Exploring Social Media Data to Understand How Stakeholders Value Local Food: A Canadian Study Using Twitter

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Abstract: The consumption of local food, a major trend in industrialized countries around the world has experienced an unprecedented craze in the pandemic context that we are experiencing. Since the beginning of the crisis and in various media, communication about local food seems inconsistent. However, companies would have every interest in better communicating the multifaceted areas of the locality that customers value or adopting the same language if they wish to collaborate with each other. This research aims to identify and evaluate the "fit" or the "gap" of the different local food' meanings of Canadian agri-food stakeholders through data mining of one of their communication media: Twitter. Using tweets by over 1300 Twitter accounts from Canadian agri-food companies and a popular hashtag, we analyze a sample of their tweets in 2019 and 2020 by creating and using a local food' keyword dictionary based on the concept of proximity. Term frequency and multivariate analysis of variance of 16,585 tweets about local food show significant differences in dimensions of proximity used in communications. This study shows the interest of using the concept of proximity to better define and understand the valuation of local food products. In addition, it offers a methodology capable of distinguishing the nuances of meaning of the locality of products using natural data that is accessible via social media.

Keywords: local food; food dictionary; proximity; social media; twitter

1. Introduction

In the context of COVID-19, the agri-food sector in Canada has responded to calls for local food buying by trying to be more efficient, autonomous, resilient and sustainable, and by encouraging the collaboration between actors. However, since the beginning of the crisis and in various media communications, several terms such as "local", "proximity" and "from here" have been used intensively and together with the terms "consumption", "purchase", "economy", "trade", "product" and "business". Communication about local food seems inconsistent. Today, there is no consensus on the perimeter determining a local food product [1–7] because it means different things, to different people and in different contexts [8]. Nevertheless, individual meaning is an important factor in creating value [9–11] and local food benefits from a multiplier effect of interaction or reconnection between stakeholders [12].

Dubois [13] suggest that perceiving the local as a collaboration between all chain actors from the "local" to "translocal" scale, can allow them to maintain their flexibility while optimizing efficiency, resilience and sustainable development [14–18]. All the actors in the chain are therefore essential to generate stability, but also to guarantee the growth of the "local" by taking full advantage of the synergies of this system [19,20]. The interconnection or "reconnection" between all actors in the value chain enables economies of networks

rather than economies of scale [21]. These network economies are probably possible thanks to proximity, since the relationship built through the actors is facilitated by common interests or common identities. In this sense, companies would have every interest in better communicating the multifaceted areas of the locality that customers value or adopting the same language if they wish to collaborate with each other.

The main objective of this research is to examine how agri-food stakeholders communicate about local in digital realm. This research aims to identify and evaluate the "fit" or the "gap" of the different local food' meanings of Canadian agri-food stakeholders through data mining of one of their communication media: Twitter. Considering the limited number of characters allowed for a Twitter post, we can reasonably believe that the words used will relate to what the user values when communicating about local food.

This article first presents the conceptual framework based on the notion of proximity used to analyze tweets as well as the research hypotheses. Subsequently, the three main stages of this research are explained in the materials and methods section. The results show significant gaps in dimensions of proximity used in communications about local food across the different agri-food stakeholders, industries and Canadian provinces, and before and during COVID-19 pandemic. The paper concludes with a discussion of the results and avenues of research are proposed.

2. Theoretical Background

2.1. Concept of Proximity

Proximity is not based on a particular theory [22]. It is a polysemic term that hinders its understanding [23,24] since it is both a state and a feeling [25]. "Distance" that is felt is not only metric, but can also be cultural, cognitive and social [26]. Most authors dealing with proximity agree on its spatial nature, but its relational nature is still debated [27]. Geographical proximity refers to the physical distance perceived between the actors in the geographic space [28,29], and organized proximity distinguishes two logics: the logic of belonging—being close through interaction facilitated by explicit and implicit rules and routines—and the logic of similarity—being close by sharing the same system of representations or set of beliefs [29]. These conceptual subtleties required an array of adjectives that accompany the word proximity: organized, organizational, institutional, cognitive, socio-economic, social, cultural, functional, material, mediating, etc. [27].

2.2. Local Food and Proximity

The academic literature presents different concepts or terms to approach the phenomenon of localism including in particular local food, local food systems, alternative food networks, short food supply chains, localized food systems and sustainable food systems [3,30–35]. Mainly, local food can be view as an "alternative food system" (AFN) founded on the principles of social justice, environmental sustainability and aimed at rebuilding or "reconnecting" the link between producers and customers [2,36,37] or a "localized food system" (SAL) production in a given geographical territory, which gives the product a particular identity [37,38]. Despite some differences, the two perspectives share a fundamental notion of proximity between individuals, products and organizations [30]. In an empirical study based on the work of Eriksen [8], Chicoine et al. [39] show that local food products can be defined by geographical, process, economic, identity, relational functional, cultural, access and experiential proximities (Figure 1).

Figure 1. Local food as a constellation of perceived proximity [39].

Geographical proximity is the most frequently used dimension in literature and is primarily a notion of spatial, physical or geographical distance [40]. In literature on local food, the notions of distance (e.g., food miles) [2,37,41–45], boundary (e.g., geographical or political) [2,4,46–48] and context [3,49,50] are used most frequently to qualify the 'geographical' aspect of this phenomenon. The geographic limit to qualify a local food product is quite flexible and will depend on certain factors [39].

Process proximity, in distribution, lies in the importance that the customer attaches to the internal functioning of the store, which will guarantee the quality of the products or the expected service [25,51–53]. This proximity refers to the freshness of the offer, the establishment of traceability and origin, as well as various quality controls [54]. At the product level, this proximity refers to the methods used (production, processing, breeding, etc.), which are shaped by the locality, either by the different government norms or artisan traditions, which will have an impact on the intrinsic attributes of the product [39].

Economic proximity (or price proximity) discussed by Capo and Chanut [54] underlines that the choice of an adequate price policy and a good quality-price ratio contribute to the feeling of proximity to the trade. During their analysis of proximity circuits, Praly et al. [26] also raised an economic dimension that evokes an additional valuation perceived by the producer or customer. Economic proximity is attributed to the perception of a higher quality/price ratio as well as a more equitable relationship between producers and customers [26,39]. Indeed, local food is perceived to have fairer prices [48,55], thereby participating in a social economy [2].

Identity proximity refers to a set of values shared between the two actors of an exchange [39,51–53,56]. Values associated with a local food product typically include sustainability, organic production, support of local and regional farmers, seasonal consumption, health, equity, or simply 'better' [1,34,44,46,57,58]. Indeed, Chicoine et al. [39] note that a local food product seems to be a product around which there is an important sharing of values, in particular at the economic, environmental and social sustainability level, and in terms of seasonality and organic concerns. It is also a product that creates a sense of belonging and pride [8,39].

