

Local radio and online audience connectivity:

How stations in the U.S. are using Twitter

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Abstract

Using a content analysis method, this study examined the way in which 111 radio stations in the U.S. are using the social network system, Twitter. Results of the study revealed that there was only a weak correlation between stations' average quarter hour share and the number of followers of stations' Twitter sites. Also, music stations had more promotional tweets, while news stations provided more news items for their audiences.

Keywords: radio, Twitter, online, broadcasting, broadcast, stations

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Radio stations have long been dedicated to connecting with their listeners. From an economic perspective, attracting and retaining listeners is equated with audience share and, thus, more potential revenue from advertisers (McDowell & Dick, 2003). Concerns include keeping listeners satisfied with content so they do not to change stations while driving (McDowell & Dick, 2003), and so that they maintain loyalty in instances when stations switch frequencies (Abelman, 2005). Even National Public Radio has increased its branding efforts in relation to its future viability (McCauley, 2002).

Since the mid-1990s, deregulation of the radio industry has altered much of local radio's historical relationship with the public within an "increasingly competitive environment" (Dick & McDowell, 2004, p. 26). Research has found that, in the post-consolidation decade, changes had the potential to create monopolies (Wirth, 2007), while negatively impacting diversity (Bates & Chambers, 1999), the number of listeners (Polinsky, 2007), the number of formats in a given market (Berry & Waldfogel, 2001), and the level of competition and "new formats" within markets (Aufderheide, 2006). Closely associated with ownership is the relationship between consolidation and localism (Chambers, 2003), particularly given the ability for stations to mass distribute content (Sauls & Greer, 2007) at a location that is distant from the originating station. Such changes have resulted in fewer local programs and news, but more advertising (Sterling, 2006) and similarities in station content (Albarran et al., 2007).

Broadcasters are also faced with technologies such as satellite radio and portable digital audio devices that have been viewed by some audience members as alternatives to

radio programming (Ness, 2006; Sterling, 2006). Despite the emergence of alternative digital audio technologies, radio is still an important tool for local connections (Albarran et al., 2007) and was observed to be “a highly popular source of news for Americans in 2008” (“The State of the News Media,” 2009, ¶ 1). However, the importance of online communication for broadcasters cannot be ignored. For example, Abelman (2005) found that Web sites assisted branding and promotions for a number of stations that switched frequencies within a market.

More recently, radio stations and their on-air personalities are connecting to audiences online via Twitter, a social network system that provides both connectivity and glimpses at people’s lives (Johnson, 2009). Scholars are just now beginning to consider Twitter as a focus of research. However, at this point in time, there is a dearth of scholarship that has looked at media uses of this technology. Using a content analysis method, this study examines how more than 100 radio stations in the US are using Twitter. By drawing on prior research about social networks and radio station uses of the Web, this study seeks to understand how stations in various markets and formats are using Twitter. Furthermore, it provides an initial look at radio stations as early adopters of this social networking technology.

Twitter and Social Networks

First made available for public use in August 2006, Twitter is a Web-based social network system that enables users to post brief comments (140 character maximum) about what they are doing (Twitter, 2009). Since its inception, Twitter not only has provided communication from individuals, but it also has been used to disseminate as well as to follow news about events such as the fires in California in

2008 (Lenhart & Fox, 2009) and Michael Jackson's death in 2009 (Oloffson & Snyder, 2009). Twitter users are also reinventing the use of this medium and finding it to be a means of distributing news worldwide (Johnson, 2009). As Johnson (2009) stated, "(T)he most fascinating thing about Twitter is not what it's doing to us. It's what we're doing to it" (¶ 5). Twitter served as a communication platform for protests in Iran following the June 2009 presidential elections in that country (Grossman, 2009).

Professionals from various fields are utilizing social networks. When it comes to social networks in general, medical professionals have found these online tools to be a means of enhancing communication with the public (Hawn, 2009), and a way for small companies to market their businesses (Miller, 2009). Regarding Twitter specifically, many news organizations have found the social network system to be a valuable resource for providing timely updates about news events, as well as a tool for obtaining story tips and ongoing information from member of the public who are directly connected to an event (Farhi, 2009).

