"Where to Go on the Weekend?": Trends for Local Information Seeking in Leisure Settings Using Social Media

Eman Alyami and Sandra Toze
Dalhousie University

Abstract

This study looks at information seeking behaviour in local settings using social media as a source of information for leisure purposes. We used mixed methods to analyze tweets' content and users' network. We found that Twitter is used as a local news media more than of a social channel. The results have also indicated a more locally centered online community and discussions where the type of information in a local setting tends to be slightly different from the information found in the literature. Future research might be done on enhancing the analysis measures and on a broader geographic area.

1. Introduction

Searching for information is an integral part of conducting everyday life tasks. People usually tend to look for information by using traditional channels like phoning or texting friends, asking family members, posting a question on blogs (e.g., Yahoo, Ask.com, etc.), or by simply going to search engines and using "Google" to do a word search.

As a result of this interactivity, online communities have emerged. An online community is a clustered group of online users who personally or collectively interact with each other and with other users in different communities in both real and imagined ways [2]. Recently, these online communities have been taking an active part in one or more social media channels (e.g., Facebook, Twitter, LinkedIn, YouTube, etc.). Members in these communities reported that they share the same information, resources, emotional conditions, and goals within their online community as they would in real life [3]. As a result, Internet users tend to move toward social media channels, which have become a popular medium for people to use when they look for information [12].

Twitter has become one of the most popular information communication technology (ICT) mediums and social media platforms since its launch in 2006. Social media users understand the power of Twitter as a source of information and have used it for multiple reasons. First, the information that is posted on Twitter is concise. Twitter is a micro blogging service, which enables its users to create up to date posts using no more than 140 characters. This ensures that the posted information is limited to the most important points [10]. Second, news often first breaks on Twitter. For example, when the news of

Osama Bin Laden's death was traced back to its first source, it was discovered that the story started with a single user who tweeted the news to his followers before it was officially published by the White House and various news channels [4]. Given the speed of tweets, which travel in certain communities, it is assumed that news related to local events has as much popularity [12]. Third, there is a degree of connectivity via Twitter that explains why communication is faster through Twitter. For example, by creating what so called "hashtags", information can be posted and shared instantly for various reasons, such as to plan group activities or certain local events. Finally, Twitter has a search tool that makes it easy to find local activities and social events [10].

However, the purpose of using Twitter might go beyond planning events. Reference [7] found that people in an online community share the same information and resources as in a physical community, and they work for the same goals, as well as report emotionally strong bonds as in real life. Hence, our focus in this study is to observe and analyze Twitter users' behaviour in a local setting during leisurely times. In particular, the study will try finding out what type of information is sought locally on Twitter, and how local people interact with this information using a qualitative approach.

2. Literature Review

The literature has approached two main methods of using social media as a source of information: content analysis and usability analysis. In content analysis studies, researchers collected the data by accessing publically available Twitter posts. For example, reference [6] has created one of the very first studies that looked at the topological characteristics of Twitter and its power as a new medium of information sharing and found that the dominant topics of the most active tweets (around 85%) are news headlines or information of that nature. Reference [4] examined how the news broke and spread on Twitter and concluded that Twitter was the first to break many news stories online and Twitter has a way of confirming information before the news is reported in formal media. Both studies considered analyzing tweets from massive data without specifying the context of these tweets. Recently, studies [5] and [11] looked at Twitter as a source of information during social unrest (e.g., domestic protests). Both studies found that Twitter was used as a medium to organize protests (locally and nationally) and to recognize the participating

parties. Nonetheless, massive amounts of data have emerged during these national activities, which blocked the researchers' ability to find out how local people interact with information in safer settings and for entrainment purposes.

On the other hand, some studies looked at the users' perceptions of using social media as a source of information and communication. For instance, reference [10] studied the searching tool on Twitter (#Twittersearch) and compared it to the "traditional" search engines and found that the Twitter search tool is used to find timely information related to news, social activities, people, celebrities, and events. The participants reported that the results of Twitter search change less frequently and are more common and precise as compared to content found through search engines. Another recent study concluded that people use social media for 10 main reasons: "social interaction, information seeking, passing time, entertainment, relaxation, communicatory utility, convenience utility, expression of opinion, information sharing, and surveillance/knowledge about others" [13]. That study did not specify what social media channels were focused on. Nonetheless, the 10 factors mentioned earlier can be helpful to determine whether a micro-blogging tool will have an effect on the local use of Twitter as a source of information and self- education, and in what regard.

