The Formation of Consensus in Iranian Online Communities*

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ABSTRACT

For several years now, the role that digitally mediated social movements and online communities play in challenging authoritarian regimes in the Middle East and North Africa has been extensively debated. The focus of attention on the political use of the Internet shapes conventional wisdom that political issues are widespread in online communities in these contexts and that the users are predominantly oppositional users with political democratic motivations. Using fresh methods and techniques to gather a variety of online data, this chapter argues and reveals that, at least in the case of Iran, this view selectively overlooks the diversity of users and the broad range of issues frequently and intensively discussed among users in online communities. The failure to examine a broader range of issues means that scholars have neglected how consensus forms and develops among online users in other issues. This study broadens our understanding of the current social issues and possible areas of change in Iran through investigating a more comprehensive frame of the Iranian web.

Keywords: Digitally mediated social movements, Online communities, Consensus Formation, Social Change, Iran, Online Research, The Middle East, Repressive Societies, Facebook, Balatarin

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INTRODUCTION

Shocking political and social developments in the Middle East and North Africa (MENA) region, from the emergence of Iranian Green Movement to Arab Uprisings, have heightened the need for understanding agents of change in those societies. Much of the political upheavals were credited to the Internet, in particular newly more personalized digitally mediated social movements which "have frequently been larger; have scaled up more quickly; and have been flexible in tracking moving political targets and bridging different issues" (Bennett & Segerberg, 2012, p. 742). One global quantitative study using country-year data demonstrates that unlike in democracies, internet use has paved the way for the occurrence of protests in authoritarian regimes (Ruijgrok, 2016). It is commonly argued that the Internet, by reducing costs and risks, facilitates participation of people as well as coordination and mobilization of protests (Earl & Kimport, 2011; Shirky, 2008) resulting in the intensification of protests in repressive societies (Farrell, 2012). On the other hand, critics contend that 'real' change in repressive societies requires hierarchical networks with strong ties formed on trust, which are absolutely absent on the Internet (Gladwell, 2010).

Whether from internet enthusiasts (Shirky, 2008; Earl & Kimport, 2011; Howard & Hussain, 2013) or from a more critical view (Morozov, 2010; Gladwell, 2010; Harlow & Guo, 2014), explaining the role of the Internet in *social change* in repressive contexts entails understanding of online activism (Zuckerman, 2014), in other words, the process of participation in digitally mediated social movements. Klandermans and Oegema (1987, p. 519) distinguished four steps in this process: "becoming part of the mobilization potential, becoming target of mobilization attempts, becoming motivated to participate, and overcoming barriers to participation." The first step, becoming a potential participant, involves the *formation of consensus* on goals and means of participation (Klandermans, 1988). The process of consensus formation concerns unplanned construction and convergence of meaning in social networks and subcultures. People validate information by discussing their issues of interest and comparing their interpretations from an event or issue with others. In fact, the process of consensus formation fertilizes the ground for participation in social movements. Thus, consensus formation, as the initial process, must be understood fully as the main condition of realizing the larger framework in the debate on the role played by the Internet in social movements.

In societies where expressing critical views is likely to be punished by the government, and mass media are suppressed and censored, online communities have increasingly become important venues where autonomous, or even anonymous discussions take place (Howard & Hussain, 2013; Al-Rawi, 2014). In this chapter, *online communities* refers to a collectivity of people who communicate with each other (Malinen, 2015) and actively engage in discussions in a defined web-based online service (*online platform*). The Internet offers a space, at least for some, to engage in conversations and spread information that can be hard to trace by government officials (Tufekci & Wilson, 2012; Lim, 2012). When people perceive lower levels of repression, the likelihood of sincere expressions of political beliefs and emotions increases, which makes preference falsification (Kuran, 1997) less likely (Farrell, 2012). In fact, in those societies, *consensus forms* and *develops* through generating and sharing content and discussing a variety of issues within online communities (Bennett & Segerberg, 2012).

Yet, a more comprehensive understanding of the web that captures the broad range of issues around which consensus forms suffers. So far, little attention has been paid to the political issues that are discussed among and expressed by ordinary citizens in online communities of repressive societies. For several years now, the role that digitally mediated social movements and online

communities play in challenging authoritarian regimes in the Middle East and North Africa has been extensively debated (Howard & Hussain, 2013; Farrell, 2012; Lynch, 2011). Particularly the use of the Internet during the 2009 Iranian Green Movement protest and Arab uprisings in 2011 focus attention to political use of the Internet (Segerberg & Bennett, 2011; Aday, Farrell, Lynch, Sides, Kelly, & Zuckerman, 2010). Thus, the term 'Twitter revolution' in Iran and 'Facebook revolutions' in Egypt shaped conventional wisdom and expectations about the concerns and interests of Internet users in repressive societies. There is a widely accepted belief about the Internet in those societies that political issues are widespread in online communities, and that users are predominantly oppositional users with political democratic concerns. Studies relying on these assumptions are prone to neglect how consensus forms among online users in other issue areas. Therefore, the existing literature neglects or ignores various areas of interest to Iranian users and overlooks indirectly political issues and possible areas of change resulting from activities among the Iranian online communities (Honari, 2015). This poses a challenge for understanding the agency of social change in repressive societies. If one is to obtain the fullest possible understanding of the role of the Internet in society, to have a comprehensive view of the wide range of interests and topics and the diversity of Internet users, there is a substantial need to offer a more inclusive picture and vision of the web in these societies.

Methodologically speaking, most studies have gathered data from Twitter and other internationally well-known platforms of social networking instead of collecting data from local online platforms (Honari, 2015; Akhavan, 2013). In particular, there is a lack of research on local Iranian platforms despite their widespread popularity among Iranian users.

Taken together, while scholars have called for paying more attention to digitally mediated social movements, particularly in the authoritarian contexts (Lynch, 2011; Farrell, 2012; Earl & Kimport, 2011; Golder & Macy, 2014), studies on such societies still suffer from theoretical and methodological drawbacks: (a) little attention has been paid to the indirectly political areas of the web, (b) most studies have examined only a nonsystematic selection of topics and websites and (c) there is a lack of research on local platforms, despite their widespread popularity (Honari, 2015).