A particularly interesting recent trend in social networking is the increasing use of these systems by adults. The number of adults using all types of online social networks increased from 8% in 2005 to 35% at the end of 2008 (Lenhart, 2009). Formerly the domain of college students (Babay, 2009), an iStrategyLabs report (cited in Kopytoff, 2009) noted that more than 60% of Facebook's users were older than 24, with the 35-54 age group constituting the highest percentage of users. Regarding Twitter, one study reported that most Twitter users are between ages 25 and 34 ("Do you know," 2009). Another study reported that just over a third (37%) of people who used that social network system fell between the ages of 18 and 24 (Fox, Zickuhr, & Smith, 2009).

As of December 2008, it was estimated that about 11% of adults who use the Internet also used Twitter or a similar type of “microblogging” program, which was a 5% increase in use since May 2008 (Lenhart & Fox, 2009). According to a comScore (2009) report, Twitter had more than nine million users in March 2009. Compared with other social network systems, Twitter had the highest “year-over-year percentage growth” in “total minutes” of usage between April 2008 and April 2009 (Nielsen, 2009).

A study by the Pew Internet and American Life Project found that Twitter users tended to have less income and “to live in urban areas” (Lenhart & Fox, 2009, ¶ 15). A study by Arbitron/Edison Media Research showed that the use of other new media technologies was tied to knowledge and use of Twitter (Webster, 2009). Specifically, 43% of individuals who used podcasts had heard of Twitter and 5% of podcast users had also used the social network service “in the Past Month” (Webster, 2009, p. 20). Regarding age, the study indicated that the highest percentage of users (20%) fell between the ages of 25 and 34. Users were also more active in online news acquisition.

Twitter is the latest service in a line of social network programs that have included MySpace and Facebook, each of which has differing features and uses (Boyd & Ellison, 2007). A social network site has been defined as a service in which users can “(1) construct a public or semi-public profile within a bonded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (Boyd & Ellison, 2007, ¶ 4). An essential aspect of social networks is the reciprocity of information sharing between individuals at varying levels (Ritzer, 1996). In relation to interpersonal networks, individuals are connected “by patterned flows of information” (Rogers, 1995, p. 27).

Littlejohn and Foss (2008) noted that links within networks may be either formal or emergent. Formal networks are those found in a structured environment that is typically constructed and maintained by an organization. In contrast, an emergent network is characterized by the formation of relationships on an informal basis through “regular, daily contact among members” (p. 260). Perhaps this is what contributes to the fluidity of users as they move from one system to another over time. Nielsen (2009) research found that, in mid-2009, Facebook topped all social networking sites in the number of minutes used per month. The same study showed that although the overall usage of MySpace had declined between 2008 and 2009, the social network site still ranked first in the number of video streams and total minutes users of the site viewed videos.

Online social networks connect system participants through shared information and common interests as well as common characteristics (homophily), since “individuals enjoy the comfort of interacting with others who are similar” (Rogers, 1995, p. 287). For radio station uses of Twitter, there is an assumed homophilous relationship between the social network services used by a radio station, perhaps posted by on-air personalities, and the connectivity of listeners to that site. The network structure also seems to be more emergent than formal, since members of the network largely determine the future existence of the system. Although radio station personalities might control the initial dissemination of information, the future viability of the network is dependent upon the connections of followers to the station, as well as to each other.

There are several characteristics that make Twitter unique in relation to other social network services. Compared with traditional blogging, the benefits of Twitter are brevity of postings and the frequency with which users tend to post “tweets” (Java, Finin,

Song, & Tseng, 2007). Other key benefits are speed, mobility and simplicity for individual users (Grossman, 2009). Users can post tweets from their desktop computer or via a mobile device such as a cell phone (Farhi, 2009). Another unique aspect of Twitter is the concept of “followers” (Johnson, 2009). Although posts on Twitter are limited to 140 characters, users can lead their followers to more extensive information by embedding links to sites with more detailed content (Johnson, 2009). On the other hand, drawbacks of Twitter are the amount and organization of information and the difficulty in determining the origin of tweets (Grossman, 2009).