2.1. Adressing the reasearch problem

Studies that have looked at social media as a source of information have done so from either a national perspective or based on personal perceptions. There has not been to our knowledge an empirical study that looked at Twitter as a source of information in local setting and took it further to analyze user behaviour in that regard. To address the gap in the literature, this study will look at social media as a source of information in a local setting for leisurely purposes. In particular, the study will address the following research questions:

RQ1: What type of information is sought locally on Twitter for leisurely purposes?

RQ2: How local people interact with this information?

3. Methodology

To obtain the data, this study used a special tool called "Netlytic". Netlytic is an online open source that was developed by the Social Media Lab at Dalhousie University [8]. It allows researchers to collect text-based contents from several social media platforms (e.g., YouTube, Facebook, Twitter, etc.). In addition, the data can be easily managed, cleaned, summarized, and visualized. This visualization helps to understand the behaviour of online communities

and uncover any hidden relationships or unexpected patterns [8].

To initialize the data collection process from Twitter, Netlytic asks for identifiers. These identifiers can be hashtags, user identity (i.e., the user name that follows the "@" sign), keywords (e.g., Soche 2014), or phrases (such as social media marketing). For the purpose of this study, the hashtag "#Halifax" was used to collect data during 7 consecutive weekends starting on Friday, January 31, 2014. This resulted in a total of 16, 373 messages with 5, 549 unique tweets.

Prior to streaming the data, we observed the stream of (#Halifax) for about one week, including the weekend. Based on these observations, we developed the assumption that weekends are the most suitable time to observe tweets during leisure time. There is also the possibility of a higher rate of tweet sharing that is related to local entertainment. During weekdays, tweets are focused on the local news that is either governmental (comes from municipalities, hospitals, etc.) or academic (universities, school boards, etc.). During the weekend the information sharing between friends or with virtual friends (followers) generally focuses on topics that relate to local entertainment or enjoyable activities.

Given the massive amount of the streamed data, our approach determined two main aspects: text and networks. Text refers the content of the tweets, which can be categorized into 3 main concepts: informing, inquiring, and sharing (Table 1). Inquiring implies that the tweet have a direct question or an inquiry about a certain topic [12]. Informing is when the message is a personal statement or tends to have news in its nature (e.g., updates) [4][12]. Sharing is when the message is a retweet, a quote of another tweet, or has a shared link [6]. Those text factors help to address RQ1.

On the other hand, to understand Twitter local user interaction with each other regarding the information that they find on Twitter (RQ2), this study examined the relationships between members in that network. Network analysis helps individuals to understand the connections between locals among their local community users.

Table 1 Factors and sources of the research design

Type	Factor	Example/ Source
Text Analysis	Informing	Posting news, updates, referrals, and opinions/ [4][12]
	Inquiring	Asking questions, and incidental acquisition/ [12]
	Sharing	Using retweet, and link features/ [10]
Network Analysis	Relationship	Using replies, tags, favorites, and followed features/ [2]

4. Data Analysis and Results

In order to answer the research questions, two analysis techniques were applied: text analysis and network analysis. Both are done using Netlytic. Hence, after completing the data collection, the first step was to clean the data by omitting the quoted text to avoid repetition and redundancy in the analysis [8].

The following sections will discuss the techniques in detail and present the findings both literally and visually

4.1. Text analysis

This step is essential to analysis the discourse content of the tweets. The data collected using the (#Halifax) resulted in a number of 172083 unique terms. This is not particularity surprising, given the amount of collected tweets (n= 16373) over the extended period of time, which again resulted in a variety of different topics. To identify the most frequently used terms, a word generator was applied, where up to 100 words can be extracted depending on the frequency of use. However, this was not sufficient, so we made a manual text analysis in order to determine the nature of the messages in terms of sharing, informing, or inquiring.