This study explores the different issues that are currently being discussed in Iranian online communities. Using a variety of online data, the study is also an attempt to present a broader picture of Iranian online communities to provide fullest possible understanding of the agents of change through the Internet. Equally important, this chapter proposes some methods and approaches for gathering data from online communities and analyzing data extracted from the Internet to understand repressive societies. It can be applied in any society of control with minor contextual adjustments.

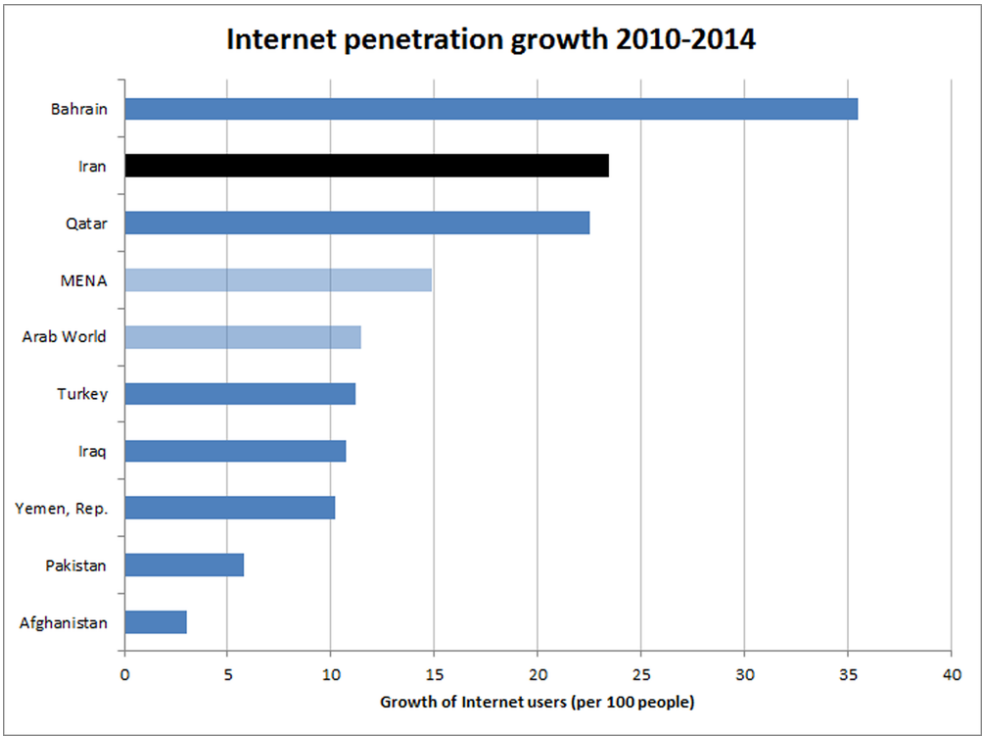
Iran is a unique and important case in the Middle East for studying digitally mediated social movements through the Internet. While in terms of freedom of expression and press freedom Iran remains one of the most repressive countries in the world (Iran: Freedom of press the 2014, 2014; World press freedom index 2014, 2014) its growth of Internet penetration rate is amongst the highest in the Middle Eastern countries (Honari, 2015).

The remainder of this chapter proceeds as follows. In the next section the Internet in Iran will be addressed. Then, the procedure of research, methods and the data will be presented. It will be followed by the results section. Finally, in the conclusion and discussion part, the findings will be put into context and practical implications of this research will be discussed.

BACKGROUND: INTERNET IN IRAN

In 1992, Internet access in Iran was provided for the first time. Since then, the Iranian government has taken steps to expand and develop its telecommunications and informatics infrastructure (Sreberny & Khiabany, 2010). Nevertheless, while the development of Iran's Internet infrastructure enabled the number of people with access to the Internet to rise rapidly since the late 1990s, reports repeatedly reveal that the Iranian Internet -- in terms of limits on content, obstacles to access, and violations of user rights -- is ranked among the least liberated in the world (Kelly, Troung, Earp, Reed, Shahbaz, & Greco-Stoner, 2013). Internet service providers (ISPs) in Iran must obtain a license from the government, and to do so must meet official governmental restrictions by using software that blocks users from accessing forbidden URLs. Nevertheless, there is a rather large Internet service market in Iran and the Internet penetration rate is amongst the highest in the Middle East and has increased significantly over the last few years (see Figure 1a and 1b).

Figures 1. Internet penetration growth in Iran and in comparison with other counties in MENA region. The data of World Development Indictors is used for this diagram.



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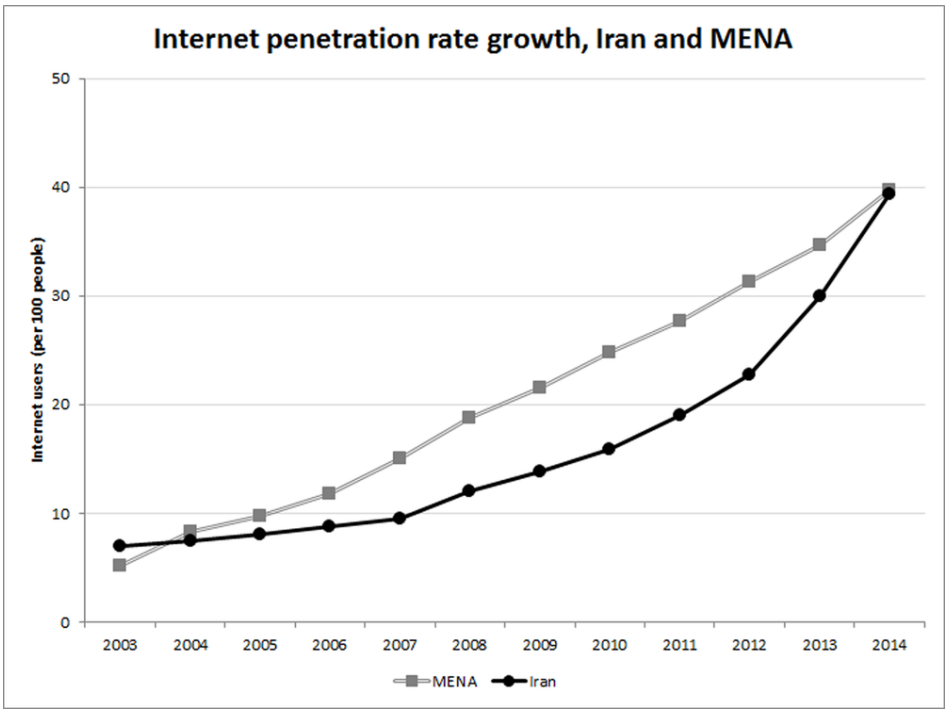