Relational proximity can be compared to the concept of relational marketing [51] where it is characterized by an important affective content [59] since it develops feelings of attachment [54]. Relational proximity represents the relationships built between actors who are reconnected by alternative distribution practices [3,8,58,60,61]. Indeed, relational proximity is another component of the definition of a local food product around which social and friendly relationships, knowledge, trust, personalization, and collaboration are

organized [39]. A local food product is therefore not reduced to a simple transactional exchange, but is rather an opportunity to build long-term relationships with all industry stakeholders [51].

Functional proximity, also studied in distribution, is characterized by the desire to not waste time, to easily find one's products, to have a wide choice in terms of offer [25,51,54,56]. Local food products present clear information but are also a unique, original and creative offer [39]. Communication is translated into concrete and clear information (price, origin, instructions for use) in order to optimize the purchase time [51]. In fact, a local food product has an easily identifiable symbol or label of origin.

Cultural proximity (or cognitive proximity) represents shareable material and cognitive resources such as language, values and standards [28,40]. This proximity is commonly defined as the similarities in the way actors perceive, interpret, understand and evaluate the world [62]. This proximity does not only refer to a common place, but also to a common history and a common belonging solidified in collective norms and regulations [37]. Indeed, local food product as a product with a (hi)story [39]. This dimension can be linked to ancestral or cultural traditions [43,44]—called history—but can also be the result of the construction of brand image—called story [39]. Either way, a local food product has something to tell.

Access proximity is essentially based on the ease for customers to reach their point of sale [25,51,53,54] or to find their products [39]. As Laut [24] defines it, it is the act of 'making accessible'. According to Dunne et al. [2], local foods can be defined based on the ease of these transactions. Indeed, accessibility to a market or source for actors in the agri-food industry is important when looking at local food products [63].

Experiential proximity refers to the lived experience of a local food product in terms of pleasure and discovery [39]. The pleasure experienced in the production, processing, purchase and consumption of local food products is a differentiator from non-local products. It is therefore not by obligation that we will take part in the local consumption in the food sector, but for pleasure [64]. Local food is also an opportunity to (re)discover different products or ways of doing things, for example the different local varieties or cultivars that do not need to withstand long distance transport [39].

As presented, local food means different things, to different people and in different contexts [8], however, they all share a fundamental notion of proximity in nine dimensions [39]. This article then attempts to answer several questions: Do Canadian agri-food stakeholders use the nine dimensions of perceived proximity in their publications on Twitter? What dimensions are most used in these media communications? Do the stakeholders communicate the same facets of the locality? If not, on which dimensions of proximity are there differences? Finally, this study assesses the impact of context on communication about local food by testing the following hypotheses:

Hypothesis 1 (H1). *The year of publication (pre and post pandemic) is associated with the dimensions of proximity used in communication about local food.*

Hypothesis 2 (H2). *The organization's activity is associated with the dimensions of proximity used in communication about local food.*

Hypothesis 3 (H3). *The organization's industry is associated with the dimensions of proximity used in communication about local food.*

Hypothesis 4 (H4). *The organization's location is associated with the dimensions of proximity used in communication about local food.*

Hypothesis 5 (H5). *The type of stakeholder (organizations and customers) is associated with the dimensions of proximity used in communication about local food.*

3. Materials and Methods

In order to carry out this study, three main steps were carried out. First of all, we built two keyword dictionaries: a food dictionary and a local food dictionary. Next, we extracted and cleaned the data on Twitter using a list of accounts and hashtag. Finally, we analyzed the tweets with term frequency and multivariate analysis of variance (MANOVA) using the local food dictionary.

3.1. Keyword Dictionaries

3.1.1. Food Dictionary

First, a dictionary of food related keywords was created to filter the sample of tweets. As this study is focused on food, we wanted to make sure that the tweets about "local" are related to "food". We used the categories offered by Aliments du Québec, a non-for-profit organization whose mission is to promote the local agri-food industry [65] and we complemented it with the Canada's agriculture sectors categories proposed by the Government of Canada [66]. Then, using Wikipedia, we found the English keywords related to each of these categories [67] and we added a "general" category for keyword such as "food" or "meal". Finally, each keyword was translated into French by one of the French-speaking researchers. The dictionary ultimately includes 1148 keywords. It is important to note that this dictionary does not claim to contain all the keywords related to food, but it serves as a basis to narrow down tweets about food.

3.1.2. Local Food Dictionary

As local food is a multidimensional concept, we have chosen to build our dictionary using the main articles dealing with the definition of this concept. A systematic review with the *Methodi Ordinatio* protocol was used to select the relevant scientific articles [68]. In accordance with this protocol, the Ordinatio (InOrdinatio) index was applied to classify the articles, taking into account the year of publication, the number of citations and the impact factor of the journal in which the article was published in [68]. As proposed by Pagani et al. [68], the keywords were defined following the definition of the problem, the search intent and a preliminary search on different databases. A wide selection of related keywords was therefore favored. Concept 1—keywords belonging to the research subject in its various terminologies—included "local food", "alternative food system *", "alternative food network *", "alternative agro-food network *", "short food supply chain" and "sustainable food system*" keywords. Concept 2 included "defin *" and mean *" keywords. The asterisk has been used to enable searches for singular and plural keywords and related words.

The Scopus and Web of Science databases were used to search for these two concepts in article titles, abstracts and keywords. As suggested by Pagani et al. [68], the specific mechanisms of each database were examined, respecting the search guidelines for better search consistency. The search was limited to all original, peer-reviewed research articles that were published in English, in print or electronic form, between January 2000 and December 2020. All the keyword combinations defined under concepts 1 and 2 were used, resulting in 12 searches in each database, for a total of 24 searches in all databases.

