AN OVERVIEW STUDY OF TWITTER IN THE UK LOCAL GOVERNMENT

Panagiotis Panagiotopoulos (Panos), Department of Information Systems and Computing, Brunel University, West London, UB8 3PH, UK
Panagiotis.Panagiotopoulos@brunel.ac.uk

Steven Sams, Department of Information Systems and Computing, Brunel University, West London, UB8 3PH, UK
Steven.Sams@brunel.ac.uk

Abstract

Microblogging applications are becoming a momentous element of the public sector social media agenda. The potential of Twitter to update the public with frequent, concise and real-time content has motivated many pubic authorities to create their accounts, thus generating an interesting topic for research. This paper seeks to make an empirical and methodological contribution to this new body of knowledge by presenting an overview study of general Twitter accounts maintained by UK local government authorities. Over 296,000 tweets were collected from the 187officially listed local government accounts. The analysis was conducted in two stages: an examination of the Twitter networks developed by the accounts was followed by a structural analysis of the tweets. The combination of online research and social media analytics techniques enabled us to reach important conclusions about the use of Twitter by those authorities. The findings indicate high level of maturity of Twitter in the UK local government and point to several directions for further increasing the impact and visibility of those accounts within a social media strategy.

Keywords: Government 2.0, Twitter, Microblogging, Online research, Social media analytics, Social media strategy, UK local government, eGovernment.

1 INTRODUCTION

The use of social media by government agencies can hardly be considered a novel or innovative activity anymore. Among popular social networking platforms such as Facebook and YouTube, microblogging applications led by Twitter are gaining a key role in the public sector social media agenda. There are now numerous examples of Twitter accounts maintained by all types of government organisations, elected representatives, legislative bodies and political parties[1].

Twitter's popularity comes from its distinctive communicative characteristics that support immediacy and the ability to feed content frequently in real-time. Due to its space restriction in posting updates, Twitter is not a medium to present detailed views or organise a thorough debate over issues. Yet, although it was launched as a brief announcement service in 2006, Twitter is now, to an equal extent, a space for collaboration and conversation among users (e.g. Honey, Herring 2009, Boyd et al. 2010). Importantly, Twitter seems to be enabling the rapid formulation of ad hoc thematic communities around specific topics or events (Small 2011, Bruns in press).

In the public sector, Twitter is argued to facilitate extensive forms of information sharing, status updating, as well as conversational and collaborative models with all diverse stakeholders interacting with public authorities (Waters, Williams 2011, Wigand 2011). Previous studies have outlined

[1] For example, an unofficial list of USA government accounts on Twitter can be found at: http://twitter.pbworks.com/w/page/1779986/USGovernment (accessed 03/2012)

promising patterns of public sector Twitter in contexts such as police authorities (Heverin, Zach 2010, Crump 2011), the USA Congress (Golbeck et al. 2010), Korean Ministries (Cho, Park 2012), political representatives (Vergeer et al. in press, Saebo 2011) and communication with the public during emergency events (Oh et al. 2010).

Given the contemporary nature and rapid expansion of the medium, there is a need for comprehensive research on the state-of-the-art of public sector microblogging and the way this seems to be changing existing communication patterns. How are public authorities building their online Twitter networks? How are those networks possibly becoming parts of a social media engagement strategy? The current paper seeks to make an empirical and methodological contribution to those emerging questions by presenting an overview study of Twitter by UK local government authorities. Our exploratory research combines: (1) online research tools for capturing a large dataset of Twitter data from the official accounts of 187 UK local government authorities and (2) social media analytic tools that assisted to overview, make sense of and visualise those data.

The findings indicate positive patterns of Twitter use in the UK local government since those accounts have generated significant activity over diverse topics. For example, this activity includes posting regular updates over topics of local interest, promoting campaigns, providing responsible information during emergency events, as well as engaging in more conversational styles such as directly responding to public queries or contributing to national Twitter discussions. Furthermore, local government authorities seem to have formulated an extensive network that gives them access to a diverse range of stakeholders beyond local citizens. On the basis of those findings, the paper points to several suggestions about how local authorities can consolidate and further build on their online Twitter networks.

The next two sections establish the background of this study in terms of introducing Twitter as a medium and reviewing previous literature about its use with emphasis on the public sector. Then, following the description of the methodological approach, the study findings are presented. The final section discusses the findings and highlights the practical implications on the use of microblogging by public authorities.

2 COMMUNICATING ON TWITTER

Since its launch in 2006, Twitter has become the flagship of microblogging, which involves sending brief online updates to large audiences via the web or mobile devices. Twitter's membership base now exceeds 200 million users. Messages on Twitter are restricted to 140 characters, are usually publicly available by default and might come with additional content such as links to websites, photos or videos. Users' updates or tweets can be produced from the web interface, a great variety of other desktop or mobile applications, as well as text messages from cellular phones.