The Iranian government conducts vast and intensive filtering measures over the Iranian Web, in terms of both content restriction and access to websites. This goes far beyond simply blocking access to particular websites and services (MacKinnon, 2013). After the 2009 Green Movement protests, "increasingly complex surveillance and monitoring techniques, complementing technical filtration tools with legal frameworks and information manipulation" were adopted by the government (After the Green Movement: Internet controls in Iran 2009-2012, 2013). Despite the wide-ranging and sophisticated filtering system in Iran (Internet filtering in Iran, 2009), large numbers of Iranian websites are highly responsive (i.e., blocked sites are still functioning) and the Iranian web is fresh (i.e., sites have been recently updated) (Rogers, Weltevrede, Niederer, & Borra, 2012). Moreover, the appearance of blocked blogs demonstrates that the Iranian web has an active "censorship circumvention culture" (Rogers, Weltevrede, Niederer, & Borra, 2012). Monitoring is accepted by users as what ordinarily happens (Abadpour & Anderson, 2013). While a majority of Iranian users often encounter blocked websites, most of them had heard about tools that help circumvent blocked websites, and they have easy access to such tools (Wojcieszak & Smith, 2014). In fact, despite the disruption of access to the Internet, users are not persuaded to abandon their activities (Abadpour & Anderson, 2013) and the filtering does not have any influence on users' access to the demanded websites (Rasouli & Moradi, 2012).

METHOD

Research Design and Procedure

The research proceeded in three main stages. In the first stage, I selected influential platforms within the boundaries and scope of the Iranian web. I then proposed the best sampling strategy for

each platform. In the second stage, I extracted the relevant data from the selected platforms. In that stage, web scraping was used as the technique for the automated collection of online data. In the third stage of the study, I conducted analyses to identify major online communities and the issues that are most frequently discussed among users in each online community. In this stage I further investigated these issues to obtain data on correlates in terms of discussants' socio-economic characteristics and location, as well as by platform or community. Based on the profiles of user accounts, I break down the extracted data into user traits, to the extent possible.

Sampling Strategies

The first step in sampling has been to identify the influential online communities most likely to attract a diversity of Iranian users *and* to include diverse content generated by them. To have a comprehensive sample that represents a wide range of interests and topics and consequently a diverse group of Iranian Internet users, the most challenging issue is demarcating the Iranian national web (Rogers, 2013). As Earl (Earl, 2013) points out, sampling design, including sampling frame (i.e., identifying cases at risk of being studied) and sampling method (i.e., how cases from the sampling frame are drawn), is crucial for online studies on political issues. Studies relying on presuming a frame are prone to the production of desirable answers, and enormous bias by concealing other frames (Gamson, 2004, p. 245). In the sampling process we should have minimal preselection and pre-assumption.

A recent thorough literature review (Honari, 2015) concluded that the three main sectors of the Iranian web, which cover the main areas of interests and activities of Iranian users, are the blogosphere, social networking sites (SNSs), and news sources. For the purposes of this research the last is excluded from the sampling frame, as the content is generally not directly user driven, leaving a focus on the blogosphere and SNSs. Within SNSs, I examine both filtered and unfiltered platforms, with an emphasis on the most popular platforms, along with Balatarin which is highly user driven. Less widely used SNSs, like Twitter, are excluded. A specific sampling strategy is chosen for each platform on the basis of its nature. The main platforms that are focused on are listed in Table 1.

Table 1. Main platforms for data gathering

	Platforms	**Filtering (Inside Iran)**	**Sector**
1	Facebook	Blocked	OSN
2	Cloob.com	Accessible	OSN
3	Balatarin	Blocked	OSN (social news aggregator)
4	Tebyan	Accessible	OSN (social news aggregator)
5	Persianblog	Accessible	Blogosphere

Data and Sample

Iranian blogosphere (Blogistan)

There is a consensus that Iranian blogosphere -"Blogistan"- contributed to the opening up of society by enabling a political voice, particularly to Iranian youths during the last decade (Bucar & Fazaeli, 2008). Wojcieszak, Smith, and Enayat (2012) have shown that a considerable portion of Iranian Internet users are engaged in writing (8%), reading (42%), or commenting on (18%)

blogs. A few studies on Iranian users show the variety of interests and issues in their blog posts (Wojcieszak & Smith, 2014; Honari, van Stekelenburg, & Klandermans, 2014; Sreberny & Khiabany, 2010), although most studies on the Iranian blogosphere have only been carried out on political blogs (e.g. Golkar, 2005; Jansen, 2009). In order to understand the blogosphere, one blog service provider has been chosen for identifying a sample of blogs and extracting all contents that bloggers on that platform produced in the course of the research. For this study I choose Persianblog (http://persianblog.ir). Persianblog, which was launched in 2005 (Sreberny & Khiabany, 2010), is the oldest blog forum in Iran. Today, Persianblog is the third most important blog service provider in Iran; it hosts 9.3 million pages.

I identified blogs by extracting the feed of the "latest updated pages" on the Persianblog home page (http://persianblog.ir/). My software automatically saved the URLs of all blogs that were updated in one week from 11th August until 17th August 2014. By doing so, I identified 5,224 individual blogs from Persianblog. Then, all the contents of these blogs over two weeks were saved for later analyses.