Following the collection of the articles, a first elimination was carried out to remove the duplicates as well as the texts in other languages. Each of the titles of the selected articles were read, and those that were not related to local food products, alternative systems, short circuits or sustainable food systems, were eliminated. Abstracts of the other articles were used to remove from the corpus those articles that did not include the meaning or the definition of the local, as well as those that are more related to food safety (food safety, food security), nutrition, justice and microbiology. Finally, the Ordinatio index (InOrdinatio) was calculated. Figure 2 presents the number of articles found by applying the search keywords in the databases as well as the filtering of the final corpus.
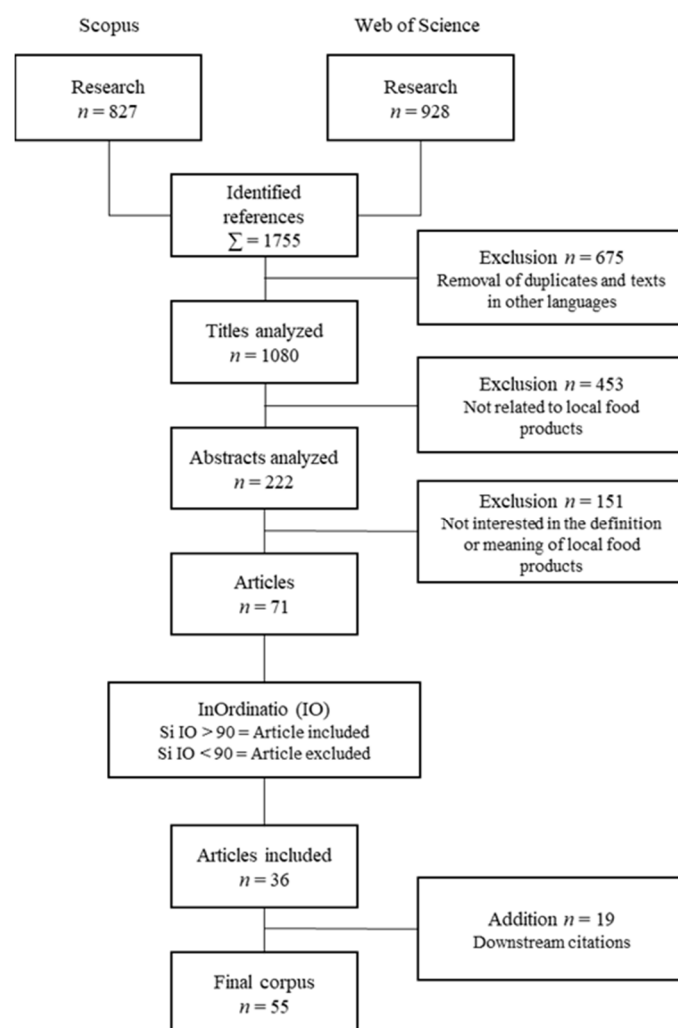
Figure 2. Results of the application of the *Methodi Ordinatio*.

On the basis of these criteria, 36 articles were selected to compose the final portfolio. Next, we carried out a new search through the 36 articles, by looking at the downstream citations to include more recent papers since this method quickly eliminates newer articles that have no or very few citations. This step allowed us to add 19 other articles for a total of 55 articles that make up our final corpus (see Appendix A).

Each article was read in order to identify important keywords relating to local food. These were noted and categorized according to the dimensions of proximity to local food proposed by Chicoine et al. [39]. Depending on the dimensions, other keywords have been added to contextualize the dictionary. For example, when it comes to the provincial border, we have added all the names and abbreviations of the Canadian provinces as the research takes place with agri-food companies in Canada. We have also translated each of the keywords into French in order to have a bilingual dictionary. In the end, our dictionary of local food is composed of 582 keywords in nine dimensions of proximity.

3.2. Twitter Data Collection and Cleaning

Since we wanted to analyze tweets from companies and individuals, namely customers, we used two different methods to extract the data from Twitter and clean it up. First, we used a predefined list of over 1300 Twitter accounts from Canadian agri-food companies to mine 532,661 tweets published between 1 January 2019, and 31 December 2020. We cleaned up this database by eliminating duplicates before doing the pre-analysis. The latter constrained to retain only the tweets presenting the word "local". Through this

new sample of 16,912 tweets, we used the food dictionary in order to keep only tweets that contained at least one food-related keyword. These two filters combined ensure that we only have tweets that talk about "local food", for a final sample of 12,300 tweets from Canadian agri-food companies.

Using NVivo Pro software, we identified the hashtags most frequently used by organizations. With 1044 occurrences, the #supportlocal hashtag was the most used by organizations in our sample. We then used this hashtag to pull a new database from Twitter so that we could compare tweets from organizations and individuals. At this stage, we extracted a sample of 20,000 tweets containing the hashtag #supportlocal before 1 January 2021 in order to have a temporally comparable database. We then manually looked at the location of the tweets to eliminate any that were not in Canada, which reduced our sample to 7843 tweets published between 1 April and 31 December 2020. Manually again we have to look at the name of the users in order to eliminate any organizations. This work allowed us to purify our sample to have a total of 4914 tweets. Finally, similar to as with the organizations database, we used the food dictionary to only keep tweets that talk about "local food". Our final sample of tweets from individuals about local food in Canada is 4285 (see Appendix B).

3.3. Data Analysis

We privileged quantitative methods, namely multivariate regression analysis using term frequency and joint analysis [69]. First, we recorded the frequency of keywords contained in the local food dictionary for each tweet in our database using R software since the unit of analysis was each message-level tweet. Subsequently, we grouped the keywords by dimension of proximity in order to see the occurrence of each of these dimensions by tweet. For example, if a tweet contained the keywords "from here" and "Ontario", it would have the number 2 under the variable "geographical proximity". Following this exercise, our database contained 16,585 tweets by 9 proximity dimensions (dependent variables) and 5 non text data (independent variables). Independent variables include year of publication, organization's activity, industry, location, and the type of stakeholder (organization or individuals).

4. Results

4.1. Descriptive Analysis

First of all, although Canada is bilingual (English and French), our sample contained a strong majority of tweets in English (97%). The vast majority of companies in our sample are based in English-speaking provinces. A quarter of them are based in British Columbia (26%), another quarter in Ontario (25%) and 14% in Nova Scotia. In addition, 16% of them do not have a province to which they belong, they are present across Canada, or at least in multiple provinces. The majority (41%) of the organizations in our sample are processors, 13% are producers, 12% restaurants and 9% retailers. In addition, more than a third of companies (38%) are classified as being multi-category. These companies do not belong to a particular industry, for example food retailers who sell all kinds of products. On the other hand, a third of them (33%) are companies in the beverage industry, 8% in fruits and vegetables and 6% in meat industry.

Based on the publication date, we were able to assess the importance of local food communication over time. Figure 3 shows the evolution of the number of tweets published by companies between January 2019 and December 2020. We can see that the increase in the number of tweets about local food starts much earlier in 2020, in the month of March, where the pandemic started to become significant in Canada. This suggests that companies have taken part in this call for local purchase.
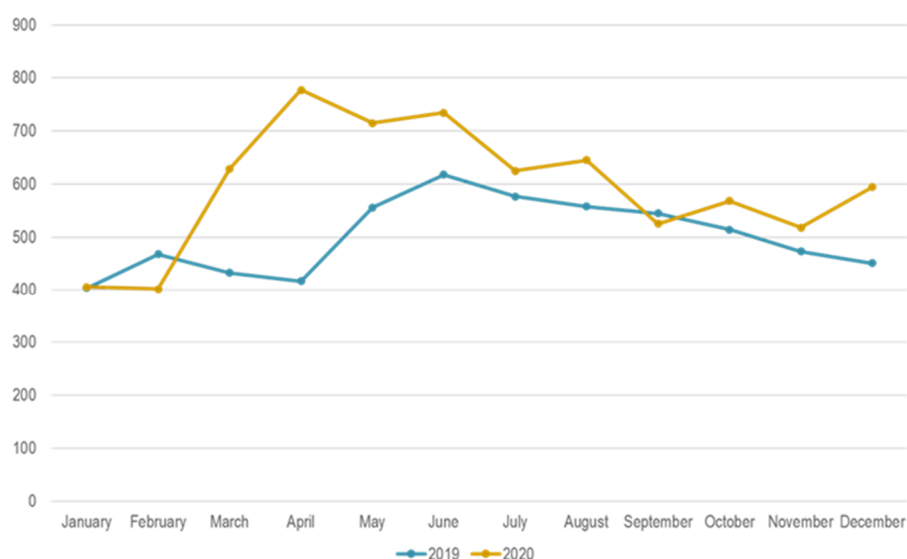
Figure 3. Number of "local food" tweets per month in 2019 and 2020.