The most distinctive characteristic of Twitter seems to be its immediacy, real-time nature and pace of updating with new content. Depending on particular uses, Twitter can be a more or less interactive medium. A user can follow the stream of messages posted another user, but this connection is not necessarily reciprocal unlike other social networking sites such as Facebook. For example, Barack Obama follows back about 688,000 of his 10 million followers, but for many users a reverse ratio of following and followers might be applicable. Following back another user might be an issue of online etiquette, but many accounts of public figures or organisations might explicitly state that they do not follow back others.

Although Twitter development sourced from the concept of microblogging, certain conventions seem to have been established by users to support more conversational features. Users can directly address other users or refer to them in conversations using the symbol "@" accompanied by the name of the user. A detailed study by Honey and Herring (2009) shows that this form of addressivity, supported by the "@" symbol, seems to have become an essential element of conversation among Twitter users. It also seems to be increasing coherence between the different discussions, as well as informal collaborations. Honey and Herring (2009) predict that due to this feature Twitter is attracting more use

as a collaboration medium even though this was not its original intention. In an earlier study, Java et al. (2007) found that about one eighth of all posts (12.5%) include the symbol "@".

Another Twitter convention aiming to categorise posts about a specific topic or event is the use of hashtags indicated by the "#" symbol. Examples of popular hashtags are: *#tsunami*, containing updates for the Japanese tsunami, *#London2012* concerning London's 2012 Olympic Games or the *#graysanatomy* for the relevant television series. Hashtags can also be broad or even vague in their topic, such as *#politics*, *#future*, *#children* or *#sports*. Since hashtags facilitate the formulation of communities engaging in ad hoc discussions about a topic or event, they are the best possible indication of "what is going on" on Twitter. For this reason, the importance of hashtags to monitor thematic focus of Twitter content has been exceptionally highlighted (e.g. Small 2011, Bruns in press). In their large dataset, Boyd et al. (2010) observed that 5% of tweets contained hashtags, but this figure is very likely to have increased since then.

A third conversational aspect of Twitter is republishing someone's message or retweeting, which is marked by the text RT at the beginning of messages. Retweets might involve some small modification or commenting on the original message. In a study of retweeting practices, Boyd et al. (2010) found that 36% of a large random dataset of Tweets mentions a particular user. Furthermore, they concluded that there are many reasons why users might retweet messages; examples include publicly agreeing (or not) with someone, supporting a cause by spreading a message, helping an interesting message reach new audiences or even attempting to gain personal status.

3 TWITTER IN GOVERNMENT AND POLITICS

Research on Twitter has been evolving around multiple topics. For example, Jansen et al. (2009) found that Twitter is an important tool for customer word of mouth communications and marketing efforts. Due to its extensive and diverse membership base, Twitter can also be a useful platform for mining public sentiment and reaction around popular events (Thelwall et al. 2011). Furthermore, Twitter can be helpful even in enterprise microblogging activities in terms of coordinating loosely related individual tasks (Riemer et al. 2011).

Certainly, a field of significant scholarly interest is the effect of Twitter in political campaigning and even election forecasting (Small 2011, Vergeer et al. in press, Tumasjan et al. in press, Lassen, Brown 2011, Larsson, Moe 2011). Joint conclusions by Larsson and Moe (2011) and Vergeer et al. (in press) indicate that politicians devote limited attention on the conversational elements of Twitter, they tend to use the medium asymmetrically during and after elections and are also likely to draw an audience with elitist characteristics, e.g. established journalists. Variations in terms of political affiliation and audience seem to be highly contextual from one political system to the other.

When it comes to representatives beyond elections, empirical findings show that their use of Twitter rather tends to support self-promotional models and interaction with the audience remains limited. Saebo (2011) found that tweets produced by Norwegian elected representatives lack deliberative characteristics and focus on general information dissemination, discussions with other representatives and publicly agreeing about non-controversial topics. Golbeck et al. (2010) found that members of the USA Congress are mainly using Twitter to promote links to their blogs or articles about themselves instead of attempting to provide the public with new insights about legislative processes.

With regards to Twitter in government organisations, the debate has focused on the medium's capacity to act as a new space to build relationships with government stakeholders and citizens in particular (Wigand 2010a, 2010b). Empirical studies have outlined a complicated picture of what government organisations are doing on Twitter:

- Waters and Williams (2011) analysed 1800 tweets posted by 60 USA governmental accounts. About 75% of the tweets provided links to other content, 12.5% used at least one hashtag, 20% mentioned another user (18% direct replies) and 5.5% were retweets. It was concluded that the information needs of those organisations are so diverse that focusing only on

increasing interactivity with the public is not realistic. To some extent, the rather unidirectional content of those accounts pointed to the fact that preserving the traditional control of public communications remains an important variable.