4.1.1. Concept cloud. Figure (1) shows the mostly frequently used terms in the data. The word cloud does not present common words, such as "or", "the", "will" based on a list of over 500 noise/stop words that are defined in the 'english.txt' website [8].

It is important to note that we had to eliminate some words, including "Halifax", "Dartmouth", "today",' tonight", "Nova Scotia", and "Canada" from the word cloud. This was done for 2 reasons: 1) these words are commonly used and have no specific indication that they would serve the purpose of this study; 2) after referring to the messages that included such words, I found that the majority of users were referring to these words alternately in hashtags.

Figure 1 The Modified Word Cloud of #Halifax [8]

4.1.2. Manual text analysis. From a text analysis perspective, tweets can be informing, inquiring, or sharing (see Table 1). Hence, to obtain the messages that are inquisitive, informative or shared, we manually exported the data file in a CSV format. We used Excel to filter the messages. To identify the shared messages, we used two filters: the 'RT' combination at the beginning of a tweet was used to identify the retweeted messages, and the 'http' combination was used to filter messages that contained links. Inquisitive messages were identified by the "?" symbol. We encountered a small challenge when acquiring inquisitive questions. The total number of tweets that contained "?" was 310. However, this number is smaller than our expectation (based on the literature), so for this step, we used Netlytic again to create a category named "questions". We used some question indicators (e.g., "when", "where", etc.) plus the question mark. We obtained a total number of 2088 tweets. Finally, the informative messages were messages that did not fit into either category. Table (2) presents the results of this step.

Table 2 Tweet Types of #Halifax Generated Manually

Factor	Example	Count
Inquiring	"Anyone know where I can get some good Corn Chowder in downtown #Halifax??"	~13%
Sharing	"RT @yelphalifax: @TwitCoast Terrible news. What is Scotia Square thinking? Halifax loves local, nobody is going to happily switch to Subway."	~67%
Information	"Zzzillow will be set up tomorrow at the Halifax Seaport Market from 9:30-4:30 tomorrow! #Zzzillow #halifax #BeThereOrBeSquare"	~ 20%

4.2. Network analysis

Network analysis is important for identifying the main players in an online community and for identifying the relationships between the users. This step is commonly used in studies that are interested in streaming real-time data from Twitter (e.g., [2][5][10]). For the purpose of this study, we used two types of network analysis: name network and chain network.

4.2.1. Name network. Name network is an automatically generated network that identifies and sorts the names in a network [8]. This step is helpful in identifying the main users in the Halifax local online community. We found that the data resulted in 7,260 names (see Figure 2).

One of the challenges that we encountered was that it was not clear from the name itself if it refers to

a person or to an organization. Thus, we traced down the top 30 mentioned names and found that:

- There was a strong presence of robots such as @halifaxns_rt which automatically retweeted any messages includes #Halifax.
- The majority of names were news breakers (e.g., @globalhalifax, @stuff2dohalifax) or people related to media (e.g., @mcgrawcory, jwongglobalnews).
- Local places (e.g., @alderneymarket, @hfxseaportmarket, and @theredstaghfx) had also been mentioned frequently.
- There were a number of individuals who are also entrepreneurs (e.g., @amibamonsters, @smalljobplumber, @craigburn).
- The network indicated a show of support for local individuals and for their causes (e.g., actress @ellenpage).

Finally, some names were not related to local matters (e.g. @westyorknews, @thunbery), but appeared frequently because the messages contained '#Halifax' and had been retweeted by robots.

Figure 2 Name Cloud of the Top 30 Users of #Halifax [8]

On the other hand, the name "network" is also helpful to understanding the ties between users in from a "who mentioned whom" perspective (see Figure 3). There is a very high connectivity in this network. This was not surprising given the high number of retweets found in this network. Every retweet would include the name of the original tweeter and any other names mentioned in the message.