4.2. Term Frequency Analysis

Analysis of term frequency shows that 47% (*n* = 275) of the keywords in the local food dictionary were found in the sample of tweets. This result can be explained by the fact that 97% of the tweets were in the English language. Thus, the majority of French keywords were not found in our sample. The calculation of the sum and mean of the keywords shows that on average, individuals use 2.63 local food keywords by tweets while this number is 2.37 among organizations.

Analysis of term frequencies allowed us to assess whether the nine dimensions of proximity were mentioned in tweets about local food. As shown in Figure 4, all dimensions have been noted. Surprisingly, it is the identity proximity that has been used the most in local communication, in contrast with the geographic dimension in the literature. Indeed, the keyword "support local economy" has been very strong in this period of time. Geographical, process and experiential proximities correspond to nearly 3/4 of the keywords used in local food tweets. Only the functional and economic proximity were very weak.
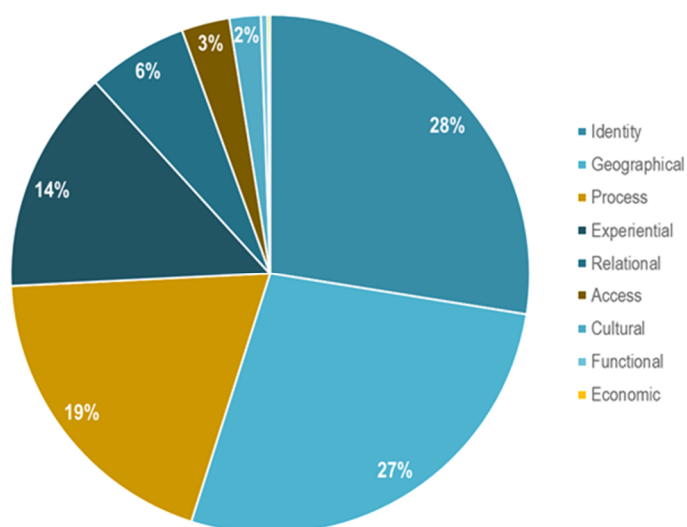

Figure 4. Dimensions of proximity in local food tweets.

4.3. Twitter Data Analysis

The frequencies of the terms made it possible to identify the different dimensions of proximity used in the tweets. With this information, we were able to conduct multivariate analysis of variance (MANOVA) in order to see if there was a difference in the communication on the local food according to the year of publication, organization's activity, organization's industry, organization's location and the type of stakeholders. The choice to use multivariate analysis of variance (MANOVA) is explained by the fact that we have multiple independent variables and multiple dependent variables [70]. Table 1 provides summary outputs from the multivariate analysis of variance (MANOVA).

Table 1. Multivariate analysis of variance (MANOVA) results.

Effect	Test Statistic	Value	F	df	Sig. (p)	η^2
Year of publication	Wilks' Lambda	0.961	55.461	9	0.000	0.039
Organization's activity	Wilks' Lambda	0.485	156.531	81	0.000	0.077
Organization's industry	Wilks' Lambda	0.523	95.813	117	0.000	0.069
Organization's location	Wilks' Lambda	0.514	106.745	108	0.000	0.071
Type of stakeholder	Wilks' Lambda	0.592	1270.217	9	0.000	0.408

All multivariate differences measures (Wilks' lambda) are significant ($p < 0.05$); that is, all the dependent variables (i.e., geographical, process, economic, identity, relational functional, cultural, access and experiential proximities) vary across the year of publication, organization's activity, organization's industry, organization's location and the type of stakeholders. These contextual variables are associated with the dimensions of proximity used in communications on Twitter, supporting hypotheses 1 to 5.

4.3.1. Year of Publication

First, we evaluated the year of publication to see if there were any differences in the use of proximity keywords. The multivariate result was significant for the year of publication, Wilks' Lambda = 0.0961, F = 55.461, df = 9, p = 0.000, indicating a difference between 2019 and 2020, and supporting Hypothesis 1. The univariate F tests showed there was a significant difference between 2019 and 2020 for geographical (p = 0.017), identity (p = 0.024), functional (p = 0.022), economic (p = 0.000), access (p = 0.000) and experiential (p = 0.002) proximities (see Table 2).

Table 2. Multivariate analysis of variance of the year of publication.

	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
	Geographical	4.057	1	4.057	5.727	0.017
	Relational	0.394	1	0.394	2.112	0.146
	Identity	1.522	1	1.522	5.124	0.024
	Process	0.316	1	0.316	0.566	0.452
Year	Cultural	0.031	1	0.031	0.506	0.477
	Functional	0.061	1	0.061	5.252	0.022
	Economic	75.692	1	75.692	438.572	0.000
	Access	1.799	1	1.799	23.552	0.000
	Experiential	2.765	1	2.765	9.348	0.002

The contrast results (matrix K) reveal that Twitter users in 2019 used more geographical proximity keywords (0.036), less identity proximity keywords (−0.022), less functional proximity keywords (−0.004), less economic proximity keywords (−0.157), less access proximity keywords (−0.024) and more experiential proximity keywords (0.030). Despite these significant differences, it is the economic dimension of proximity that explains the most differences between 2019 and 2020 (effect size = 0.034).

