Libraries Using Twitter Better: Insights on Engagement from Food Trucks

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“Twitter is useful for two things: revolutions and tracking food trucks. I’m too lazy for the first.”
~ Twitter profile of a fan of food trucks

How does academic libraries’ use of social media compare with other types of organizations? Librarians are early adopters of new information technologies and avid evaluators of their own practices, but we have yet to answer this comparative question. This paper addresses this gap by comparing Twitter practices across academic libraries and gourmet food trucks. Aside from common interests in communication technology and building community, these are very different types of organizations. Nevertheless, we find that this unlikely comparison generates several valuable insights on how academic libraries can better use Twitter to build interest and engagement around information and learning.

Gourmet food trucks emerged in 2008 when Roy Choi and Kogi BBQ started selling fusion Korean-Mexican cuisine and using Twitter to connect with their customers. The new trucks subsequently multiplied into the thousands and spread across the United States and beyond. Gourmet food trucks have made Twitter an essential part of their business model. They use Twitter to inform their customers about menu and location changes but also to interact with their patrons, other food trucks, and local organizations. This conversation creates buzz around the new food trucks, and connects them to the larger food culture within cities. As indicated by the opening quote from the Twitter profile of a fan, food trucks have been highly successful in their use of social media and have become emblematic of the potential use of Twitter. Business writers have filled the internet with columns that convey insights on how food trucks use social media, with headlines such as: “Food Trucks and Social Media—What Your Business Can Learn from the Masters.”

Academic libraries have a longer history of adopting new technologies. They have been early adopters and experimenters with many kinds of technologies, recently including QR codes, 3D printers, and makerspaces. Librarians have also engaged with several social media platforms, whether individually or for their institutions. Academic libraries often have IT support from either within their library or from their larger institution, but social media takes relatively little training and no capital investment to use, opening its potential to libraries of all sizes. Twitter is a very popular social media site among college age students and many academic libraries joined Twitter to be where their students are. According to a 2015 report by eMarketer, 35.2% of U.S. college students are on Twitter, and 18- to 24-year-olds have the highest percentage of participation of any age segment in Twitter usage.

How successful are academic libraries at using Twitter to engage with students and other audiences? Some of libraries’ experiments in adopting new tech-

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Technologies have been more successful and long-lasting than others, and evaluation is crucial to success. There has already been significant interest in studying libraries’ use of social media but we have yet to consider what we can learn from comparison with other high-performing organizations. We offer such a comparison and also advance on past research by examining a much more complete set of library Twitter accounts (N = 1548).

We examine the use of Twitter in particular because it is commonly used by academic libraries but also because it is easier to study than other social media such as Facebook or Pinterest. Unlike Facebook, most Twitter users have public accounts. The service itself has a very open and accessible API, which makes it easy to access Twitter data on individual users’ past tweets and interactions. Unlike Facebook, it is possible to pull data on not just a user’s account, but also data on the activity and connectivity of that user’s friends and followers. Facebook’s privacy settings make this level of access very difficult to achieve. The openness of Twitter’s API and default privacy settings allow us to capture data not just on what libraries and food trucks tweet about, but also to characterize the richness of their interactions with their followers and other organizations.

In the rest of this paper, we develop our comparison of library and food truck Twitter practices in four sections. First, we review previous studies of libraries’ use of Twitter. Second, we detail our novel data collection methods. Third, we present the results of our comparison. Fourth, we conclude with a discussion of insights gleaned, research challenges, and future directions.

Past Research

After the first surge of early Twitter adopters, the library literature and conference proceedings built up a large volume of case studies, reporting on individual ventures with this new technology. These studies tend to follow the “how we did it and lessons learned” format. These individual case studies serve to build a composite picture of best practices for Twitter. We also have research that aims to describe how early adopters use Twitter. Other researchers have studied Twitter adoption and spread. For research into academic libraries’ use of Twitter, we haven’t yet closed the loop. We have identified some best practices and also some indicators of the prevalence of Twitter use, but there is a gap in the literature in measuring whether we in the profession have adopted these best practices on a large scale. Without comparison to other types of organizations, we also have a limited picture as to the quality of our “best practices.” Some of these limitations have to do with the way Twitter research has been conducted. The appeal of Twitter is that it is easy to implement, but those same low barriers make it hard to comprehensively track academic library users on Twitter. There is little consistency in how academic libraries identify themselves on Twitter, and visiting each library’s website, following a link to their Twitter account, and then copying and pasting their Twitter history is immensely time consuming.

