polimeni, J.M.; Iorgulescu, R.I.; Mihnea, A. Understanding consumer motivations for buying sustainable agricultural products at Romanian farmers markets. *J. Clean. Prod.* **2018**, *184*, 586–597. [[CrossRef](#)]
18. Escobar-López, S.Y.; Amaya-Corchuelo, S.; Espinoza-Ortega, A. Alternative Food Networks: Perceptions in Short Food Supply Chains in Spain. *Sustainability* **2021**, *13*, 2578. [[CrossRef](#)]
19. Smithers, J.; Lamarche, J.; Joseph, A.E. Unpacking the terms of engagement with local food at the farmers' market: Insights from Ontario. *J. Rural Stud.* **2008**, *24*, 337–350. [[CrossRef](#)]
20. Tregear, A. Progressing knowledge in alternative and local food networks: Critical reflections and a research agenda. *J. Rural Stud.* **2011**, *27*, 419–430. [[CrossRef](#)]
21. Carzedda, M.; Marangona, F.; Nassiverab, F.; Troiano, S. Consumer satisfaction in Alternative Food Networks (AFNs): Evidence from Northern Italy. *J. Rural Stud.* **2018**, *64*, 73–79. [[CrossRef](#)]
22. Blasi, E.; Cicatiello, C.; Pancino, B.; Franco, S. Alternative food chains as a way to embed mountain agriculture in the urban market: The case of Trentino. *Agric. Food Econ.* **2015**, *3*, 1–13. [[CrossRef](#)]
23. Brunori, G.; Rossi, A. Differentiating countryside: Social representations and governance patterns in rural areas with high social density: The case of Chianti, Italy. *J. Rural Stud.* **2007**, *23*, 183–205. [[CrossRef](#)]
24. Galli, F.; Bartolini, F.; Brunori, G.; Colombo, L.; Gava, O.; Grando, S.; Marescotti, A. Sustainability assessment of food supply chains: An application to local and global bread in Italy. *Agric. Food Econ.* **2015**, *3*, 1–17. [[CrossRef](#)]
25. Jablonski, B.B.; Schmit, T.M.; Minner, J.; Kay, D. *Rural Wealth Creation Impacts of Urban-Based Local Food System Initiatives: A Delphi Method Examination of the Impacts on Intellectual Capital (No. 250033)*; The Charles H. Dyson School of Applied Economics and Management Cornell University: Ithaca, NY, USA, 2016.
26. Kemkes, R.; Akerman, S. Meeting people where they are: Instilling familiarity to increase demand in a rural local food market. *J. Rural Stud.* **2019**, *72*, 116–124. [[CrossRef](#)]
27. Ashtab, S.; Xing, Y.; Zheng, C. Exploring Constituents of Short Food Supply Chains. In *Operations Management—Emerging Trend in the Digital Era*; IntechOpen: London, UK, 2020.
28. Baker, D.; Hamshaw, K.; Kolodinsky, J. Who shops at the market? Using consumer surveys to grow farmers' markets: Findings from a regional market in northwestern Vermont. *J. Ext.* **2009**, *47*, 1–9.
29. Gumirakiza, J.D.; Curtis, K.R.; Bosworth, R.C. Who attends farmers' markets and why? Understanding consumers and their motivations. *Int. Food Agribus. Manag. Rev.* **2014**, *17*, 65–82.
30. Onianwa, O.; Mojica, M.N.; Wheelock, G. Consumer characteristics and views regarding farmers markets: An examination of on-site survey data of Alabama consumers. *J. Food Distrib. Res.* **2006**, *37*, 119–125.
31. Röhr, A.; Lüddecke, K.; Drusch, S.; Müller, M.J.; Alvensleben, R.V. Food quality and safety-consumer perception and public health concern. *Food Control* **2005**, *16*, 649–655. [[CrossRef](#)]
32. Wolf, M.M.; Spittler, A.; Ahern, J. A profile of farmers' market consumers and the perceived advantages of produce sold at farmers' markets. *J. Food Distrib. Res.* **2005**, *36*, 192–201.
33. Onianwa, O.; Wheelock, G.; Mojica, M. An analysis of the determinants of farmer-to-consumer direct-market shoppers. *J. Food Distrib. Res.* **2005**, *36*, 130–134.