4.3.2. Organization's Activity

Second, we evaluated the organization's activity to see if there were any differences in the use of proximity keywords. The multivariate result was significant for the organization's activity, Wilks' Lambda = 0.485, F = 156.531, df = 81, p = 0.000, indicating a difference between the various organization's activity and supporting Hypothesis 2. The univariate F tests showed there was a significant difference between the various organization's activity for all proximity dimensions. As can be seen in Figure 5, for retailers and farmers, geographic proximity is most communicated. Relational proximity seems to be important for the post-process and the hospitality. It is more with the distributors that the identity and process proximity are most communicated, in particular with regard to green, organic and fresh products. Finally, restaurants are the ones that used the keywords relating to economic proximity the most during this period.
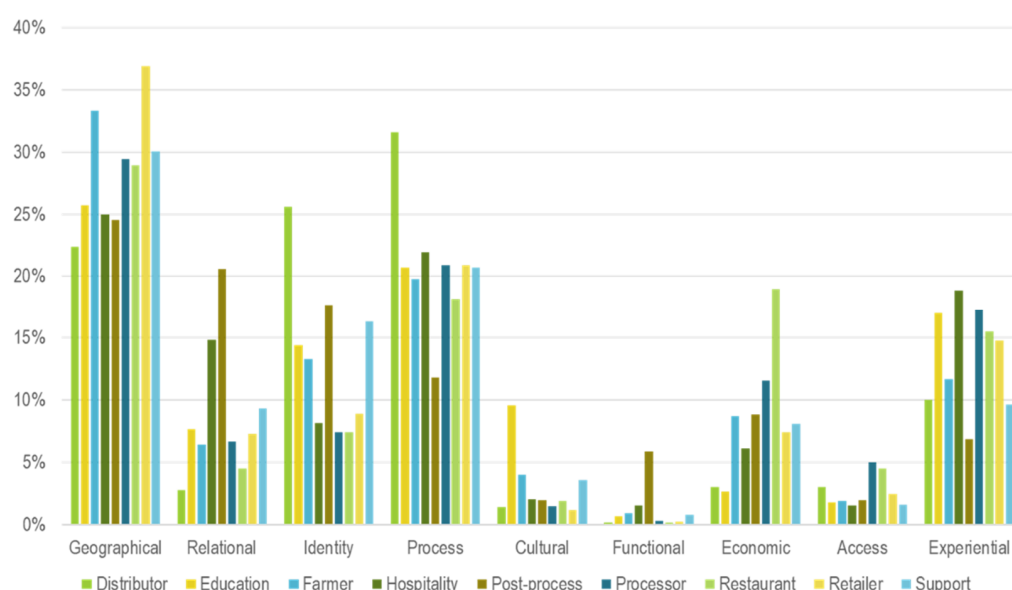

Figure 5. Percentage of proximity keywords used according to the organization's activity.

4.3.3. Organization's Industry

Third, we evaluated the organization's industry to see if there were any differences in the use of proximity keywords. The multivariate result was significant for the organization's activity, Wilks' Lambda = 0.523, F = 95.813, df = 117, p = 0.000, indicating a difference between the various organization's industry and supporting Hypothesis 3. The univariate F tests showed there was a significant difference between the various organization's activity for all proximity dimensions. As presented in Figure 6, for organization, geographical and process proximity are still important. One interesting thing is the strong presence of horticulture in identity proximity. Probably the pandemic has exacerbated the desire for a green and comfortable home or the desire to engage in gardening as the majority of people had to work from home, so they had more time to take care of plants. In addition, cultural proximity seems to be the most important in the seafood industry. Indeed, companies in this industry have communicated more about the history and traditions of recent fishery products.
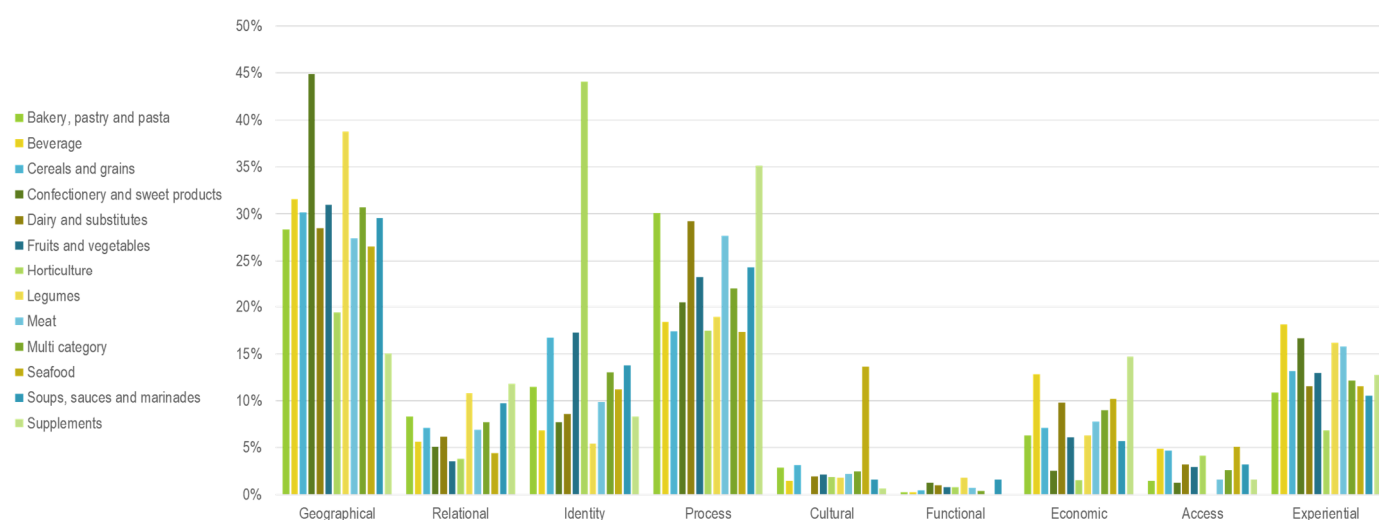
Figure 6. Percentage of proximity keywords used according to the organization's activity.

4.3.4. Organization's Location

Subsequently, we evaluated the organization's location to see if there were any differences in the use of proximity keywords. The multivariate result was significant for the organization's activity, Wilks' Lambda = 0.514, F = 106.745, df = 108, p = 0.000, indicating a difference between the various organization's location and supporting Hypothesis 4. The univariate F tests showed there was a significant difference between the various organization's location for all proximity dimensions. At the Figure 7, we can see that the smallest provinces (NL and YT) tweeted the most on the economic dimension of proximity. In addition, it seems that the east-coast provinces have placed greater emphasis on experiential proximity in their communications.
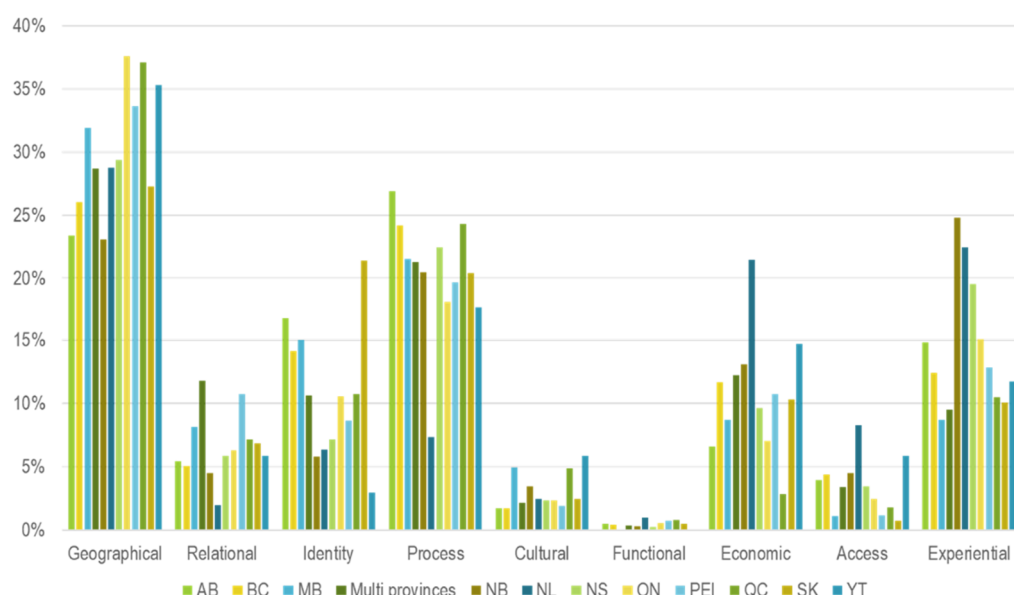