Java, Fanin, Song and Tseng (2007) examined how people used Twitter and for what reasons. The predominant three categories of users were information source, friends, and information seeker. They also found that intentions of users were associated with four factors. The predominant content was daily chatter, followed by conversations, sharing information/URLs, and reporting news. Despite the increasing use of Twitter, Heil and Piskorski’s (2009) analysis of Twitter postings showed that a few individuals provide most of the posts. They also found that, while women tend more than men to be Twitter users overall, men have more followers.

Radio Stations and New Media Adoption

Even with the creation of a point of connection (in this case Twitter), the diffusion of the innovation must occur for both the provider (i.e., a radio station) and its audience in order for the technology to be successful. Evaluating the potential implementation of a given technology involves a number of key issues, including the advantage (or not) to the organization, the complexity of the innovation, its compatibility with existing structures, whether it can be observed before implementation, and the extent to which the innovation

can be tried first (Rogers, 1995). For most organizations, the adoption of an innovation is closely tied to the level of risk that the management deems is within or outside its limits. For example, stations might view programming innovations as being an essential risk for future economic well-being, but they are not always willing to take that step (Owens & Carpentier, 2004). Unlike the risks radio stations face with other types of innovations that require programming changes and financial commitments, Twitter primarily involves the expenditure of time on the part of radio personnel.

Resilience and adaptability to changing technologies in the face of competitive environments, such as the emergence of television, is a hallmark of radio (Albarran et al., 2007; Pitts & Harms, 2003). At the same time, even though broadcasters decide to adopt a new technology, the successful implementation of the innovation is contingent upon both the broadcasters and their audiences (Ducey & Fratrick, 1989). For the industry, this has a range of possible implications – from changes that have little or no impact on the individual station to technologies that have a significant effect on the broadcaster, especially because of the need to acquire new equipment and change of operations (Ducey & Fratrick, 1989). One example is development of AM stereo. Although the diffusion of AM stereo was blunted for both the broadcasters and their audiences (Klopfenstein & Sedman, 1990), it demonstrated the industry's desire to provide innovative solutions to internal and external challenges to its future. However, despite the relatively low costs, there was little incentive for broadcasters because there was enough risk in adoption and there was also slow consumer adoption (Ducey & Fratrick, 1989).

More recently, radio stations have begun to adopt HD Radio through the IBOC system, which enables stations to broadcast both an analog signal and a digital signal at the same time (Maxson, 2007). HD Radio provides CD quality for FM stations and near FM quality for AM broadcasts (Bray, 2007). As with AM stereo, there is no government mandate for stations to convert from analog broadcasts to digital. One key factor in the diffusion of this innovation is whether stations determine that HD Radio is to their advantage. According to the findings of one study, station management indicated they were adopting the technology as a means of differentiating themselves from their competition (Greer & Ferguson, 2009).

In contrast with the above-mentioned technologies, radio stations more readily adopted the use of the Internet. In a major study of radio station uses of the Web, Lind and Medoff (1999) found that the primary reason that stations had a Web site was to connect with the station's audience. In addition, there was also a desire for the station to appear technologically savvy and for stations to stay toe-to-toe with other stations that were also having an online presence. According to the findings of the research, benefits of having a Web site included image, improved communication between the station and its audience, and a way to enhance "brand image and loyalty" (p. 217). Similar findings were observed by Greer and Phipps (2003) in their examination of non-commercial religious radio stations that had a Web site. Managers they polled noted that goals for having a site included station image, other stations having a site, and "keeping up with technology" (p. 28). Greer and Phipps (2003) found that the site benefited the station by creating a means for the station to communicate with its listeners and, in turn, for listeners to communicate with the station.

Through a content analysis, Lin and Jeffres (2001) examined how newspapers, radio stations and television stations were using the Web. For all three types of media, they found that the most frequently found features were promotional content and community service information. Radio stations tended to provide content associated with self-promotion, as well as “links to government sites” and “technical features” (p. 564). In addition, they also found that radio station sites provided “community service” information as a means of attracting listeners. Furthermore, radio wants to “build brand identity by promoting their stations” (p. 568). Market size was a point of differentiation among media, so that all three types of media in larger markets provided more “advertising-related content” (p. 567). Other than that, market size was not an issue in Web content. However, Lin and Jeffres argued that market competition might have explained the existence of promotional content on radio station sites compared with the other two media types.

