Stakeholder Valuation of Local Foods on Social Media: A Canadian Study Using Twitter

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Abstract:

The consumption of local food has experienced an unprecedented craze in the pandemic context. However, communication about local food seems inconsistent. 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 over 1,300 Twitter accounts from Canadian agri-food companies and a popular hashtag, we analyze a sample of tweets by 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 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, proximity, social media

Track: Digital Marketing & Social Media

1. Introduction of Paper

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, communication about local food seems inconsistent. Today, there is no consensus on the perimeter determining a local food product (Blake, Mellor, and Crane, 2010; Dunne, Chambers, Giombolini, and Schlegel, 2011; Feagan, 2007; Hinrichs, 2003; Pearson et al., 2011; Schnell, 2013; Wilhelmina, Joost, George, and Guido, 2010) because it means different things, to different people and in different contexts (Eriksen, 2013). Nevertheless, individual meaning is an important factor in creating value (Bustamante Juan and Rubio, 2017; Lipkin, 2016; McColl-Kennedy, Cheung, and Ferrier, 2015) and local food benefits from a multiplier effect of interaction or reconnection between stakeholders (Mount, 2012).

The interconnection or "reconnection" between all actors in the value chain enables economies of networks rather than economies of scale (John, 2020). 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 that 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.

2. Literature Review

This literature review contains two main sections. First, we review the different understandings of the concept of proximity; and finally, we present the dimensions of proximity retained to examine the communications about local food on Twitter.

2.1 Concept of Proximity

Proximity is both a state and a feeling (Labbé-Pinlon, Lombart, and Louis, 2016). "Distance" that is felt is not only metric, but can also be cultural, cognitive and social (Praly,

Chazoule, Delfosse, and Mundler, 2014). Most authors dealing with proximity agree on its spatial nature, but its relational nature is still debated (Mundler and Rouchier, 2016). Geographical proximity refers to the physical distance perceived between the actors in the geographic space (Bouba-Olga and Grossetti, 2008; Torre and Rallet, 2005), 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 (Torre and Rallet, 2005). 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. (Mundler and Rouchier, 2016).

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 (Bowen and Mutersbaugh, 2014; Feagan, 2007; Goodman, 2004; Hinrichs, 2016; Kloppenburg, Lezberg, De Master, Stevenson, and Hendrickson, 2000; Tregear, 2011; Watts, Ilbery, and Maye, 2005). 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 (Allen, 2010; Dunne et al., 2011; Fonte, 2008) or a "localized food system" (SAL) production in a given geographical territory, which gives the product a particular identity (Fonte, 2008; Muchnik, Biénabe, and Cerdan, 2005). Despite some differences, the two perspectives share a fundamental notion of proximity between individuals, products and organizations (Bowen and Mutersbaugh, 2014). In an empirical study based on the work of Eriksen (2013), Chicoine, Rodier, and Durif (n.d.) show that local food products can be defined by geographical, process, economic, identity, relational functional, cultural, access and experiential proximities (Figure 1).

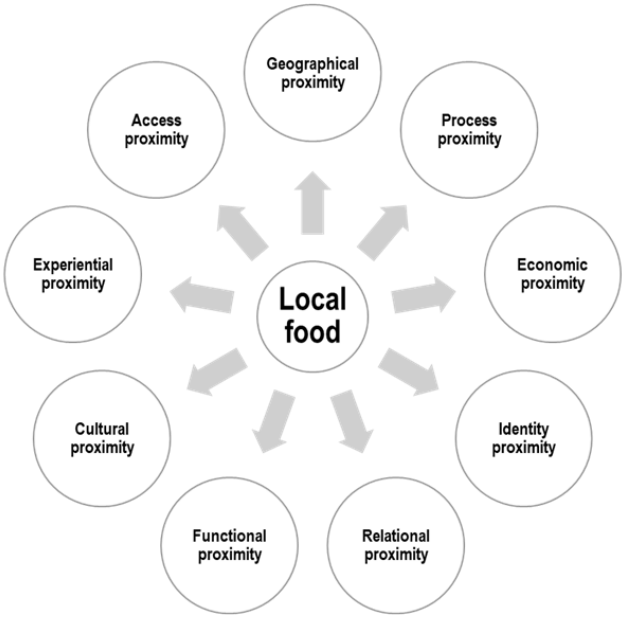

Figure 1. Local food as a constellation of perceived proximity (Chicoine et al., n.d.)