Figure 7. Percentage of proximity keywords used according to the organization's location.

4.3.5. Type of Stakeholder

Finally, we evaluated the type of stakeholder to investigate differences in the use of proximity keywords between organizations and individuals, namely customers. The multivariate result was significant, Wilks' Lambda = 0.592, F = 1270.217, df = 9, p = 0.000, indicating a difference between the organizations and customers, and supporting Hypothesis

5. The univariate F tests showed there was a significant difference between organizations and customers for all dimensions except functional proximity, $p = 0.225$. Despite these significant differences, it is the identity dimension of proximity that explains the most differences between the groups (effect size = 0.366). The contrast results (matrix K) reveal that customers used significantly more identity (0.894. $p = 0.000$) and experiential (0.022, $p = 0.027$) proximity keywords than organizations.

In summary, we found support for all five hypotheses (see Table 3). Indeed, all the dependent variables (i.e., geographical, process, economic, identity, relational functional, cultural, access and experiential proximities) vary across the year of publication (H1), organization's activity (H2), organization's industry (H3), organization's location (H4) and the type of stakeholders (H5). These results allow us to conclude that the context is an important impact factor on local food discourses, i.e., the projected and perceived identity of local food.

Table 3. Summary of findings.

Hypothesis	Findings	Related Literature
H1: The year of publication (pre and post pandemic) is associated with the dimensions of proximity used in communication about local food. Highlight: • In 2020, stakeholders used more identity, functional and economic proximity keywords in their tweets • Economic proximity explains the most differences between 2019 and 2020	Supported	[8,26,39,54]
H2: The organization's activity is associated with the dimensions of proximity used in communication about local food. Highlight: • Geographical proximity is the dimension most used by retailers and farmers and economic proximity is the dimension most used by restaurants • Identity proximity explains the most differences between organization's activity	Supported	[1–7] [26,48,54,55] [39,51–53,56]
H3: The organization's industry is associated with the dimensions of proximity used in communication about local food. Highlight: • Strong use of identity proximity for horticulture industry • Seafood industry relied mainly in cultural proximity • Identity proximity explains the most differences between organization's industry	Supported	[1–7] [39,51–53,56]
H4: The organization's location is associated with the dimensions of proximity used in communication about local food. Highlight: • Smallest Canadian provinces (NL and YT) tweeted the most on the economic dimension of proximity • East-coast provinces have placed greater emphasis on experiential proximity • Identity proximity explains the most differences between organization's location	Supported	[1–7] [39] [39,51–53,56]
H5: The type of stakeholder (organizations and customers) is associated with the dimensions of proximity used in communication about local food. Highlight: • Customers used significantly more identity and experiential proximity keywords than organizations	Supported	[1–7] [39,51–53,56]

5. Discussion

First of all, the results shows that Canadian agri-food stakeholders use the nine dimensions of perceived proximity in their publications on Twitter. However, it is the identity, geographical, process and experiential dimensions that are used the most, correspond to 88% of the keywords used in local food tweets. In this sense, the actors of the Canadian food system tend to value organic farming, sustainability and the support to local economy; the short distances between the farm and the table; the production methods guaranteeing quality, freshness and taste; as well as the pleasure, the experience and the (re)discovery of these products.

Then, the results demonstrated significant gaps in the dimensions of proximity used in communications about local food across the different agri-food stakeholders, industries and Canadian provinces, and before and during COVID-19 pandemic. Indeed, proximity dimensions used by stakeholders in this food system are significantly different. In this sense, it reiterates the lack of coherence surrounding the meaning of local food [1–7]. This research also shows that, as Eriksen [8] notes, local food means different things to different people and in different contexts. Indeed, actors, industries, and geographies tend to communicate differently about local food on Twitter. Moreover, we saw that the pandemic had an influence not only on the number of tweets about local food but also on the discourse that accompanied it, namely geographical, identity, functional, economic, access and experiential proximities. These results suggest that local food means different things at different times as well. We believe that the pandemic has exacerbated a desire for local food imbued with identity proximity. Indeed, the results show that identity proximity is the one that explains the most the differences between the groups. Moreover, identity and experiential proximity are the dimensions of local food that consumers use the most in their communications on Twitter. However, organizations tend to rely more on geographic and process proximity. Perhaps more and more consumers are looking for local food products with strong sustainable values that give them an experience.

This result allows us to underline two important elements. On the one hand, in contrast with the literature on local food which tends to define the concept in terms of geographical proximity (e.g., distance or boundary) [2,37,41–45] or relational proximity (e.g., embeddedness) [58,71–74], our research shows that local food in Canada is valued by the identity proximity in media communications. Identity proximity refers to a set of values shared [51–53,56] between agri-food actors [39]. Values associated with local food include sustainability, organic production, support of local and regional farmers, seasonal consumption and health [1,34,44,46,57,58]. As Chicoine et al. [39] note, local food is a phenomenon through which there is an important sharing of value, in particular at the economic, environmental and social sustainability level. Indeed, 28% of all the keywords founded were related to identity proximity.

On the other hand, this result implies that identity proximity is an essential element to communicate, but in a coherent way with its partners or consumers. Ranfagni et al. [75] highlighted the importance of brand alignment of food products in online communities. Knowing the alignment between the way a company communicates its brand identity and how this is perceived by consumers allows for effectively reviewing brand communication [75].

Veltz [76] suggests that proximity is no longer just useful, it becomes a value in itself, because what is close is trustworthy. However, if companies want to become closer to their customers in the digital realm, it would be in their interest to better understand not only the dimensions of proximity that their customers value but also their different elements. In this sense, they could provide the information that consumers are looking for, for example, about the sustainability of a local food product since identity proximity seems to be highly valued by them.