Past studies in the library literature provide an orienting set of expectations concerning library Twitter practices and prevalence. Studies about specific libraries tend to measure the content of tweets, or how Twitter can be used for specific departments, such as reference. There have been more limited attempts to capture a picture of libraries’ Twitter use on a larger scale. A study by Kim, Abels and Yang examined 10 academic library Twitter accounts and analyzed what kind of users retweeted their tweets. They coded the users into categories including students, university organizations, librarians, and found that other university organizations were the most common retweeters of library messages. Additional research has been done into the level and rate of adoption of Twitter within academic libraries, as well as its content. Del Bosque et al completed a study in 2012 where they examined 296 university libraries randomly pulled from a Carnegie list of academic libraries. They found that 34% of those libraries had a Twitter account. They analyzed Twitter use by geographic location and content of tweets among other variables. They pulled their data by looking at Twitter feeds and library websites individually. They also found that few libraries were using their Twitter accounts for two way conversations.
with followers. Collins and Quan-Haase completed a longitudinal study on adoption rates of social media by academic libraries. They identified that Twitter was the second most common social media site used behind Facebook. They also found that usage grew over time. Robin Sewell studied the Twitter account for the Texas A&M University to investigate who followed that library account. Sewell pulled the information on the 436 followers by hand and coded them with groups like student, faculty, corporation etc. She found that a large portion of the followers were undergraduates, but interestingly about 10% of followers were companies such as library vendors and local businesses.

**Methods**

The increasing use of social media by libraries and other organizations allows researchers to collect data generated by this online activity (digital breadcrumbs) to learn about organizations’ social media practices. In particular, we examine Twitter data because of the open access to these data through Twitter’s API and because of the extensive use of Twitter by both academic libraries and gourmet food trucks. Below, we describe our novel data collection procedure.

We developed a snowball sampling method for locating the Twitter accounts of academic libraries and gourmet food trucks. This method generates a complete sample when the population has no isolated components or nodes and prior research on Twitter has found that snowball sampling generates equivalent results to sampling based on user activity. For each type of organization, our method starts with a seed user and spiders out through friends of this user to locate additional cases. Although connectivity varies across libraries and gourmet trucks, as we will discuss below, we were able to locate large samples of both types of organizations using our snowball method. These results are due to both direct ties among libraries and trucks as well as indirect links through outside users that are connected to libraries or trucks such as librarians, library associations, foodies and news media that cover food trucks. We later removed these external users but they provided many links to actual libraries and trucks.

For each type of organization, we built an initial dataset of possible cases through two steps: first, we traced the links from one library or food truck’s Twitter account out to other users or “friend” ties. Second, we provisionally selected among these friends by matching their self-descriptions against relevant dictionaries. For academic libraries, we used a single dictionary with three terms: library, libraries, and information commons. For gourmet food trucks, we used two dictionaries. One contained 1180 food words from an online food encyclopedia, and the second had eight words that described the mobile business design of food trucks (e.g., truck, cart, trailer, etc.). After selecting users that matched the appropriate dictionaries, we then restarted the process with the newly selected users, so that we iterated between finding friends of users and selecting the users with matching descriptions. As an additional step to deal with the creativity of Twitter users in describing themselves, we supplemented our provisional lists by examining users whose unusual names did not match the earlier selection criteria but who had a high indegree from other libraries or trucks. We also found additional libraries by checking users whose Twitter profiles included a URL with “.edu” in it. Lastly, both authors independently coded the users to select U.S.-based academic libraries and gourmet food trucks. We collectively resolved disagreements. The end result were two datasets covering the Twitter activity of 1548 academic libraries and 3336 gourmet food trucks. In order to limit our analyses to organizations that actively engaged with Twitter, we discarded users that had fewer than 50 tweets, resulting in samples of 1322 libraries and 2840 trucks.