In an analysis of FM station Web sites, Potter (2002) found that stations commonly offered features, including a contact email address, and information about talent and “station events” (p. 375). However, few stations provided opportunities for interaction, such as chat rooms. Potter also noted that, although Arbitron research indicated that listeners wanted community event information and the ability to comment about music, few stations offered those features on their Web sites. He concluded that the Web could be a means of connecting with audiences, but stations were not effectively using this technology for that purpose.

Pitts and Harms (2003) focused on radio station Web sites regarding promotional content. They found that promoting DJs was the top feature, with FM stations more

likely than AM stations to offer this content. Frequency band also differentiated content in a number of other features. For example, AM was more likely than FM to give information such as news and weather, while FM stations were more likely to promote concerts. In contrast, FM stations tended more to provide lists of songs and “artist information” (p. 278). Both AM and FM provided links to other sites. Additionally, at least 70 percent of sites offered a way for listeners to contact the station via email or phone. However, there appeared to be few opportunities for interactions with talent. For example, less than a fifth of the stations’ sites provided direct interaction with the DJs. Also, few stations used their sites to promote remote broadcasts and only a small percentage used the site as a way for listeners to request songs.

Some of the same concerns found in studies dealing with station Web sites also were present in research that focused on radio station streaming activities. Using a Delphi methodology, Evans and Smethers (2001) examined the perspectives of broadcast industry professionals regarding program streaming. Comments from respondents focused on the importance of content in the stream and on the station’s Web site, and the crucial aspect of creating “communities of listeners” and building relationships with “targeted groups” (p. 12). Evans and Smethers concluded that “local content” was an essential component of positioning a station among its competitors and of using interactive elements “to build and cultivate new relationships with listeners and clients” (p. 23). Ren and Chan-Olmsted (2004) examined the Web pages of Internet radio stations and terrestrial stations that streamed audio. They found that some of the most common communication features were email and response forms. Few sites provided interactivity such as chat rooms and feedback about music. Internet-only stations offered

more opportunities for audience communication, such as chat rooms and forums, than did terrestrial stations.

A number of findings from prior research regarding radio stations and the Web are pertinent to the examination of Twitter. Studies showed that sites predominantly featured content associated with station image, and offered a basic means of communication between the stations and their audiences (Greer & Phipps, 2003; Lind & Medoff, 1999), as well as promotional content and community information (Lin & Jeffres, 2001). However, studies consistently found that a low percentage of stations provided interactivity (Pitts & Harms, 2003; Potter, 2002; Ren & Chan-Olmsted, 2004). In addition, studies found that there was some differentiation in content based on market size (Lin & Jeffres, 2001) and whether the station was AM or FM (Pitts & Harms, 2003). Generally, it is important to determine the extent to which stations use online technology for building community (Evans & Smethers, 2001). Given the aforementioned issues, the following hypothesis and research questions are proposed:

H1: The level of interactivity between audience members and radio station Twitter sites will be dependent upon the station's ratings.

RQ1: What is the relationship between format and level of interactivity?

RQ2: What is the relationship between format and content of postings?

RQ3: What is the relationship between type of frequency (AM/FM) and interactivity?

Method

Population. The list of stations was obtained in July 2009 from the www.radioontwitter.com website that lists U.S. radio stations using Twitter. An online

search revealed an additional dozen stations that were sent to the website for inclusion, as well as new information regarding inactive stations. One listed station in Toronto was omitted. The total number of stations as of the data capture date was 120, which represents a very tiny share of the over 14,000 stations on the air in the United States, so there was no need to draw a smaller sample.

Screen snapshots were taken of the top level of each site on August 5, 2009, using a batch process program. Webpage Thumbnailer is a commercial program that proved useful during its free-trial period. The key benefit is that the program captures the entire scroll of tweets up to the point where the user clicks the "More" link to older tweets. The capture process took less than an hour to complete.

Inactive stations (9) were deleted. Format and personnel changes may have been the culprit. In most cases, fewer than 100 tweets had been sent before the site was abandoned. In 2 or 3 cases, the station only sent one inaugural tweet.