34. Besser, T.; Jurt, C.; Mann, S. Agricultural structure and farmers' interconnections with rural communities. *Int. J. Soc. Econ.* **2017**, *44*, 362–376. [[CrossRef](#)]
35. Brown, E.; Dury, S.; Holdsworth, M. Motivations of consumers that use local, organic fruit and vegetable box schemes in Central England and Southern France. *Appetite* **2009**, *53*, 183–188. [[CrossRef](#)]
36. Lyon, P.; Collie, V.; Kvarnbrink, E.-B.; Colquhoun, A. Shopping at the farmers' market: Consumers and their perspectives. *J. Foodserv.* **2009**, *20*, 21–30. [[CrossRef](#)]
37. Weatherell, C.; Tregear, A.; Allinson, J. In search of the concerned consumer: UK public perceptions of food, farming and buying local. *J. Rural Stud.* **2003**, *19*, 233–244. [[CrossRef](#)]
38. Zander, K.; Hamm, U. Consumer preferences for additional ethical attributes of organic food. *Food Qual. Prefer.* **2010**, *21*, 495–503. [[CrossRef](#)]
39. Zepeda, L.; Li, J. Who buys local food? *J. Food Distrib. Res.* **2006**, *37*, 1–11.
40. Daskalopoulou, I.; Petrou, A. Consumers' expenditures and perceived price fairness. *Int. J. Soc. Econ.* **2006**, *33*, 766–780. [[CrossRef](#)]

41. Zepeda, L.; Nie, C. What are the odds of being an organic or local food shopper? Multivariate analysis of US food shopper lifestyle segments. *Agric. Hum. Values* **2012**, *29*, 467–480. [[CrossRef](#)]
42. Thilmany, D.; Bond, C.A.; Bond, J.K. Going local: Exploring consumer behavior and motivations for direct food purchases. *Am. J. Agric. Econ.* **2008**, *90*, 1303–1309. [[CrossRef](#)]
43. Nie, C.; Zepeda, L. Lifestyle segmentation of US food shoppers to examine organic and local food consumption. *Appetite* **2011**, *57*, 28–37. [[CrossRef](#)] [[PubMed](#)]
44. Bean, M.; Sharp, J.S. Profiling alternative food system supporters: The personal and social basis of local and organic food support. *Renew. Agric. Food Syst.* **2011**, *26*, 243–254. [[CrossRef](#)]
45. Bellows, A.C.; Alcaraz, G.V.; Hallman, W.K. Gender and food, a study of attitudes in the USA towards organic, local, U.S. grown, and GM-free foods. *Appetite* **2010**, *55*, 540–550. [[CrossRef](#)]
46. Onozaka, Y.; McFadden, D.T. Does local labeling complement of compete with other sustainable labels? A conjoint analysis of direct and joint values for fresh produce claims. *Am. J. Agric. Econ.* **2011**, *93*, 693–706. [[CrossRef](#)]
47. Feagan, R.B.; Morris, D. Consumer quest for embeddedness: A case study of the Brantford farmers' market. *Int. J. Consum. Stud.* **2009**, *33*, 235–243. [[CrossRef](#)]
48. Alonso, A.D.; O'Neill, M.A. A comparative study of farmers' markets visitors' needs and wants: The case of Alabama. *Int. J. Consum. Stud.* **2011**, *35*, 290–299. [[CrossRef](#)]
49. Schneider, M.L.; Francis, C.A. Marketing locally produced foods: Consumer and farmer opinions in Washington County, Nebraska. *Renew. Agric. Food Syst.* **2005**, *20*, 252–260. [[CrossRef](#)]
50. Roininen, K.; Arvola, A.; Lähteenmäki, L. Exploring consumers' perceptions of local food with two different qualitative techniques: Laddering and word association. *Food Qual. Prefer.* **2006**, *17*, 20–30. [[CrossRef](#)]
51. Winter, M. Embeddedness, the new food economy and defensive localism. *J. Rural Stud.* **2003**, *19*, 23–32. [[CrossRef](#)]
52. Archer, G.P.; García Sánchez, J.; Vignali, G.; Chaillot, A. Latent consumers' attitude to farmers' markets in North West England. *Br. Food J.* **2003**, *105*, 487–497. [[CrossRef](#)]
53. Hunt, A.R. Consumer interactions and influences on farmers' market vendors. *Renew. Agric. Food Syst.* **2007**, *22*, 54–66. [[CrossRef](#)]
54. Hu, M.; Liu, B. Mining and summarizing customer reviews. In Proceedings of the Tenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, New York, NY, USA, 22–25 August 2004; pp. 168–177.
55. Crawford, B.; Byun, R.; Mitchell, E.; Thompson, S.; Jalaludin, B.; Torvaldsen, S. Seeking fresh food and supporting local producers: Perceptions and motivations of farmers' market customers. *Aust. Plan.* **2018**, *55*, 28–35. [[CrossRef](#)]
56. Kessarim, M.; Joly, C.; Jaouen, A.; Jaeck, M. Alternative food networks: Good practices for sustainable performance. *J. Mark. Manag.* **2020**, *36*, 1417–1446. [[CrossRef](#)]
57. April-Lalonde, G.; Latorre, S.; Paredes, M.; Hurtado, M.F.; Muñoz, F.; Deaconu, A.; Cole, D.C.; Batal, M. Characteristics and Motivations of Consumers of Direct Purchasing Channels and the Perceived Barriers to Alternative Food Purchase: A Cross-Sectional Study in the Ecuadorian Andes. *Sustainability* **2020**, *12*, 6923. [[CrossRef](#)]