Online Social Networking Sites (SNSs)

Over 85% of Internet users in Iran access SNSs such as Facebook and Google+ (Tabnak, 2012). Social networking is the most significant activity that Iranian Internet users are engaged in (Abadpour & Anderson, 2013). After the widely disputed Iranian presidential election in June 2009, SNSs played an important role in sharing ideas and spreading information and news among Green Movement supporters (Honari, 2013; Baldino & Goold, 2014; Rasouli & Moradi, 2012; Rahimi, 2011a), and also in "catching global media attention and raising human rights concerns" (Sohrabi-Haghighat & Mansouri, 2010). It is worth mentioning that using SNSs in Iran for political purposes is not limited to any particular political views (Abadpour & Anderson, 2013).

- *Blocked in Iran*

  Facebook is the most popular SNS among Iranian users. Students use Facebook more than other social groups in Iran. A recent survey of social communication students in four main Tehran universities (n=325) found that the vast majority (92.3%) use SNSs, particularly Facebook (Rasouli & Moradi, 2012). Facebook in Iran represents an emerging frame for a new kind of activism (Rahimi, 2011a). Very close to the disputed 2009 presidential election, "Facebook rapidly expanded into a political forum" (Rahimi, 2011a, p. 8). Then, in the midst of post-election protests, Facebook was extensively employed by the Iranian Green Movement activists for mobilization (Honari, 2013) and "online broadcasting of offline events" (Rahimi, 2011b). Using Facebook as a platform for the mobilization attempts of Green Movement activists was also actively encouraged by Facebook itself (MacKinnon, 2013).

  In June 2014, I used Netvizz applications to extract data from the Facebook platform (Rieder , 2013). To have a systematic sample of Iranian Facebook pages and avoid selection bias, I focused on popular Iranian Facebook pages. To do so, I began with an initial sample of the 233 top Facebook pages (all Facebook pages with more than 100,000 members in June 2014). Top Facebook pages were chosen based on Pagebaan (http://pagebaan.com/top). Using this initial sample I traversed their links to other Iranian Facebook pages two steps deeper (initial sample → 1st step linked → 2nd step linked). I then removed all international Facebook pages and kept only Iranian Facebook pages. By

Iranian Facebook pages I mean pages which are in Farsi or/and pages whose members are mostly Iranians. I also removed the Facebook pages with less than 14,000 members, as they are not significant on Iranian Facebook. This process resulted in a pool of 3,511 active Iranian Facebook pages. From the Facebook pages, in addition to their links to each other, I extracted following variables:

Like Count: the number of likes that the page has received or the number of members.

Talking about Count: The index that shows the actual number of users who are engaged in and interacting with the page.

Category: The category of Facebook page, which is assigned by the administrator or the creator of the page.

Some descriptive data about the pool of Facebook pages is shown in Table 2.

Table 2. Descriptive data About Facebook pages

	N	Minimum	Maximum	Mean	Std. Deviation
Like Count	3,510	14,001	2,985,228	113,258.46	187,690.745
Talking about count	3,510	0	779,380	5,290.86	19,342.482

After identifying the active Facebook pages, I mapped them based on their links to each other. By mapping the network of this pool, I detected the main communities and the main clusters of Facebook pages. Finally, I broke down the data extracted from the selected Facebook pages and looked at their categories and also the top issues within them.

Balatarin.com is one of the most well-known social news aggregator websites in Iran. On Balatarin, which is similar to *digg.com*, users submit the best links of interest to other (Iranian) internet users around the world. Once a link acquires enough positive votes, it is moved to the top of the front page ('hot posts' page). I gathered the data from this page, assuming that it represents the interests and concerns of Balatarin users. All the content of posts on this page and other relevant objects were captured automatically by software over the course of the data gathering (from 30th June 2014 to 10th August 2014).

I measured the following variables from each post:

Number of votes+: the number of positive votes that the post received.

Number of votes-: the number of negative votes that the post received. This shows the extent to which the post is disputable.

Number of clicks: the number of post views shows the extent to which the post attracted Balatarin's audiences.

Number of comments: the number of comments shows the extent to which the post elicited user discussion.

Balatarin has about 35,000 users and half a million visitors per month (in 2012). Users are active in seven categories: society, politics, science/ technology, sports, art/literacy, entertainment, and economy. During the post-election events of 2009, Balatarin was one of the most influential Iranian social networks for the Iranian Green Movement (Sreberny &

Khiabany, 2010; Honari, 2013), and it is one of the most popular social news aggregators blocked inside Iran.

- *Accessible in Iran*

SNSs accessible in Iran, such as Facenama.com (Alexa traffic rank: 7/ users: 435,000), aparat.com (Alexa traffic rank: 16), cloob.com (Alexa traffic rank: 18/ users: more than 850,000), and Tebyan.net (Alexa traffic rank 28/ users: 222,000) are among the most popular and frequently visited online platforms in Iran (Alexa ranks are retrieved in November 2014). I chose cloob.com and Tebyan; two of the most important SNSs accessible in Iran. The sampling strategy for cloob.com and Tebyan, is similar to that applied to Facebook and Balatarin.

cloob.com is the most popular and oldest social network in Iran. Cloob users have their own profile pages, as on Facebook, and any user can share or reshare others' entries. They are also able to comment on each other's posts. In Cloob, there are 23,695 'clubs' that people are members of according their interests or needs. Clubs in Cloob are similar to Facebook pages/groups and are categorized into 22 categories.

I extracted the data of clubs in detail in June 2014. To obtain an appropriate sample of users, using Excel's random number generator, I randomly selected a certain number of users from the top 10 Clubs in each of the categories. All in all, I randomly selected 8,652 users from 220 clubs. From the profile of sample users, I gathered self-reported sociodemographic variables. Occupations, Education level and Place of residence were manually coded by a research assistant and randomly rechecked by me. Information that has not been reported by users or was not possible to understand and code is categorized as missing data. The list of variables and categories is shown in Table 3. The profile data reveal that Cloob users live mostly inside Iran and are distributed across the country. In comparison to international social networking websites such as Facebook and Twitter, Cloob users are younger and not limited to highly educated and high socio-economic status people.