In order to validate the data we compared it with random samples. For libraries, we sampled the first five academic libraries for each state for a total of 250 libraries from Information Today’s American Library Directory, which the ALA uses to compile library statistics. We then examined the websites for each library to determine the library’s use of Twitter. We found that eighty libraries had their own Twitter account.
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(32% of the sample), and that of these eighty, fifty-nine were in our dataset. This ratio suggests that our dataset includes about 75% of the academic libraries, which is a very large sample. It is also interesting to note that the 32% adoption rate we found in our random sample, multiplied by a total of 3793 academic libraries, yields an expected 1214 library Twitter accounts, whereas our data include 1548 accounts. This difference may be due to the use of multiple accounts by some libraries.

For trucks, we compared our data with an exhaustive search for gourmet food trucks from a sample city. We picked Milwaukee for this analysis because it had a medium-size truck population (twenty-six cases in our dataset) and municipal licensing records of food trucks were available online. After we consulted the licensing data, as well as Yelp, Facebook, Foursquare, and several local news and entertainment media that cover dining in Milwaukee, we found six gourmet food trucks not in our sample, implying a sample coverage of over 80 percent. So despite differing levels of connectivity, as we will discuss below, snowball sampling produced similar levels of coverage for both populations. We attribute this result to the network properties of Twitter and the small worlds phenomenon, wherein a small number of well-connected intermediaries can integrate a dispersed set of individuals.13

Results
We are interested in comparing how academic libraries and gourmet food trucks—two very different types of organizations with different histories and resources but a common enthusiasm for new technology and building community—utilize Twitter. To develop this comparison, we draw on three sets of analyses. First, we map out the ties among users defined by following and mentioning each other on Twitter. This step illustrates the connectivity within each organizational community, which supports communication among libraries and trucks. Second, we calculate a variety of statistics that characterize the amount and content of tweets from each type of organization. This analysis fills out our picture of how Twitter practices vary across libraries and trucks. Third, we report insights from closely examining a small number of Twitter accounts that are emblematic of the larger patterns found in each community. With this step, we aim to provide greater depth to our findings.

Figures 1 and 2 graph the reciprocal mention networks of libraries and trucks respectively. We found similar patterns in the friendship networks but we focus on mention networks because they are sparser, which enables them to more clearly indicate the differences between academic libraries and gourmet food trucks. A tie exists between two organizations when each has at least one tweet that mentions the other organization. Organizations without a single tie or isolates are not shown and colors indicate the number of ties an organization has. In figure 1, there is a disparate network structure among libraries. Almost two-thirds of the libraries are isolates and so are not shown, leaving 493 nodes in the network. Further, these connected nodes are broken into 41 disconnected components, with 384 libraries in the largest or main component and over a fifth of the connected libraries in separate smaller components. There are several types of evident clusters in the network such as distinct groups of music and law libraries, Indiana libraries, and UCLA libraries. Overall then, most academic libraries are not communicating with each other through Twitter, and the lines of communication that do exist are fragmented, often by region, academic system, or specialization.

This disconnectedness is especially clear when we examine the mention network for gourmet food trucks, which is much more cohesive (see figure 2). Here, 2260 trucks are connected, which is about 80% of the sample. There are 14 components, with 2224 or over 98% of the connected users in the main component. This largest component is densely connected, forming a characteristic “hairball” pattern that reveals little disaggregated structure. We have to increase the threshold for removing trucks to require at least twenty ties prior to the emergence of clearly distinct groups, which are largely centered on cities such as
FIGURE 1
Reciprocal Mention Network for Academic Libraries

FIGURE 2
Reciprocal Mention Network for Gourmet Food Trucks
Los Angeles and Houston. Comparing the two network diagrams, gourmet food trucks are much more active in communicating with their peers, and such communication is less structured by geography and other divisions.