One station was deleted because its extreme data skewed the dataset. WKHT in Knoxville uses an automated system that tweets the song title and artist to match the music content. Data from tweetstats.com indicated an average 291 tweets per day with a uniform pattern of messages throughout the hours and days of a typical week. Although the station has a very unique and helpful method for serving its listeners, the robotic nature of the messages falls short of interactive communication.

In another extreme case, a community station in Tampa, WMNF, sent 95,034 tweets in a single month, no doubt using an automated submission process to achieve an average 132 messages per hour. WMNF thereafter became far less active, about 12 tweets per month. Web manager for the station, Matt Cowley, explained, "We are a

community radio station and have an automated feed of our playlist. For a time those were sent to the wmnf account; now they live at <http://twitter.com/wmnfplaylist> and /wmnf is updated by humans." (personal communication, November 12, 2009). WMNF was omitted from analyses involving total tweets, but included for other statistical tests.

Other stations that suspended operations for the summer were college-run stations. These sites were included in most analyses after it was determined that they were resurrected by September 2009. Two of them were omitted from calculating average tweets, because the frequency measured zero for the months being studied.

The final N was 111 stations representing 36 of the 50 states. New York and California were represented, but so were Hawaii and Alaska. Florida only had 3 stations, all in Tampa. Savannah was the only city in Georgia with a tweeting station. Two states (Virginia and Washington) among the top 15 most populous had no radio stations with Twitter. A good mix of small-market and large-market stations were evident, however. Only 32 stations (28.8 percent) were AM stations. Noncommercial stations accounted for 32.4 percent of the entire population of radio stations using Twitter.

Measurement. Information regarding number of followers and total number of tweets were gathered from the Twitter homepage for each station. The number of followers ranged from 62 to 44,358 ($M = 1925.52$, $SD = 4762.00$) and the total tweets ranged from 10 to 7,151 ($M = 972.03$, $SD = 1399.78$). Number of followers reflected *listener interactivity* in a passive sense. The number of tweets sent by listeners could not be calculated and re-tweets by the station were not considered an accurate indication of active participation of listeners.

Average daily tweets (ADT) were initially estimated by dividing the total tweets per most-recent week divided by 7, but an automated counter at www.tweetstats.com provided a more accurate, longer-term measure, which ranged from 0.2 to 32.3 tweets per day ($M = 5.25$, $SD = 5.73$, $N = 108$). The two methods correlated strongly ($r = .70$) so the automated counter was used. ADT reflected *station interactivity*.

Ratings information for 63 stations was collected from Arbitron's 2009 spring measurement, available on the Internet (Arbitron, 2009). Average quarter hour (AQH) share ranged from 0.8 to 10.1 ($M = 4.22$, $SD = 2.08$). The AQH share for the remaining 48 stations was coded as missing.

The content of tweets was coded into two very broad categories: promotion and news. Promotion was any program promotion, on-air contest, or sponsored event. The news category included news, weather, and sports. All talk formats included mostly news items and were coded into the news category. Frequency counts for 108 stations yielded 48 news (44.4 percent) and 60 promotion (55.6 percent).

Formats were classified using information from station websites and Twitter site. The most common format was "public" representing 24 stations (21.6 percent), but music formats were splintered. See Table 1. Some formats were not represented in proportion to their national distribution among all music stations (e.g., country music, a top music format, was played on a single station).

When all music and spoken formats were combined, public stations were a minority. Music accounted for 51 stations (45.9 percent) and news/talk accounted for 36 stations (32.4 percent). Music sub-formats were created to dichotomize youth and non-youth appeal. Youth appeal was comprised of these categories: alternative, college,

hiphop/rap, hit AC, hits, hits/hiphop, hot AC, KISS CHR, modern hits, rhythmic, and rock. Remaining music formats were coded as non-youth appeal. Of the 51 stations, 32 were coded youth (62.7 percent).

Results

H1 was tested with a correlation matrix of the independent variables (AQH share and average daily tweets) and the dependent measure (followers). Because stations were not a sample, but the entire population of those using Twitter, statistical significance was not considered. Average daily tweets was not correlated with followers ($r = .02$) and AQH share was only weakly correlated ($r = .11$). There was no real support for the first hypothesis.