Table 3. The list and information of demographics variables of Cloob users

Title	Categories	N	Mean	SD.
Gender	1 male; 2 female	8,651	1.4886	
Age		5,167	24.9145	6.1886
Marital Status	1 single; 2 married	8,652	1.1150	
Religion*	Muslim, Christian, Zoroastrian, Jewish	8652		
Education Level*	1 Under Diploma; 2 Diploma; 3 One Year College; 4 Bachelor's Degree; 5 Master's Degree; 6 PhD and more	7596		
Occupation*	1 Employer/manager; 2 Professional; 3 Manual worker; 4 Farmer; 5 Member of armed forces; 6 Culture, art and literature, 7 Journalist, politician, etc.; 8 Governmental employee; 9 Non-governmental employee; 11 Self-employed; 12 Academic; 13 Other, 14 Unemployed; 15 Student; 16 Employee; 17 Teacher; 18 Engineer, industry, etc.; 19 Professional workers	4352		
Place of Residence	1 inside Iran; 2 outside Iran	7,596	1.0072	
City of Residence*	1 Tehran; 2 Large cities (Capital of provinces); 3 Other smaller cities; 4 Towns and Villages	6116		
Province of Residence*	1 Alborz; …; 31 Zanjan	8652		

Note: * For the detail see Appendix 1

Tebyan is a highly popular and richly informative website which is run by the Islamic Propagation Organization (Saazeman-e tablight-e eslami). A part of the website is the Tebyan Social Network which is similar to Balatarin and functions as a social news aggregator. I extracted all the posts that were shared by Tebyan users in July and August 2014. Over four weeks (weeks 27, 30-32), I extracted the data of 15,164 posts which were submitted by users. The number of positive (mean=7.36) and negative (mean=0.08) votes, as well as full text and publication date and time of the posts, are gathered from the data of Tebyan as well. In Tebyan, as in Balatarin, posts that get enough votes (45) convert to 'hot' posts and move to the top of the hot posts page. Over the course of the research 284 posts got more than 45 likes and moved onto the hot page. I focus on *hot posts* as they are filtered by the votes of users and represent the demands and interests of users.

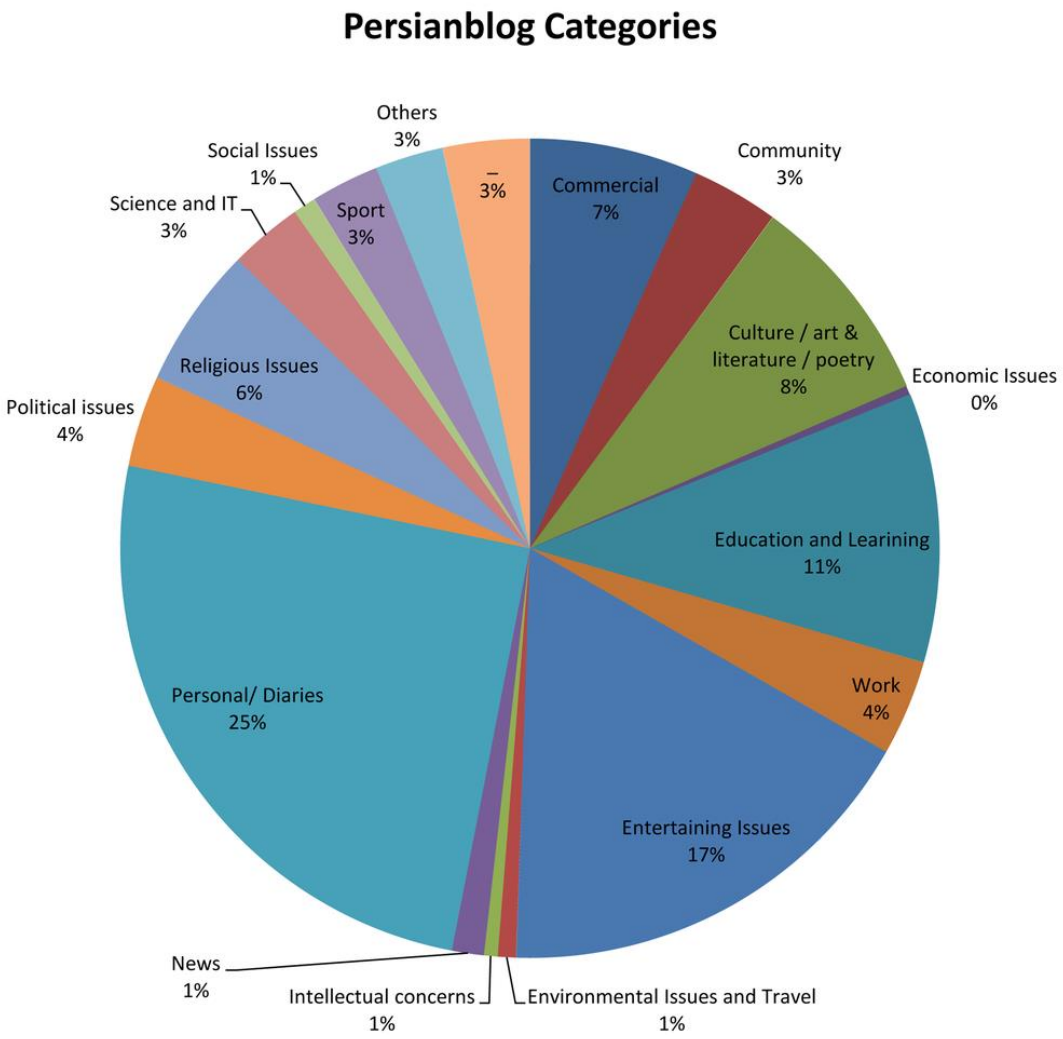
RESULTS

In this section I present results from each of the online communities/platforms individually. Then I combine findings into a larger picture in the conclusions section.