Turning to our next analysis, table 1 compares tweet characteristics across academic libraries and gourmet food trucks. We organize these results by three types of variables: activity, community, and content. The average numbers of tweets per user, years per user, and tweets per year illustrate overall activity levels. Although libraries have typically been using Twitter for about a year longer than food trucks, trucks are significantly more active than libraries, posting more than twice as many tweets per year. We examine community-building by looking at the average rates of user mentions, replies, retweets, and times retweeted per tweet. As we would expect from the comparison of mention networks, trucks are generally much more active in communicating with other Twitter users. Per tweet, trucks are more than twice as likely to mention and reply to other users as libraries, and truck tweets are reposted by other users over three times more than library tweets on average. Interestingly, this pattern does not apply to the per tweet rates for retweeting.

This mixed set of results suggests that trucks are creating more content within Twitter to support their rich social media community, while libraries are more active in sharing external content through Twitter. Given the prominent success of food trucks in using Twitter to build excitement and engagement around their product and community, it is reasonable to consider whether libraries have moved to adopt the trucks’ Twitter practices over time. Table 2 displays the per tweet trends for libraries for the five practices where they lagged behind trucks. In all five areas, the rates are increasing over time as libraries converge towards the Twitter behavior of food trucks. While academic libraries engaged with Twitter earlier than gourmet food trucks, the trucks pioneered leading social media techniques that libraries are increasingly adopting.

In our third analysis, we offer some additional insights into these contrasting patterns of Twitter engagement by closely examining leading cases for several Twitter practices. From both the food truck and academic libraries datasets, we extracted the cases that are the heaviest users of retweets, mentions, hashtags and URLs. Overall, libraries were more likely to include a URL in their tweets, while food trucks were more likely to use mentions and hashtags, and the two types of organizations were unusually similar in their rate of retweeting. By inspecting both libraries that exemplify the aggregate trends as well as libraries that behave more like food trucks, and vice versa, we can provide greater understanding of how Twitter practices differ across the two types of organizations.
The libraries that were most likely to include URLs in their tweets largely fell into two categories. For accounts that were for main or central academic libraries, the URLs mostly pointed to their own websites. These tweets were highlighting services or resources at the library. For example, the Twitter account for the State College of Florida Libraries (@SCFLibraries) posted URLs that pointed followers to their Facebook page and lib guides. For library accounts that were for special libraries (such as health science or law) or for departments within libraries (such as reference or digital services), we found that their URLs were not for their libraries’ websites, but for related news stories or subject specific content that would be useful to their followers. For example, the library of the Massachusetts School of Law (@MSLAWLibrary) tweeted links to law related articles from the Boston Globe and other publications. These special libraries used Twitter as a curated newsletter. Retweets worked in a similar manner. Main library accounts most often retweeted from other institutional Twitter accounts from the same university. The special libraries and departments were more likely to retweet subject specific content, such as how the Samford University Government Documents (@Samford-GovDocs) retweeted messages from the U.S. Department of the Interior and the EPA. In contrast, the food trucks that heavily used URLs were generally linking to another social media account such as Facebook, and their retweets tended to be for messages from other users (often other food trucks) that had mentioned them. Hashtags and user mentions were the behaviors more common to food trucks. The trucks that used mentions the most were generally either engaged in conversations with other food trucks or tweeting about events in which they would appear with other food trucks. Those trucks that were the biggest mentioners tweeted about food festivals or other large events and mentioned their fellow trucks in those tweets. These types of tweets were often in turn retweeted by the other food trucks. Food trucks were also extensive users of hashtags. They participated in the larger Twitter culture like “Follow Friday” where users mention other users and the hashtag #FF to encourage their followers to follow the mentioned users as well. Trucks also used hashtags for geographic locations and to describe their products. Often the biggest users of hashtags linked their Instagram accounts, a social media site that also operates with hashtags. In contrast, libraries use of hashtags centered around two main concepts. Some users included hashtags specific to their institution: e.g., #umass or #sdlaw. Others used hashtags dependent on the content within their tweets. For example, the University of Connecticut Library’s Map and Geographic Information Center (@uconnlibmagic) often used hashtags like #map or #gis. For mentions, academic libraries usually mentioned their institution’s official Twitter accounts, or other departmental Twitter accounts.