- Cho and Park (2012) conducted an in-depth social networking and semantic content analysis of the Twitter account of a large South Korean Ministry. They concluded that Twitter in government could function as an effective information distribution and mutual communication channel, although limitations were found with regards to the second.
- Wigand (2011) presents some positive findings of Twitter use in terms of rapidly increasing adoption, extending traditional communication boundaries and collaborating with government stakeholders. USA federal and local governments were found to be adopting Twitter faster than state agencies.
- Two studies have examined the Twitter accounts of USA (Heverin, Zach 2010) and UK (Crump 2011) police authorities. Crump (2011) argues that constrains in police culture hinder ambitions to engage in online discourse about policing issues and priorities. Heverin and Zach (2010) analysed about 5,000 posts authored by 30 large USA city police departments. They found similar conclusions in terms of those accounts gathering a large audience, but not engaging with this audience further to the announcement of incident related information.

Overall, those studies have raised several interesting issues not only in terms of what governmental organisation are doing on Twitter, but also with regards to how research should attempt to address those questions. The medium itself seems to be constantly evolving with its conversational elements rapidly extending its communicative scope and power. This study attempts to contribute with up-to-date empirical evidence in the context of UK local government authorities. The UK local government provides a promising environment for conducting studies on social media adoption and use, given that fact that those efforts are usually well documented and shared in online communities officially organised by the Department of Communities and Local Government. The next section elaborates on the research approach of this study for locating, capturing and analysing Twitter content.

4 RESEARCH METHODOLOGY

Figure 1 outlines the research approach of this study. At the first stage, to identify which UK local authorities (LAs) are using Twitter, we consulted the @Directgov/ukcouncils, which is an official list aggregating the Twitter accounts of 187 different UK councils[2]. Those councils represent all different types of local government authorities in the UK, namely metropolitan districts (e.g. the ones forming Greater Manchester), the 32 London Boroughs composing Greater London, county councils or unitary councils which are the most standard form in England, Scotland, Wales and Northern Ireland). Apart from their general official Twitter accounts, some LAs might have additional specialised accounts for local services such as libraries or housing. Our focus here is only on general accounts, which usually cover the whole range of local topics such as events, meetings, news and so on.

The data used in this study were collected in February 2011 using the Twitter developers' database (http://dev.twitter.com/), which is also available for academic research[3]. A total of 296,099 tweets were captured, out of the 341,004 tweets posted by those 187 accounts. This is due to the fact that the developers' database limits the retrieval of tweets to the most 3,200 recently posted per account (Twitter 2011). This limitation was relevant to 26 accounts in this list that had posted over 3,200 tweets. Yet, the amount of data captured still remains substantial, which is useful in reducing bias and providing solid outline conclusions.

[2] The list has 191 members, but four accounts were not considered in the analysis as either duplicates from the same authority or because they were very recently launched at the time of the study.
[3] For a detailed explanation about the reliability and capacities of Twitter developers' database for academic studies see Bruns (in press, p. 5-6).

As shown in figure 1, the analysis entailed two parts: network and structural analysis. The analysis was carried out of with the help of Microsoft Excel 2010, SPSS 18.2 and NVivo 9. For the network analysis, we looked at the account characteristics of LAs to examine what kind of networks they have been building on Twitter. Variables included the number of tweets, date joined, who are the users following or being by the account, the mutual followers of those accounts, as well as network visualisation and metrics. For the later we used the specialised software NodeXL, which is an open source extension of Excel (Smith et al. 2010, Hansen et al. 2010). NodeXL has been particularly useful for studies using data from Twitter (e.g. Crump 2011, Cho, Park 2012).