Iranian blogosphere (Blogistan)

From the 5224 blogs that I identified from Persianblog, about 10% (556 blogs) were randomly selected to be manually coded. The coding was performed by a research assistant and it has been randomly checked by me. The sample of blogs is categorized based on the content of the last three posts of the blog. Figure 2 shows the relative size of each category of blog. The most prevalent issue that is discussed by blogs hosted by Persianblog is Personal/Diaries (about 25%). Bloggers shared their daily experiences with blog readers. They often tell the stories and often just express their feelings with a photo or short sentences. Another major category among blogs is entertaining issues. These blogs mostly publish posts that includes links for music, funny quotes and photos. The education and learning category surprisingly is the third most prevalent category among blogs. The issues addressed in these blogs are as diverse as cooking, Quran, accounting software, health and beauty.

Figure 3. Post categories in Persianblog



Online SNSs Blocked in Iran

Facebook. To understand the most popular issues among Facebook pages, I first identified the top Facebook pages based on the number of likes and number of talking about (the number of users who are engaged in and interacting with the Facebook pages). As one can see from Table 4, the majority of the most popular pages are in the Musician/Band category. These pages are the official or fan pages of singers. The only exceptions are two TV channels and a music website.

Table 4. The most liked Facebook pages

	Label	Category	Like count	Talking about count
1	Arash	Musician/band	2,289,852	18,787
2	Ebi	Musician/band	2,262,613	127,251
3	Manoto TV	TV channel	2,167,821	261,379
4	Shadmehr Aghili	Musician/band	2,050,104	192,738

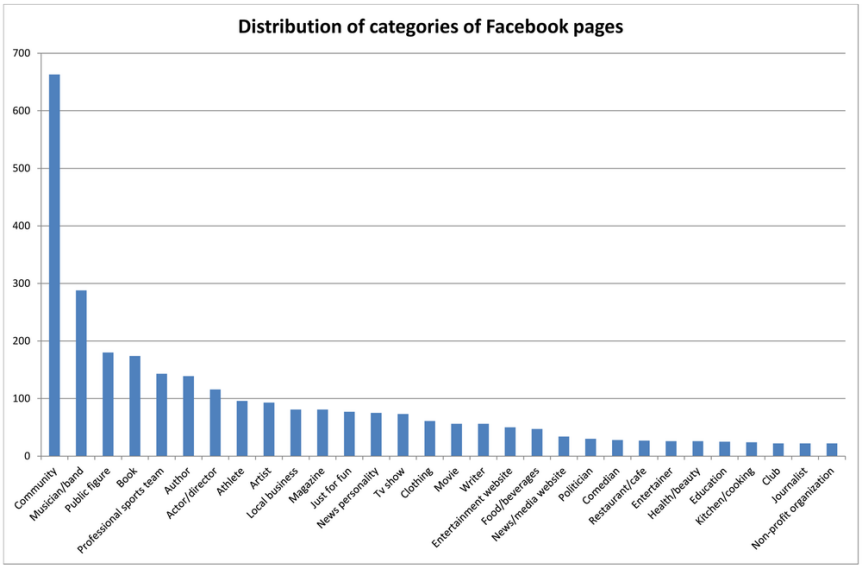
5	YAS	Musician/band	1,877,205	13,086
6	Golshifteh Farahani	Public figure	1,785,684	15,036
7	Dariush Eghbali	Musician/band	1,771,840	39,469
8	BBC Persian	Media/news/publishing	1,719,282	177,128
9	Siavash Ghomeishi	Musician/band	1,672,773	134,581
10	Radio Javan	Entertainment Website	1,647,621	61,161

Analyses based on talking-about count shows, however, users interact mostly with the diverse categories of Facebook pages from singers and comedians to a campaign against mandatory Hijab.

Most frequent categories

Among the pool of Facebook pages, I found 147 distinct categories. Figure 3 shows the most frequent categories among Facebook pages and the descriptive data for each category. About 20 percent of Facebook pages have been categorized as community pages. After community pages, musician/band, public figure and book, in turn, are the most frequent Facebook pages. Among the top 30 categories, the category of TV channel consists of 22 Facebook pages and has the highest mean of likes (380,349) and also highest mean of Talking about (34,432).

Figure 4. Frequency of categories of Facebook pages



Community detection and clustering analyses

Although the distribution of categories of Facebook pages gives us a general view of what Iranian Facebook pages are most frequently about, the information is too broad to fully understand the issues and the interests that are provided with these pages. To better identify the issues which are discussed in and the interests which are represented by these Facebook pages, I attempted to map

out the Iranian Facebook pages and take a close look at the clustering of Facebook pages. I define Facebook pages as nodes and their likes to each other as links (or edges). By doing so, I am able to detect the main communities and main clusters within the Facebook pages network. I assume that common interests and shared demands link Facebook pages together through likes and result in clustering patterns of Facebook pages network.

From 3,510 Facebook pages I removed 413 isolated Facebook pages (the pages which do not have any link with other pages). Using the rest of the pages I mapped out the network. I used the Modularity routine in Gephi software, a network analysis software, to detect communities and compartmentalize the network into sub-networks (or communities). The community structure reveals 27 distinct communities in the Facebook pages network. By decomposing the network to sub-networks, clusters within each community become identifiable. Details of the main communities and clusters are presented in Table 5.

The main and largest community is that of entertaining and life style pages. The main clusters in this community are pages comprising entertaining issues, jokes, funny quotes and love and marriage tips. Also in this community, users are more engaged in the page providing Persian music and videos. The second popular community encompasses Facebook pages related to fashion and beauty, cooking, and some educational pages providing tips and instruction for photography, decoration, handicrafts etc. The cluster of pages which are tabloids and gossip magazines are also in this community. The politician community is the fifth largest community. It consists of three types of Facebook pages: Politician Facebook pages such as that of Javad Zarif, foreign minister, grassroots-driven pages which were mostly created in the midst of Green Movement protests, and some Fake celebrities' pages which is used for the political purposes. Fake Facebook pages are active under the name of some celebrities, however, they are not administrated by the very celebrities. These pages mostly share political posts.