It is important to note that "mention" and "retweet" functions in Twitter are not the only indicators of user ties with other users. Sometimes the user circulates the message based on its news, which might not necessarily mean that he/she is paying attention to names.
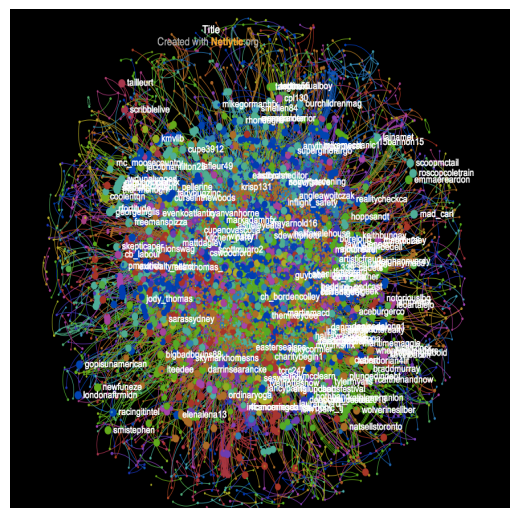
Figure 3 Name "Mention" Network of #Halifax [8]

4.2.2. Chain network. This network represents the users based on their intended interactions among them (i.e., who replied to whom)[8]. This network resulted in 543 nodes with a total number of 648 ties (see Figure 4).

Each node represents a user who replied to another user. Bigger nodes indicate more replies. We used a PageRank algorithm as an indicator regarding the relations between nodes. PageRank is a ranking algorithm introduced by Larry Page and Sergey Brin (Google Co-founders) in 1998. It is based on the assumption that if a webpage is important, then it will probably receive more links from other webpages.
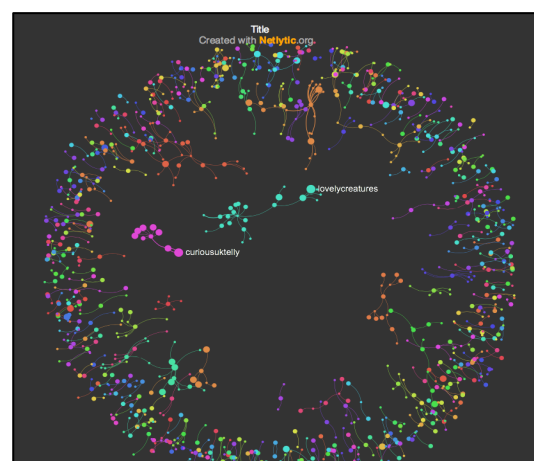

Figure 4 Chain "Reply" Network of #Halifax [8]

In the Twitter context, a user profile is considered a webpage and the importance of a profile is ranked by the number of followers (ties)[6]. For example, when we extract Figure (5) from Figure (4), we see that @LovelyCreatures was an active local girl who had received/sent the most number of replies and got

a high score of PageRank in this particular #Halifax. Nonetheless, this particular user name was not mentioned very frequently nor where her messages retweeted constantly. It is important to note that there is a distinct difference between the number of retweets and the number of followers on Twitter. This means that the popularity of a message does not necessarily mean that the sender is popular.
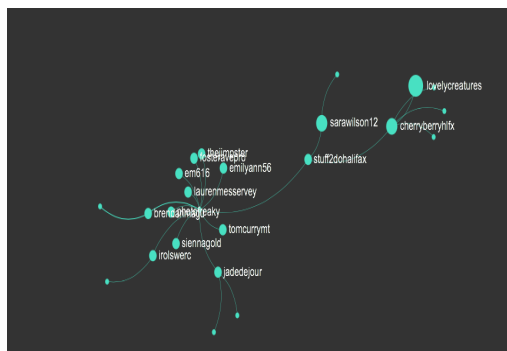

Figure 5 An Active Chain of #Halifax Chain Network [8]

5. Discussion

The results showed that twitter is used to inform, inquire, and share information of any local related news/events for the purpose of entertainment.

In a local setting the type of information tends to be slightly different from the information found in literature. The findings of other studies, which analyzed tweets from national or international perspectives, showed that headline news and celebrities are the most sought after types of information. However, there are a variety of topics that were discussed on Twitter in Halifax local online communities for leisure purposes, such as local places, feelings and sentimentality, events, and local people.