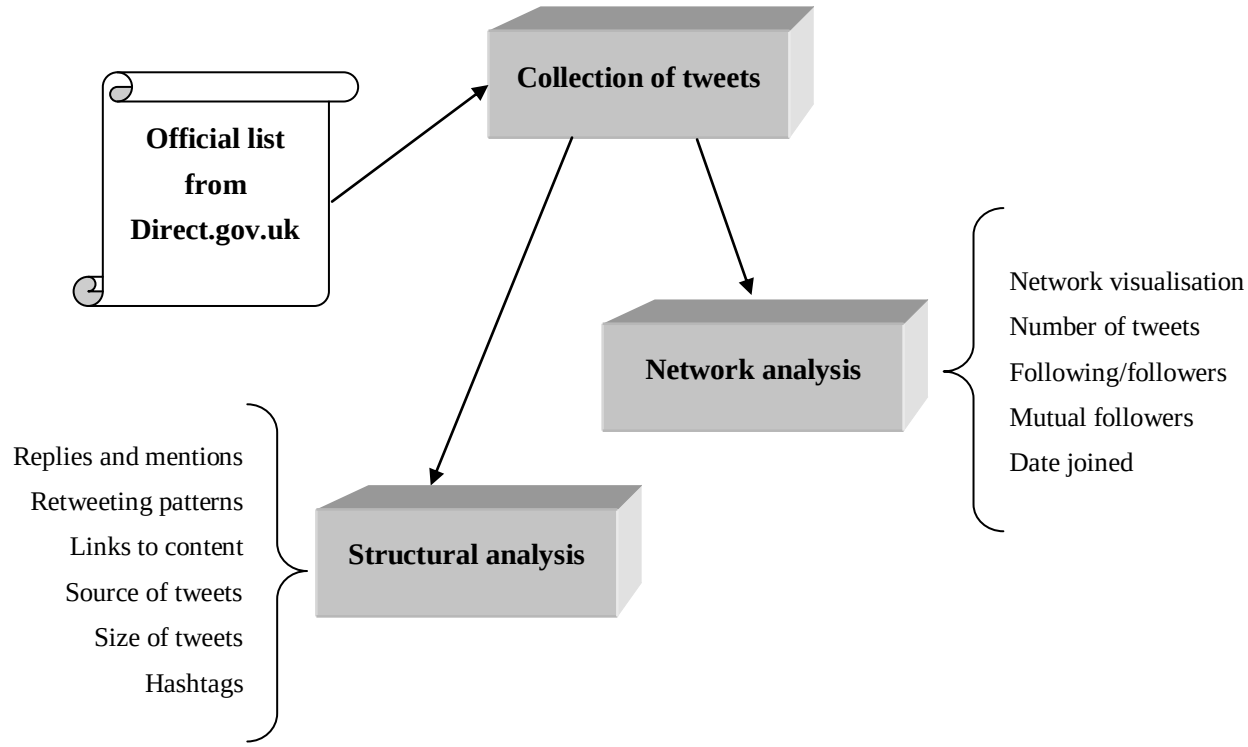

Figure 1. Overview of the research process.

For the structural analysis part, we focused on individual tweets. Manual content analysis techniques have been common for tweets in the relevant literature (e.g. Waters, Williams 2011, Golbeck et al. 2010). This is due to the fact that tweets can hardly be analysed automatically as regular text due to their particular structure, which is highly dependent on the specific medium, its conventions and the limitation of 140 characters per tweet. However, the very large dataset obtained in this study made manual analysis not meaningful unless some kind of sampling technique was adopted. Instead, it was decided to focus on the whole dataset and look for variables that reflect the structural patterns of tweets, mainly based on conversational characteristics (replies, hashtags, retweets). Predominantly hashtags, to the extent that they are used, are a very useful Twitter convention that can be the best possible summary of topics that LAs are tweeting about. Also, it was possible to conduct a word frequency count for all the tweets, in addition to measuring their size and locating their source (e.g. from mobile devices).

5 FINDINGS

5.1 Network analysis

The 187 accounts belong to 13 LAs from Scotland, 12 from Wales, 1 from Northern Ireland (Belfast City Council) and the rest 161 to LAs in England, including 28 out of 32 London LAs (Boroughs).

The first of those accounts was created in 11 June 2007 by the St. Helens Council, which is a metropolitan authority in Merseyside at the north west of England. The majority of the rest of the accounts were created in 2009 (147 or 78.6%), followed by 2008 (25 or 13.3%), 2010 (12 or 6.4%) and one account in 2011. When data collection occurred in February 2011, the 187 accounts had produced a total of 341,004 tweets, were followed by 561,299 users and were following 106,570 users.

Out of those users following the LA accounts, 316,884 were unique. About 5% of their accounts were created in 2006-2008, 35% in 2009, 25% in 2010, 32% in 2011 and 3% in 2012.The unique followers had on average produced 1,313 tweets (SD= 5,647), were followed by 1,829 users (SD= 55,376) and were following 875 users (SD= 6639). This adds to a total of 277,163,690 (not unique) second degree followers for LAs which of course provides access to a massive network potentially comparable to the whole set of Twitter users. The extreme values in standard deviations are due to the fact that among them, certain very popular accounts which have millions of followers are included (e.g. CNN, Barack Obama, People Magazine and UK Prime Minister).

Tables 1 and 2 show the top-5 accounts by number of followers and tweets posted respectively. Most of those accounts belong to metropolitan authorities. Surprisingly, London LAs hardly appear in the top-20 list of accounts both in terms followers and tweets.

Local authority	Number of Followers
Glasgow City Council	21,110
Edinburgh City Council	10,644
Newcastle City Council	9,207
Belfast City Council	8,860
Manchester City Council	8,792

Local authority	Number of Tweets
Walsall Council	11,251
St. Helens Council	9,243
Sunderland City Council	6,772
Brighton & Hove Council	6,341
Surrey County Council	6,221

Tables 1-2. Top-5 authorities according to the number of followers and tweets.

Table 3 shows the correlations for the signup date of the 187 LA accounts, the number of tweets, followers and following. It is normally expected that earlier adopters have produced more tweets and have more followers. Interestingly, strong correlations were also found between all the other variables. Hence, more tweets are produced by accounts that have more followers, but also follow more users.