Table 5. The main communities and clusters in the network of Iranian Facebook pages

	# nodes	% total nodes	# edges	Page with Max. like	Page with Max. Talking about	Main clusters
1	598	17,04%	3,424	Parazit (TV Show)	Persian Music (Music/Band)	Entertaining, joke, fun, love, romantic tips and quotes
2	535	15,24%	3,554	(tabloids)	Fashion and Beauty (Education Website)	Beauty and fashion, Education of cooking, photography and handicrafts, decoration, guidance to better life
3	315	8,97%	1534	Christian Ronaldo (athlete)*	Iran Volleyball National Team (professional sports team)	Sport
4	311	8,86%	1,211	Arash (Musician/Bands)	AMIR TATALOO, Rapper (Musician/Band)	Musician, bands and music websites
5	298	8,49%	1,191	Press TV (Media/news/publish.)**	Ebrahim Nabavi, politician and comedian (author)	Politicians, Green Movement websites, Fake celebrities' Facebook pages
6	295	8,40%	1,304	Sohrab Sepehri, poet (Public Figure)	Minimals for life (Author)	Authors, literature, poet, art (music) ,Charities
7	271	7,72%	755	BBC Persian (Media/News/Publish.)	My stealthy Freedom in Iran (Community)	News websites, informative websites, scientific and health news, oppositional human rights websites, psychology magazines
8	110	3,13%	260	Hot Pictures (News personalities) – Learn English (Book)	Hot Pictures (News personalities)	Animals lovers, tourism, environmental, tabloids, (celebrities) photos
9	108	3,08%	272	Manoto TV (TV Channel)	Manoto TV (TV Channel)	Ancient, history and nationalism, and Satellite TV channel
10	86	2,45%	176	(Writer)	Dr. Hossein Elahi Ghomshe ei (Public Figure)	Fun, troll
11	46	1,31%	322	We hate crab users(Community)	Crab Facebook Figures (Public Figures)	Girls and boys, teenagers flirting
12	38	1,08%	267	Iran Art & Architecture (Community)	Molana, poet (Author)	Poet, Art and Architect, Quran
13	25	0,71%	328	Molana, poet (Community)	Molana, poet (Community)	Poem, poet
14	474	13,50%				

Note: * The first one is a Facebook page which is not related to this community (tabloids)
**** The first one is Golshifteh Farahani public figure but it was employed by a group of dissidents to spread political news.**

Balatarin.com. On average, 4,720 posts were moved to in the 'hot page' of Balatarin per day over the period of research (from 30th June 2014 to 10th August 2014). Partitioning the posts into categories reveals that social and political issues are the most prevalent issues that attract users in Balatarin. An exception is the last week of June during the World Cup matches when that sport was the most popular category among hot posts.

Zooming on in each category reveals that the prevalent issue in terms of getting votes is social issues, and the least is economic. The posts relating to political issues get more votes than others and entertaining issues get fewer. The issues that are most discussed in Balatarin are social issues, which has the highest mean number of comments, while the least discussed is science and technology. The most controversial posts are related to political issues and the least controversial are about art and literature. The most popular posts for the general audience of Balatarin are

entertaining posts, which get more clicks than other posts, while the least popular ones are economic issues. For further details on the categories see Table 6.

Table 6. The number of posts and votes in Balatarin by categories

	# posts	votes + (mean)	votes - (mean)	Comments (mean)	Clicks (mean)
Social	**1,180**	52.7	2.1	4.9	547
Economic	376	32.6	1.2	0.7	427
Entertaining	600	26.6	1.0	1.4	**844**
Political	988	**59.2**	**2.7**	**5.9**	469
Art&Lit	576	31.8	0.6	0.9	497
Sci&Tech	590	41.7	0.7	0.6	447
Sport	409	32.4	1.2	0.9	628
TOTAL	4,720	52.7	2.1	4.9	547

To understand the issues that were discussed in each category more deeply, I identified words that are more frequently used in the content of posts in each category. Figure 4 shows the ten most used words in each category. I can see from the figure which issues are most discussed in each category over the course of research. In social and political issues users were more concerned about Gaza and ISIS in that time. Women, gender issues and state repression are other issues that were discussed in both categories. The Entertaining category also consists of photos, cartoons and videos.

Figure 5. Word frequency of posts of each category in Balatarin

The issues that attract users clearly depends in part on global and local events (offline) and circumstances. Therefore, it is wise to observe changes in word occurrences over time. I focused on four weeks from June to August. Figure 5 presents the number of posts in each category per week. The word frequency shows how the World Cup was dominant in the first week, then in the next two weeks the Gaza crisis and Palestine and Israel conflict, and in the last week ISIS was the most prevalent issues (Figure 6).