Local places were mentioned mainly because of their novelty (e.g., The Farmers' Market, which is usually fully attended in Saturdays), or to express the users' opinion about certain products/services that they like/complain about, which were mostly in that case restaurants and cafes. These places have their own social media channels and promote to their followers, who in turns retweet this information. In addition, local people mention places in order to initiate group meetings, club meetings, or simply meet friends in informal settings (with the benefit of having access to food, drinks, washrooms, shelter from the cold, etc. in one place).

The mention of events was broader than the mention of places. The nature of the event is that it is public, and local people might feel that it is their social duty to spread the word to others who may not be aware of it [3]. On the other hand, events need a lot of collaboration and planning. Twitter was used as a tool to draw local people's attention to such events and to call for volunteers (e.g. musical performances). We saw that Twitter online network might work for local people as a physical bond by allowing for collaborations to occur and by creating a sense of neighborhood. Hence, there is a high sense of neighborly commitment in this particular online community, which offers support to local people and local causes. Local authorities and schools might benefit from this research by reaching wider audiences and raising awareness for local causes [9].

Furthermore, the results showed that sentimental tweets were strongly expressed by local people. Cheerful emotions and ones that expressed a sense of satisfaction were more dominant than the negative feelings. Specifically, local people tend to report emotional statements to attract responses, compassion, cheering, or to share their psychological status with local friends or friends overseas. Therefore, sentimental analysis approach is helpful to discover patterns that might be the indicators of stress, mental and/or physical illnesses, or some signs of irregularities in a local community (e.g., protest, social unrest etc.). Local authority, health authority, and health practitioners can take a similar approach in order to gather information in that regard.

There was a strong presence of certain names that was not only related to news and journalists, but also to local people with an admirable cause or influence. The results also indicated that there was a dynamic move in the local network and online community to spread these names and to introduce new people to the followers. The reason for this may again be the sense of social duty that binds an online community and facilitates communication between experts and people who might need advice. Such actions also raise the likelihood of knowledge benefitting as many users as possible. In addition, entrepreneurs found Twitter to be a useful marketing tool in local settings to promote themselves and to be mentioned by the local online community. Hence, we suggest that entrepreneurs and small businesses can significantly benefit from Twitter by understanding local needs, culture, and the environment.

6. Conclusion

The aim of this study was to determine what types of information are available in a local setting for leisurely purposes and whether the local community interacts with this information. The results have indicted a more locally centered online community and discussions, where related local matters based on news, events, opinions, etc. occurred. This finding indicates that social media is a useful source of information in a local setting and that local users are satisfied with the information, which was explained by the high number of individuals sharing the

information and retweets of the messages. The data collected from #Halifax was satisfactory and provided the necessary answers to the research questions.

The distinction between the interaction with tweets and with followers was not clear in the data. In particular, the number of replies between users was far less than the number of shared tweets and mentioned names. This might happen for a number of reasons, such as that 1) Twitter is more of a news media than a social application; 2) the population of this online community is satisfied with the information, hence no further interaction was required; or 3) this kind of interaction was not shown in #Halifax (i.e., users did not indicate the sign #Halifax, for more personal options (to keep replies between friends or followers) perhaps).

Another challenge was the use of Netlytic. Even though Netlytic is a useful and somewhat easy tool to use, the automatic content analysis was not sufficient to the understanding of some of the aspects of this study; hence the manual text analysis was required. Nonetheless, the findings discussed above enhance the usefulness of this study, because the tweets were observed in their natural flow without being controlled or interfered with.

Overall, this study helped us to understand how and why local people use social media applications as a source of information. However, there is still a room for further research on local online communities and the exploration of local online interactions. The inclusion of more than one local setting or demographic area is also applicable to future research for the sake of comparisons. For instance, activities in small cities might not be comparable with those in cities like Toronto or New York. This study was also responsible for piloting the use of mixed methods. Future research might incorporate the use of real time data plus usability studies, for example, to come up with more methodological innovations.

7. Acknowledgements

8. References

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