	Signup	Numbers of tweets	Following
Numbers of tweets	-0.186*	-	
Following	0.017	0.353**	-
Followers	-0.249**	0.401**	0.259**

*Table 3. Two-tailed correlations, marked with * if significant at 0.05 level and ** if significant at 0.01 level.*

Another interesting observation is the number of mutual users that follow more than one LA account. On average, the accounts have 348.8 mutual followers (SD=222.7), which is around 19% of their total followers on average; a quite noteworthy figure given the fact that many followers are shared by LAs which have no geographical proximity or other apparent characteristics in common. Most of the

mutual followers' accounts belong to politicians, governmental agencies, commercial, media or other organisations working on local government issues. Figure 2 shows the graph of 476 connections between LAs that share over 1000 mutual followers. Edges are weighted according to the number of mutual followers between the two authorities/nodes. The graph is not directed because those connections are by definition reciprocated. Only 8 accounts have over 2000 mutual followers with a maximum of 2703 shared by the Edinburg and Glasgow City Councils. Apart from the two Scottish cities, those with more connections in the graph also tend to represent metropolitan areas such as Leeds, Westminster and Salford or county councils such as Devon.

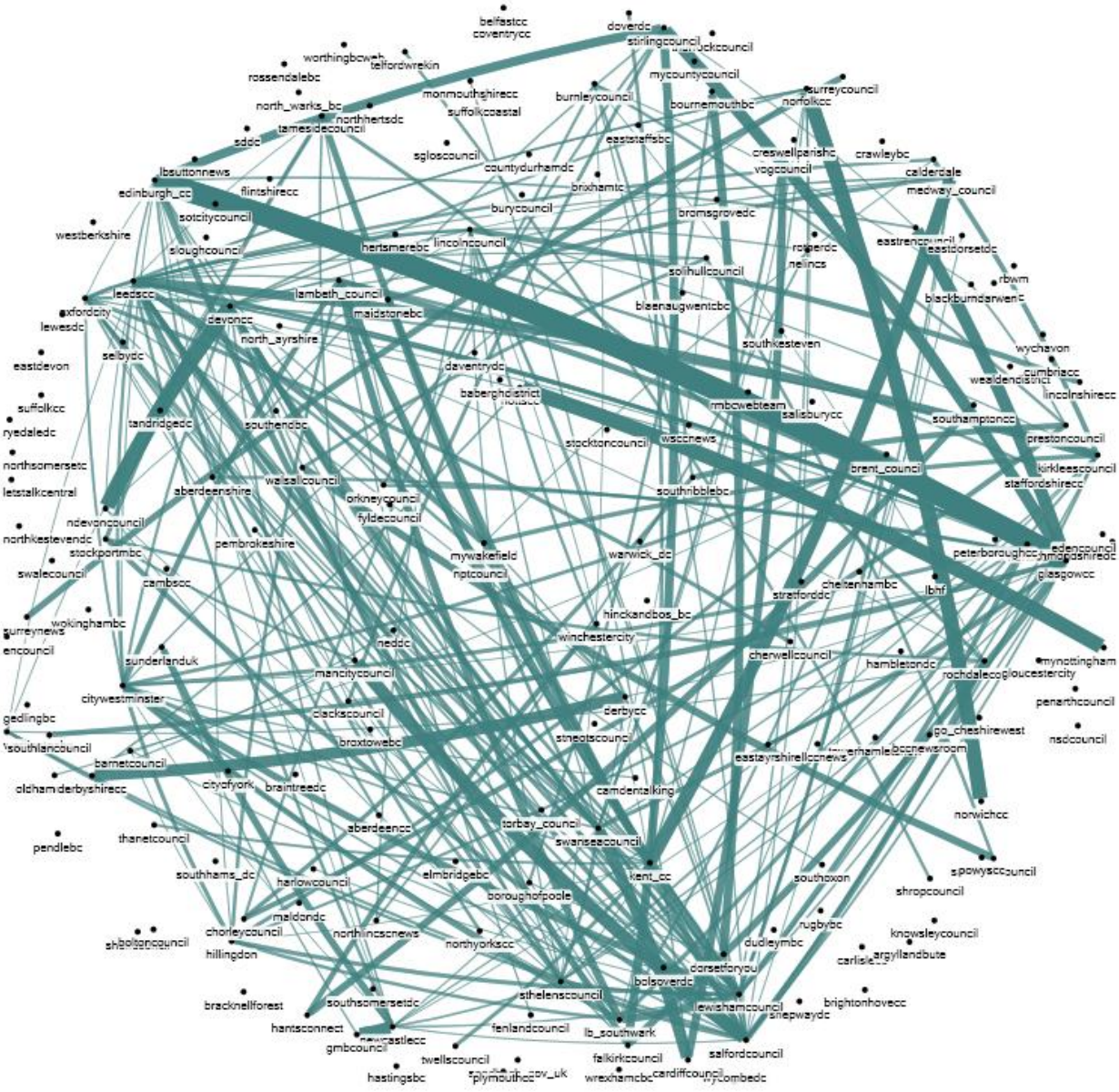

Figure 2. Graph of LAs sharing over 1000 mutual followers. The graph shows 476 connections which are weighted according to their number of mutual followers.