6. Conclusions

This study examines how agri-food stakeholders communicate about 'local' in digital conversations. We identify and evaluate the different local food' meanings of Canadian agri-food stakeholders through 16,585 tweets. Using a local food keyword dictionary based on the concept of proximity [39], we show that these dimensions actually exist, and that they are reflected in the way people speak about local food. This study shows the importance of using a granular multidimensional framework to understand the valuation of local food. Indeed, local food cannot be evaluated only on the geographical dimension or on the origin of the product. On the contrary, all the actors in the food chain tend to value local food from several dimensions of proximity.

In this sense, it would be interesting to assess the alignment of the projected and perceived local identity of the different agri-food industries, Canadian provinces or local food brands. As part of this research, we did not seek to compare the projected (organizations) versus perceived (individuals) valuation of the locality of a particular brand or industry. We have made the choice to take the agri-food industry as a whole. This more macro vision is a first limitation of this study since it does not make it possible to draw a precise portrait of the situation. As a second limit, our research was based on media communications using Twitter. This social network only allows the publication of 280 characters, which does not allow organizations or individuals to express themselves with a great wealth of vocabulary. In this sense, it is possible that several tweets were initially eliminated since they did not contain at least one of the words of our dictionary. Thus, the use of another social network would enrich these conclusions. Finally, the size and nature of the sample of tweets used in this research is also a limitation. On the one hand, an equivalent size between the number of tweets from organizations and individuals could alter the results by giving more or less weight to certain dimensions of proximity. On the other hand, the tweets used in this research mainly come from a period when local buying was very important. At other times, the different dimensions of proximity might not be valued in the same way.

Several avenues of research can be considered. A more in-depth analysis via the local identity projected on the company websites could also be considered to complement this analysis. In addition, it would be interesting to use this framework to segment stakeholders in the local food system to see if there are distinct proximity valuation clusters. Moreover, the exercise would be interesting to carry out with a much larger sample of tweets in order to train algorithms to text classification. Finally, a comparison between the communication of native (local) individuals and that of foreigners (tourism) would be considered in order to enrich our understanding of the locality from these two perspectives.

To conclude, our study shows the potential of using social media and a keyword dictionary when we want to study a phenomenon in a natural environment, such as the textual traces of social media users. The transformation of the frequency of words into data makes it possible to carry out statistical analyzes, in particular to see the divergences in valuation or image between the stakeholders of an industry, as is the case of the local food system.

Appendix A. Final Literature Corpus about Local Food

Table A1. Final literature corpus about local food (This information was obtained on 1 July 2020).

	Title	Authors (Year)	Journal	IF	Citations	IO
1	Embeddedness and local food systems: notes on two types of direct agricultural market	Hinrichs [58]	Journal of Rural Studies	1.624	1703	1603
2	Understanding alternative food networks: exploring the role of short food supply chains in rural development	Renting et al. [77]	Environment and Planning A: Economy and Space	1.725	1841	1771
3	Embeddedness, the new food economy and defensive localism	Winter [74]	Journal of Rural Studies	1.624	1157	1087
4	The local food sector: A preliminary assessment of its form and impact in Gloucestershire	Morris and Buller [44]	British Food Journal	0.579	331	261
5	The practice and politics of food system localization	Hinrichs [4]	Journal of Rural Studies	1.624	1341	1271
6	Consumers' preferences for locally produced food: A study in southeast Missouri	Brown [78]	American Journal of Alternative Agriculture	0.637	415	345
7	A case study of local food and its routes to market in the UK	Jones et al. [45]	British Food Journal	0.579	163	103
8	Place, Taste, or Face-to-Face? Understanding Producer-Consumer Networks in "Local" Food Systems in Washington State	Selfa and Qazi [41]	Agriculture and Human Values	1.109	310	260
9	Making reconnections in agro-food geography: alternative systems of food provision	Watts et al. [35]	Progress in Human Geography	4.568	678	628
10	Alternative (Shorter) Food Supply Chains and Specialist Livestock Products in the Scottish–English Borders	Ilbery and Maye [50]	Environment and Planning A: Economy and Space	1.725	356	291
11	Exploring consumers' perceptions different qualitative of local food with two techniques: Laddering and word association	Roininen et al. [79]	Food quality and preference	1.296	425	385
12	Local products and geographical indications: taking account of local knowledge and biodiversity	Bérard and Marchenay [80]	International Social Science Journal	0.141	147	107
13	Everyday Meanings of "Local Food": Views from Home and Field	Ostrom [57]	Community Development	0.348	127	87
14	Embeddedness in action: Saffron and the making of the local in southern Tuscany	Sonnino [73]	Agriculture and Human Values	1.109	145	115

Table A1. *Cont.*

	Title	Authors (Year)	Journal	IF	Citations	IO
15	The place of food: mapping out the 'local' in local food systems	Feagan [3]	Progress in Human Geography	4.568	902	872
16	Knowledge, food and place. A way of producing, a way of knowing	Fonte [37]	Sociologia Ruralis	1.458	366	346
17	Unpacking the terms of engagement with local food at the Farmers' Market: Insights from Ontario	Smithers et al. [81]	Journal of Rural Studies	1.624	259	239
18	Decomposing Local: A Conjoint Analysis of Locally Produced Foods	Darby et al. [47]	American Journal of Agricultural Economics	1.848	686	666
19	Food, place and authenticity: local food and the sustainable tourism experience	Sims [82]	Journal of Sustainable Tourism	1.333	1080	1070
20	Being close: The quality of social relationships in a local organic cereal and bread network in Lower Austria	Milestad et al. [55]	Journal of Rural Studies	1.624	97	97
21	Defining and Marketing "Local" Foods: Geographical Indications for US Products	Giovannucci et al. [83]	Journal of World Intellectual Property	0.140	153	153
22	Buying Local Food: Shopping Practices, Place, and Consumption Networks in Defining Food as "Local"	Blake et al. [1]	Annals of the Association of American Geographers	1.689	172	172
23	Contemporary and traditional localism: A conceptualisation of rural local food	McEntee [84]	Local Environment	0.747	75	75
24	What does 'local' mean in the grocery store? Multiplicity in food retailers' perspectives on sourcing and marketing local foods	Dunne et al. [2]	Renewable Agriculture and Food Systems	0.637	150	160
25	Local food practices and growing potential: Mapping the case of Philadelphia	Kremer and DeLiberty [85]	Applied Geography	1.223	198	208
26	Linking Local Food Systems and the Social Economy? Future Roles for Farmers' Markets in Alberta and British Columbia	Wittman et al. [86]	Rural Sociology	0.912	124	144
27	Local food: the social construction of a concept	Sundbo [87]	Acta Agriculturae Scandinavica—Section B Soil and Plant Science	0.386	22	52
28	Deliberate identities: Becoming local in America in a global age	Schnell [88]	Journal of Cultural Geography	0.315	75	105
29	Defining local food: constructing a new taxonomy—three domains of proximity	Eriksen [8]	Acta Agriculturae Scandinavica—Section B Soil and Plant Science	0.386	87	117