Local food means different things, to different people and in different contexts (Eriksen, 2013), however, they all share a fundamental notion of proximity in nine dimensions (Chicoine et al., n.d.). 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:

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

H2: The organization's activity is associated with the dimensions of proximity used in communication about local food.

H3: The organization’s industry is associated with the dimensions of proximity used in communication about local food.

H4: The organization’s location is associated with the dimensions of proximity used in communication about local food.

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

3. Methodology

3.1 Construction of keyword dictionaries

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 the Government of Quebec (Aliment du Quebec, 2020) and by the Government of Canada (Government of Canada, 2020). Then, using Wikipedia, we found the English keywords related to each of these categories (Vydiswaran et al., 2020). Finally, each keyword was translated into French by one of the French-speaking researchers. The dictionary ultimately includes 1,148 keywords.

As local food is a multidimensional concept, we have chosen to build our local food 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 (Pagani, Kovaleski, and Resende, 2015). 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 in Scopus and Web of Science databases. 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. (n.d.). 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 1,300 Twitter accounts from Canadian agri-food companies to mine 532,661 tweets published between January 1, 2019, and December 31, 2020. The latter constrained to retain only the tweets presenting the word "local". Through this new sample of 16,912 tweets, we passed 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.

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 before

January 1, 2021 in order to have a temporally comparable database. We then only retained tweets about “local food” from individuals who lived in Canada, which reduced our sample to 4,285 tweets published between April 1, and December 31, 2020.

3.3 Data analysis

We privileged quantitative methods, namely multivariate regression analysis using term frequency and joint analysis (Tao, Yang, and Feng, 2020). 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. 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 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.

4.2 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 (Haase and Ellis, 1987). Table I provides summary outputs from the multivariate analysis of variance (MANOVA).

Effect	Test Statistic	Value	*F*	df	Sig. (*p*)	Partial η2
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

Table 1. Multivariate analysis of variance (MANOVA) results

All four multivariate differences measures (i.e., Pillai's trace, Hotelling's trace, Wilks' lambda, and Roy's largest root) are significant ($p < .05$); 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. We can reject the null hypotheses and accept the fact that these contextual variables influence the dimensions of proximity used in communications on Twitter. Given the significance of the multivariate test, we examined the result of a univariate test (within MANOVA) to determine whether all the dependent variables were significantly different or whether the results were derived from differences of only several dependent variables. For all hypothesis, it is the identity dimension of proximity that explains the most differences between the groups. 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.

5. Discussion

The results shows that Canadian agri-food stakeholders use mostly the identity, geographical, process and experiential dimensions of proximity in local food tweets. In this sense, the actors of the Canadian food system tend to value sustainability and organic farming, 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 of our study 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. 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, namely the type of activity, the industry, the location and the type of stakeholders. Identity proximity refers to a set of values shared (Bergadaà and Del Bucchia, 2009; Gahinet, 2014; Hérault-Fournier, Merle, and Prigent-Simonin, 2012, 2014) between agri-food actors (Chicoine et al., n.d.). Values associated with local food include sustainability, organic production, support of local and regional farmers, seasonal consumption and health (Blake et al., 2010; Duram and Oberholtzer, 2010; Hinrichs, 2000; Morris and Buller, 2003; Ostrom, 2006; Tregear, 2011). 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. 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 (Ranfagni, Faraoni, Zollo, and Vannucci, 2021).

6. Conclusion

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 (Chicoine et al., n.d.), we show that these dimensions actually exist, and that they are reflected in the way people speak about local food. 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. In addition, our research was based on media communications using Twitter but a more in-depth analysis via the local identity projected on the company websites could also be considered.

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.

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