Looking further at the network characteristics of the accounts, it seems that they mostly do not follow or retweet each other's posts. Each account follows on average 23 others (min=0, max=178). This aggregates to 4255 different connections (not necessarily reciprocal), which is only 12.3% out of the whole set of possible ones. Each account is followed by maximum 60 others (minimum 0). Figure 3 shows the network of relationships between LAs that follow and are followed by at least 30 others (a total of 29 accounts). Node sizes are highlighted according to their number of followers. Those authorities have developed a critical position in the UK local government twitter-sphere since they are

able both to spread their posts most efficiently, as well as increase their monitoring abilities for posts of interest by fellow LAs. Once more, LAs from figure 3 tend to be those that represent metropolitan areas or county councils and have some of the oldest accounts in the network.

Finally, the network analysis looked at the retweeting behaviour between the LA accounts and found it unexpectedly low. Only two accounts had retweeted messages from other accounts more than 10 times (38 and 11 times respectively). This led to a total of only 0.12% possible retweeting links being the accounts established; quite surprising even given the fact that those accounts do not follow each other.

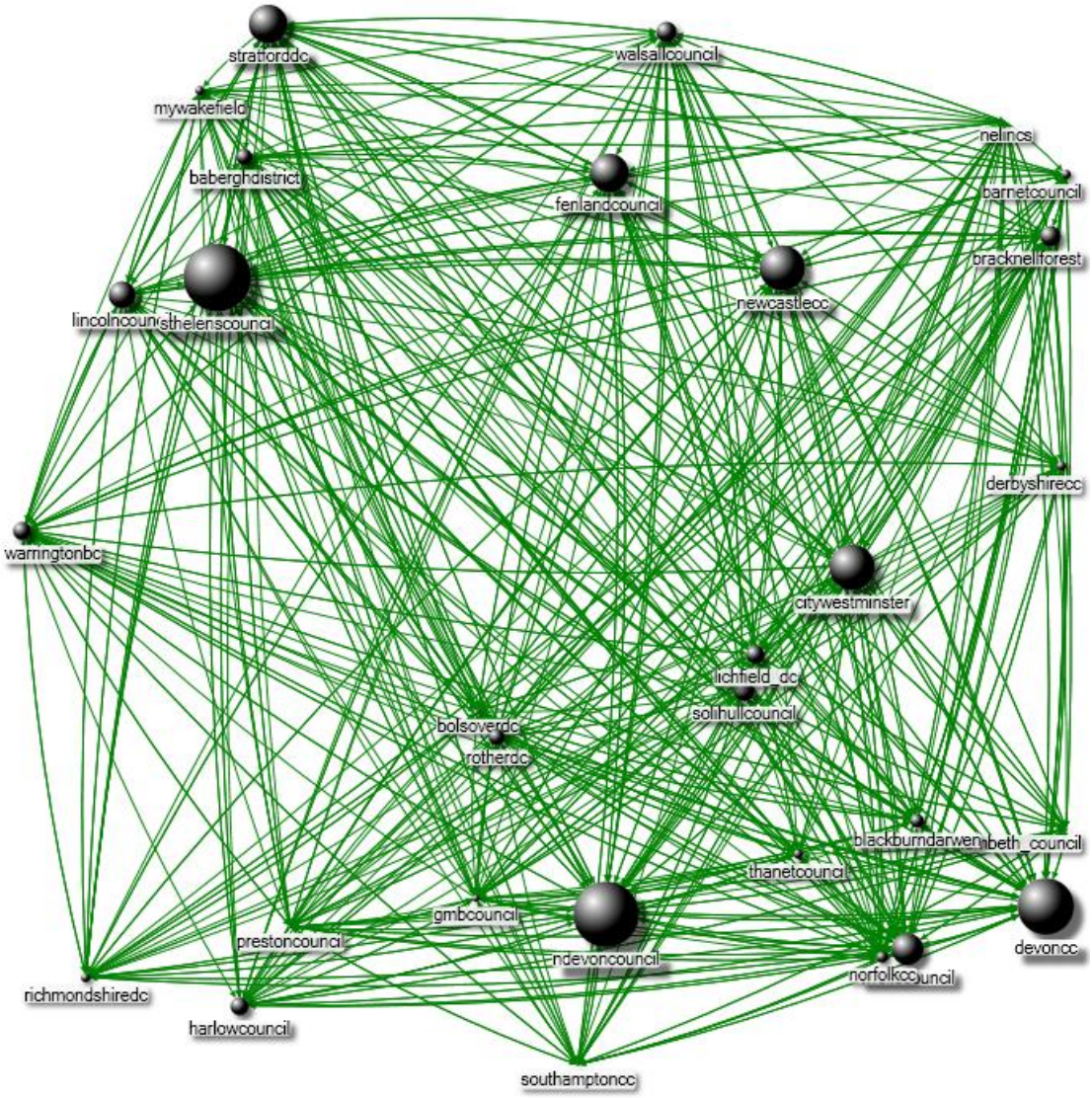

Figure 3. Graph of relationships between LAs showing only the 29 accounts that follow and are followed by at least 30 others. Node sizes are highlighted according to their number of followers.