Overall then, gourmet food trucks appear to have a well-deserved reputation as leaders in social media
given their vigorous use of Twitter to communicate and share engaging content within the medium, while libraries are more disparately connected and use Twitter more to repost and point followers to URLs outside of Twitter. Many libraries use Twitter as an announcement mechanism, pointing followers to their own services or to special articles of interest. However, by less commonly utilizing the hashtag and mention features of Twitter, these tweets are less findable to new users.

**Discussion**

The comparisons in this paper are not meant to imply that food trucks are universally better Twitter users than academic libraries, only that the libraries could learn something from food trucks’ method of community engagement through Twitter. Food trucks’ use of mentions, retweets and hashtags have created a community of users and followers within specific geographical regions. The food truck scene is most successful when trucks, venues, and bloggers communicate and reinforce one another. This could be true of academic libraries on Twitter as well, and it appears to be happening somewhat at the institutional level. We also observe that over time libraries’ Twitter practices are becoming more similar to those of trucks, which suggests that libraries are taking greater advantage of the interactive community-building potential of Twitter. Our research reinforces this trend, and urges libraries to consider the much lauded Twitter practices of food trucks as a resource for imagining better ways to build interest and engagement among library audiences.

While our novel data collection methodology provides valuable insights into academic libraries’ Twitter behavior, there are some difficulties in collecting and cleaning the data. The process can be time consuming. Twitter’s API imposes rate limiting, which restricts the amount of data that can be collected from the API within a certain period of time. To identify our sample of 1548 libraries, the snowball method examined over 2.5 million users. That process took about 12 days and 3 hours of computing time. Cleaning the data is also a time consuming process. Selecting users that match a dictionary in their self-description yielded many libraries and librarians outside of our scope of interest. We hand coded to remove these users. Further, some libraries have very limited self-descriptions, which made it more time consuming to determine if they belonged in our dataset.

This research opens up several lines of further investigation. In future research we will look in greater detail at what kinds of hashtags are most commonly used and what kind of users are mentioned by what types of academic libraries. We found many of the most prolific tweeters are special libraries or departments within large academic libraries. We would like to know how many libraries in our dataset are main branches of academic libraries and how many are departments or services within them. Many of the trends in use and engagement with other users appeared to depend on whether an account was a main library or a special library or department within a larger system. That pattern should be explored more deeply. Likewise, we are interested in discovering whether the geographic location of the library has any effect on its Twitter behavior. Our snowball method collected international data where Twitter profiles used the English language terms in our dictionary. For the purposes of this project we excluded any academic library outside of the United States, but we did gather a large number of academic libraries from Canada, the UK, Australia and other English speaking countries. It would be fascinating to use these data to compare library Twitter practices internationally.

In closing, academic libraries are deeply engaged in both new information technologies such as Twitter and in reflecting on their technological practices, but comparisons to other successful organizations has been neglected. In this paper, we address this gap and generate insights from comparing the Twitter practices of academic libraries and gourmet food trucks. We also build and analyze a much more comprehensive dataset on libraries use of Twitter than in previous research. Our takeaway is to encourage both comparative research and the trend we see among libraries to take greater advantage of the Twitter features that support building engagement and community.
Notes


11. http://whatscookingamerica.net/Glossary/GlossaryIndex2.htm, accessed on 6/8/13. We also supplemented this list with a few terms.


14. A mention is the inclusion of the name of another Twitter user and we count all mentioned users here as opposed to restricting mentions to other libraries or trucks, which we did in the network analysis. A reply is a tweet that is in direct response to the tweet of another Twitter user. A retweet is the reposting of another Twitter user’s tweet. Times retweeted is a count of the number of times other Twitter users have reposted a particular tweet.