Table A1. *Cont.*

	Title	Authors (Year)	Journal	IF	Citations	IO
30	Food miles, local eating, and community supported agriculture: Putting local food in its place	Schnell [6]	Agriculture and Human Values	1.109	108	138
31	Consuming nostalgia? The appreciation of authenticity in local food production	Autio et al. [64]	International Journal of Consumer Studies	0.678	123	153
32	Multiple territorialities of alternative food networks: six cases from Piedmont, Italy	Dansero and Puttilli [89]	Local Environment	0.747	56	96
33	Consumers' evolving definition and expectations for local foods	Lang et al. [43]	British Food Journal	0.579	57	97
34	Perspectives on Consumer Perceptions of Local Foods: A View From Indonesia	Arsil et al. [90]	Journal of International Food and Agribusiness Marketing	0.452	24	64
35	How local is local? Determining the boundaries of local food in practice	Trivette [63]	Agriculture and Human Values	1.109	41	91
36	Locating the locale of local food: The importance of context, space and social relations	Carroll [91]	Renewable Agriculture and Food Systems	0.637	29	79
37	Geographies of origin and proximity: Approaches to local agro-food systems	Sanz-Cañada and Muchnik [20]	Culture & History Digital Journal	0.111	18	78
38	Competitiveness of Small Farms and Innovative Food Supply Chains: The Role of Food Hubs in Creating Sustainable Regional and Local Food Systems	Berti and Mulligan [48]	Sustainability	0.581	128	188
39	How Local Is Local? A Reflection on Canadian Local Food Labeling Policy from Consumer Preference	Lim and Hu [92]	Canadian Journal of Agricultural Economics	0.580	32	92
40	Fixing food with ideas of "local" and "place"	Hinrichs [32]	Journal of Environmental Studies and Sciences	0.452	21	81
41	Invoices on scraps of paper: trust and reciprocity in local food systems	Trivette [93]	Agriculture and Human Values	1.109	7	77
42	Is local a matter of food miles or food traditions?	Bazzani and Canavari [94]	Italian Journal of Food Science	0.329	15	85
43	Food as Ideology: Measurement and Validation of Locavorism	Reich et al. [95]	Journal of Consumer Research	7.795	16	96
44	Bringing the consumer back in—the motives, perceptions, and values behind consumers and rural tourists' decision to buy local and localized artisan food—A Swedish example	Rytkönen et al. [96]	Agriculture	0.481	6	86
45	Reconnecting through local food initiatives? Purpose, practice and conceptions of 'value'	Albrecht and Smithers [97]	Agriculture and Human Values	1.109	25	105

Table A1. *Cont.*

	Title	Authors (Year)	Journal	IF	Citations	IO
46	How and why restaurant patrons value locally sourced foods and ingredients	Lang and Lemmerer [98]	International Journal of Hospitality Management	2.217	6	96
47	Geographical indication food products and ethnocentric tendencies: The importance of proximity, tradition, and ethnicity	Fernández-Ferrín et al. [99]	Journal of Cleaner Production	1.886	2	92
48	The importance of food retailers: applying network analysis techniques to the study of local food systems	Trivette [100]	Agriculture and Human Values	1.109	6	96
49	What is local food? The case of consumer preferences for local food labeling of tomatoes in Germany	Meyerding et al. [101]	Journal of Cleaner Production	1.886	15	105
50	Translocal practices and proximities in short quality food chains at the periphery: the case of North Swedish farmers	Dubois [13]	Agriculture and Human Values	1.109	2	92
51	Local Entrepreneurship in the Context of Food Production: A Review	Kwil et al. [102]	Sustainability	0.581	2	102
52	On the Significance of Alternative Economic Practices: Reconceptualizing Alterity in Alternative Food Networks	Rosol [103]	Economic Geography	3.790	2	102
53	"Going local": farmers' perspectives on local food systems in rural Canada	Beingessner and Fletcher [104]	Agriculture and Human Values	2.109	3	103
54	Understanding local food consumption from an ideological perspective: Locavorism, authenticity, pride, and willingness to visit	Kim and Huang [105]	Journal of Retailing and Consumer Services	1.338	0	110
55	Food Supply Chains and Short Food Supply Chains: Coexistence conceptual framework	Thomé et al. [106]	Journal of Cleaner Production	1.886	1	110

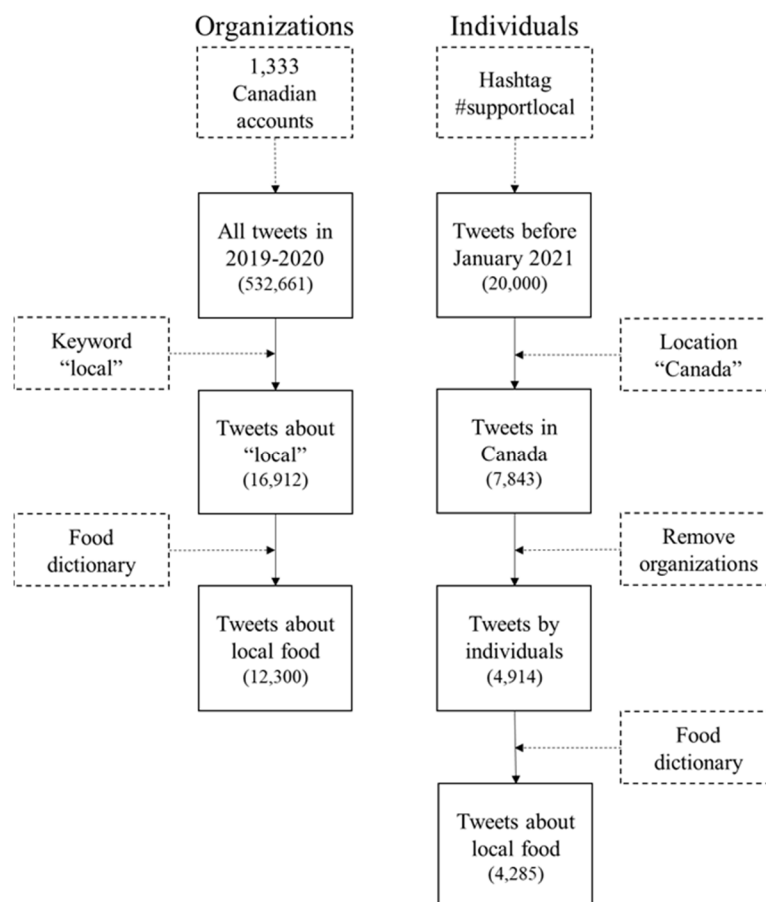**Appendix B. Database Development**

Figure A1. Database development.

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