5.2 Structural analysis

The structural analysis examines what LA accounts are tweeting about and the characteristics of their posts. The analysis for the size of tweets revealed an average of 108 characters per tweet (SD=31, median=119). About 20% of the tweets have 138 characters or more and 9.5% of them are at the maximum allowed size of 140 characters. Most of the small tweets contain simple greetings such as "happy new year" or might continue previous larger tweets that were exceeding the maximum size.

The examination of the sources of tweets identified 203 different sources, the most popular of which were the following:

- Twitter web interface 36.4%
- Hootsuite 22.4% (social media management dashboard)
- Twitterfeed 21.1% (feeds tweets from other sources)
- Tweetdeck 4.8% (social media management dashboard)
- iPhone 1.9%
- Facebook 1.6%

This shows that only about one third of the tweets were posted from the Twitter's web interface, while about half were produced from more sophisticated applications and a noteworthy number was produced from mobile devices.

Next, we looked at the frequency of links contained in tweets. Only about 28.7% of the tweets did not contain a single link to other content, while about 70.5% contained one link and the rest 0.8% contained between two and five links (three tweets contained five links which is extraordinary due to the limitation of 140 characters per post). Those links had of course their URLs shortened due to the space limitation. Although it was not possible to systematically follow the URLs to their actual links, a keyword co-occurrence indicated that most of them were linking to announcements, events or other information at the official authority's website or other sources.

Hashtag	**Percentage**	**Description**
#fb	3.57%	The hashtag for posting tweets on or any kind of links with Facebook.
#nefollowers	3.06%	A hashtag to gather followers from the North East.
#brum	2.91%	A colloquial name for Birmingham in the local dialect.
#localgov	2.39%	A hashtag to group local government topics.
#Shropshire	2.04%	County in the West Midlands of England.
#ff	1.50%	The Follow Friday hashtag is used to learn about or suggest a new person to follow.
#tweetni	1.50%	A hashtag to gather tweets about or from Northern Ireland.
#news	1.49%	A very broad hashtag to group news within the twitter-sphere.
#Southampton	1.39%	City in the south coast of England.
#Essex	1.16%	County in the East of England.

Table 4. Top-10 hashtags.

The examination of the three Twitter conventions explained in the section 2 was quite illuminating to the content of those 296,099 tweets, especially with regards to thematic information through hashtags. Given the fact that at most 3,200 tweets were captured per account, findings about Twitter conventions cannot be to a large extent biased by the individual behaviours of certain LA that might produce

disproportionally more tweets than others. Even if all the 341,000 possible tweets were available, the most active accounts would have produced about 1-3% of the total. Hence, it can be argued that the figures do provide an indication of how the 187 accounts tweet on average. With these in mind, the tweets contained in total:

- 78,595 or 26.5% mentions of other users (replies, retweets or simple mentions).
- 32,055 or 10.8% replies.
- 33,411 or 11.3% retweets.
- 57,856 or 19.5% with at least one hashtag.

In total, 8,013 different hashtags referenced 83,461 times were identified. Most large tweets contained at least one hashtag, while the 10 most popular hashtags are shown in table 4. Other examples of frequent hashtags were #democracy, #snow, #jobs, #alert, #police and all sorts of topical names such as #brighton, #aberdeen and #leedscouncil.

Frequent words in tweets	
Between 20-30,000 occurrences	News, council, new
Between 10-20,000 occurrences	Today, uk, school, event, centre, day, about, now, get
Between 5-10,000 occurrences	Gov, week, 2011, free, events, road, here, find, park, local, thanks, people, us, open, tomorrow, help, city, see, fb, Christmas, community, library, jobs, year, services, please, closed, 2010, do, service, info, primary, take, time, next, over, tonight, check, work, job, last, west, residents.

Table 5. Frequent words appearing in the whole dataset of tweets.

Finally, to get an indication of the actual content of the tweets beyond hashtags, a word frequency count for all the dataset of tweets was conducted. The most frequent words were "http" followed by other parts of URLs that appeared in most of the tweets. After excluding articles and other terms that did not provide meaningful context, table 5 shows the most frequent words. Similarly to hashtags, topical and temporal keywords are apparent.