RQ1 was answered by comparing station interactivity and listener interactivity of music/nonmusic commercial formats in two separate t-tests. Music stations had nearly twice as many followers ($M = 2193.22$, $SD = 6479.28$) than news/sports/talk formats ($M = 1182.50$, $SD = 1263.46$), but average daily tweets for non-music formats had nearly triple the average number of tweets per day ($M = 8.72$, $SD = 8.38$) than music formats ($M = 3.06$, $SD = 2.58$). Thus, music produced more listener interactivity, while spoken formats yielded more station interactivity.

RQ2 was answered by cross-tabulating the content of postings compared with each format (commercial news/talk, commercial music, and public) and measuring chi-square. Music stations were far more likely to carry promotional tweets (31 to 4), news/talk stations were far more likely to carry news tweets (4 to 45), and the tweets of public stations (13 to 11) were fairly evenly divided ($\chi^2 = 54.6$)

RQ3 was answered by comparing station interactivity and listener interactivity by type of frequency with an independent samples t-test. FM stations had over twice as many followers ($M = 2272.48$, $SD = 5669.91$) than AM stations ($M = 1068.97$, $SD = 1158.08$). AM stations, however, had over double the average number of tweets per day ($M = 8.44$, $SD = 8.63$) than FM stations ($M = 3.96$, $SD = 3.32$). We noted that 27 of the 35 AM stations (84.4 percent) carried news/sports/talk formats instead of music.

Discussion

Although we found no support for our hypothesis, a clear pattern emerged from our research questions. Music stations are finding more success with promotional tweets; news stations build their following with tweets that update news items to their audiences. Also, stations wishing to establish a news presence in their markets need to tweet more often than music stations. Although we did not code their tone, many news twitter sites had a lively, "human" feel, while a minority seemed tied to an automated headline server. Future research should test the strategic benefit of the more personal approach.

We were stunned that so few radio stations are using Twitter, with its crowdsourcing capabilities. Radio prides itself in connecting people, especially younger audiences, but perhaps assumes that everyone still listens the same as they did twenty years ago (i.e., live, local, and analog). A comparable study of www.tvontwitter.com shows that 589 television stations and networks (more than 26 percent of the 2216 total stations) had Twitter sites at the time of our study. In our population, the percentage of the 13,938 radio stations (in 2007) is only 0.8 percent, which is minuscule considering Twitter is a free technology that instantly links any business to any consumer. That television stations are taking better advantage of a promotional tool makes us wonder

about the future of radio. Twitter is mobile, but television is primarily stationary, unlike radio. Perhaps radio being the older technology keeps its owners and programmers more old-fashioned when it comes to new media. Previous research on broadcast websites, for example, focuses more on television than radio.

Our study was thus limited by a small population of stations that might not represent those who are later adopters. Another limitation is that users themselves were not surveyed. Future search should ask programmers and audiences how they view the usefulness of Twitter as a promotional and newsgathering tool. Studies that plan to measure the flow of news in the Internet era should dig deeper into the microblogging behavior of radio stations and their listeners.

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Table 1

Radio Formats Using Twitter

Format	Frequency	Percent
<i>public</i>	24	21.6
<i>news</i>	19	17.1
hits	8	7.2
alternative	6	5.4
college	6	5.4
<i>news/talk</i>	6	5.4
classic	5	4.5
<i>sports</i>	4	3.6
<i>community</i>	4	3.6
rock	3	2.7
<i>talk</i>	3	2.7
hot AC	2	1.8
hiphop/R&B	2	1.8
island	2	1.8
soft rock	2	1.8
hit AC	1	.9
60s rock	1	.9
adult hits	1	.9
rhythmic	1	.9
classical	1	.9
AAA	1	.9
freeform	1	.9
hits/hiphop	1	.9
country	1	.9
JACK	1	.9
modern hits	1	.9
KISS CHR	1	.9
reggae	1	.9
hits/oldies	1	.9
mix AC	1	.9
Total	111	100.0

Note. Music formats are not italicized.