6 CONCLUDING DISCUSSION

Before attempting to interpret and make sense of the findings, several caveats should be identified. The first is that the particular environment in which those accounts are administrated can be an important factor explaining decisions about their content and ways of use. This aspect remains unknown here, for example in terms of who is responsible for the accounts locally and how the account is being used as potentially part of other social media presence. Indeed, LAs might have different priorities in their engagement strategies with Twitter being only one dimension even within the whole range of social media applications. Second, those 187 accounts are not fully representative of the total of 354 local government authorities in England, 32 in Scotland, 22 in Wales and 26 in Northern Ireland. Rather, they tend to belong to metropolitan authorities whose resources and skills enable involvement with new concepts such as social media communications. Furthermore, there are

limitations with regards to the large dataset analysed. Within the scope of this study, it was not possible to examine in further depth the actual content of the over 296,000 tweets captured; a more elaborate classification of tweet patterns is an issue of further research.

Bearing these limitations in mind, it seems that UK LAs are at the process of building an extensive Twitter network that gives them access to a diverse group of stakeholders beyond networked citizens at the local level. This is indicated not only by the promising number of followers per account, but also by the massive number of second degree followers, as well as the numerous mutual followers across accounts which are usually quite influential ones. This diversity confirms that, beyond interactivity with citizens, Twitter accounts indeed attempt to satisfy quite complicated information needs (Waters, Williams 2011).

Regardless of being aware of those needs, can authorities really tailor their messages for specific audiences? Marwick and Boyd (2011) explain that, the way Twitter works, it is hardly possible to acquire full knowledge of the audience and how far a tweet can reach. Although the ability to target specific audiences strategically might be limited, knowing as much information about the network remains valuable. Even if their network provides them access to a large number of Twitter users, it is not certain whether the LAs have developed appropriate mechanisms to systematically monitor Twitter trends and updates from other users.

The findings of our study outline certain mixed conclusions about this ability. On the positive side, the sources of tweets reveal the use of several advanced Twitter platforms which provide monitoring functionalities. On the negative side, many of those accounts do not seem to follow back their followers (the ratio of followers/following was about 9 on average). Even if when they do so, it might be more an issue of Twitter etiquette than meaningful reciprocity. Along similar lines, as shown in the network analysis, most of the local government accounts do not exploit an apparent opportunity to increase their network by following and retweeting each other's posts. The network visualisation indicated that authorities that do so have acquired influential positions and might be able to better promote their posts (figures 2 and 3).

As far as the content produced by the accounts is concerned, there are two main observations. The first is that the content is obviously localised and temporal as indicated by the popular hashtags and keywords identified in the structural analysis (e.g. libraries, vacancies, schools and events). Geographical proximity is not limited to specific local areas but seems to reach larger geographical regions using appropriate hashtags such as #nefollowers and #tweetni. More global hashtags such as #news, #localgov and #democracy also seem to be frequently used. This is a quite positive pattern of efforts to increase the visibility of posts and their chances of reaching a wider audience. The #democracy hashtag also shows that LAs are tweeting about local democratic processes, possibly in an attempt to inform citizens about them or even stimulate their engagement.

However, the fact that less than 20% of tweets contained at least one hashtag is not positive, even if this figure is higher than the previous studies reviewed. Similarly, the fact that approximately 26% of the tweets reply to, retweet from or simply mention another user indicates adherence to Twitter conventions. Hence, it is an indication that most of those accounts are not as self-promotional as those of elected representatives whose interactivity has been significantly questioned in the literature (e.g. Golbeck et al. 2010, Saebo 2011). In any case, it should be noted that interactivity might differ considerably from one account to the other and looking at those findings across accounts is an issue of further research.

The second major observation about the content of tweets is the positive evidence that Twitter is not used in isolation as a medium, but likely as part of a more organised social media strategy. This is due to the fact that the most popular hashtag is #fb and that many tweets were generated from Hootsuite, Twitterfeed, TweetDeck or other similar tools which imply a certain extent of social media integration. Even if updates to Facebook accounts are generated automatically from Twitter and vice versa, the possibility of engaging with a larger audience can be substantially increased. Also, it is noteworthy that some tweets were generated from mobile devices. This is a trend more frequently observed during emergency events such as the summer 2011 riots is England (identifying citation).

Finally, along those practical implications, certain important conclusions can be drawn with regards to the research implications. In this study, the application of online research methods and social networking analysis provided the opportunity to investigate the local government Twitter accounts beyond sampling a particular set of tweets or focusing only on a small subset of those accounts. Such an investigation could not be possible by applying standard research methods, which are not able to follow the pace of Internet change as organisations develop their online presence (Karpf in press). Therefore, in the challenge of those questions, research methods need to be informed accordingly so that the complex interactions being formed on online social networks can be adequately understood. Methods such as hyperlink analysis and webometrics (e.g. Park, Thelwall 2003) are rapidly developing to include a set of tools that facilitate capturing and analysing content without the requirement of high expertise in information science methods (e.g. Hansen et al. 2010). An expansion of the methodological scope of eGovernment in this direction has so far been quite limited with several exceptions such as a study of blogs by Korean elected representatives (Park, Kluver 2009).

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