Figure 6. Number of posts in each categories per week

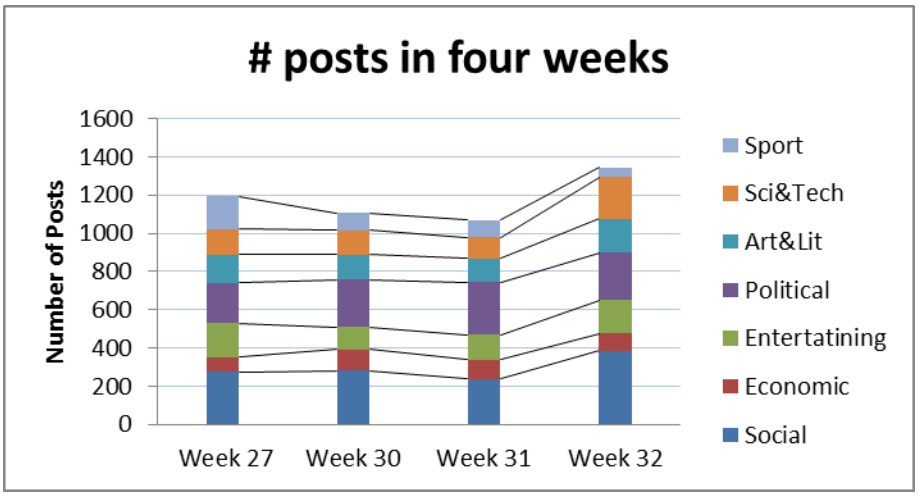


Figure 7. Word frequency in each week within the contents of Balatarin hot posts

Week 27	Week 30	Week 31	Week 32
World Cup	Gaza	Gaza	ISIS
Match	Israel	Prison	Rouhani
Iraq	Tehran	Women	Simin (Behbahani)**
ISIS	People	World	Iraq
Brazil	Sentence	Israel	Prison
America	Ali Karimi	State	Gaza
Tehran	Execution	Woman	Woman
TV	Women	Saba (Azarpeik)*	Tehran
Rouhani	Football	War	Death
Football	World	Rouhani	Turkey
Khamenei	Prisoner	Tehran	America
University	Rouhani	Rights	HRA***
State	ISIS	Newspaper	Attack

Online SNSs Accessible in Iran

Cloob. In cloob.com, clubs are categorized into 22 distinct categories. Table 7 shows the number of clubs in each category. As can be seen from the table, the most frequent category among clubs is Art and Entertainment.

Table 7. The frequency and percentage of categories of clubs in cloob.com

	Categories	**# of clubs**	**%**
1	Art and entertainment	2646	11,2%
2	Public Figures	2411	10,2%
3	Schools, universities and graduates	2348	9,9%
4	Marriage and Love	2136	9,0%
5	Countries, cities and regions	1551	6,5%
6	Related to cloob.com	1509	6,4%
7	Religion and Beliefs	1176	5,0%
8	Computer, Internet and Electronics	1052	4,4%
9	Sports and Games	956	4,0%
10	Literature, History and Culture	874	3,7%
11	Society and social sciences	842	3,6%
12	Fashion and Beauty	542	2,3%
13	Technology and Engineering	436	1,8%
14	Related to other websites	383	1,6%
15	Companies, organizations and associations	381	1,6%
16	Sciences	376	1,6%
17	Work, Employment and Career	356	1,5%
18	Travel	284	1,2%
19	Education and learning	265	1,1%
20	Food, Home, Family	215	0,9%
21	Health and Disease	174	0,7%
22	Others	2780	11,7%
	Total	23693	

By extracting data from the profile pages of a random sample of club members, I attempted to find significant correlations between demographic variables and the categories that users are most engaged in. To do so, I conducted a one-way ANOVA statistical test to compare the effect of socio-economic traits on the categories that users are engaged with.

The results show that almost all demographic variables and socio-economic traits significantly affect categories. The test showed that differences in age, gender, marital status, education level, and city of residence were all statistically significant. (See table 8. and Appendix 2)

Table 8. ANOVA test summary for cloob.com users

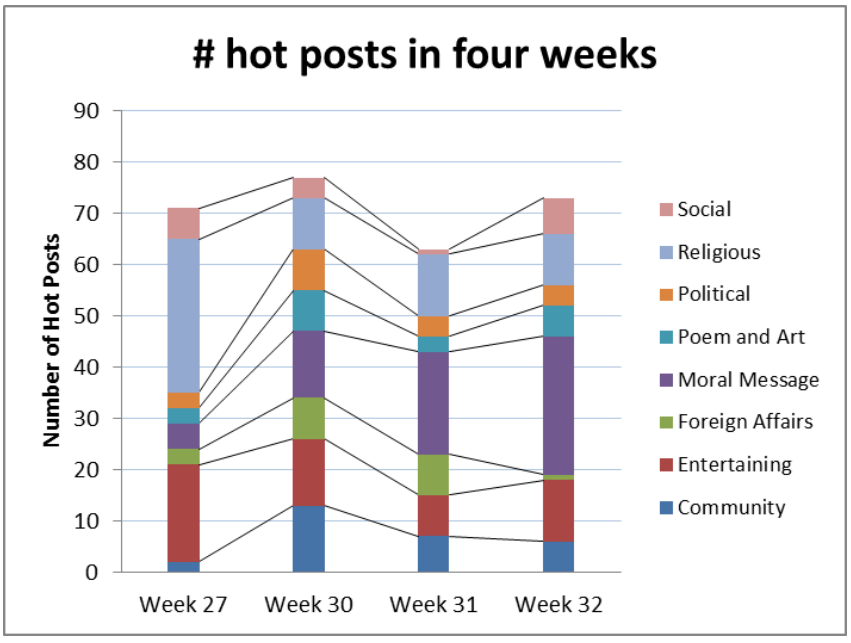
Variables	F (21, 8630)
Place of Residence	1,524
City of Residence	2,111**
Gender	3,657***
Marital Status	2,056**
Age	4,058***
Education Level	7,434***

Note: * p<.05, ** P<.01, *** P<.001

I find that the users involved in technology and engineering are more often male than female, while users of food, home and family categories are more often female. The category of education and learning attracts more single users than married ones. In terms of age, users this category are the youngest in the category of technology and engineering, and the oldest in the category of society and social sciences. Users who are more interested in art and entertainment and science live in smaller cities than users who are interested in work, employment, and career related issues. More highly educated users of cloob.com are more involved in technology and engineering clubs, unlike less educated users who are concerned about education and learning.

Tebyan. Posts that are shared in Tebyan get votes from other users. Similar to other platforms, there are many posts that are not interesting for other users so they receive few votes. Since I am interested in most popular posts, I focus on only hot posts which have received more than 45 votes. Partitioning the posts into categories reveals that religious issues and moral messages are the most prevalent issues that attract users in Tebyan. Religious issues are highly prevalent in week 27 as it was during Ramadan. Figure 7 presents the number of posts in each category per week and the changes over time.

Figure 8. The number of hot posts in each categories per week in Tebyan



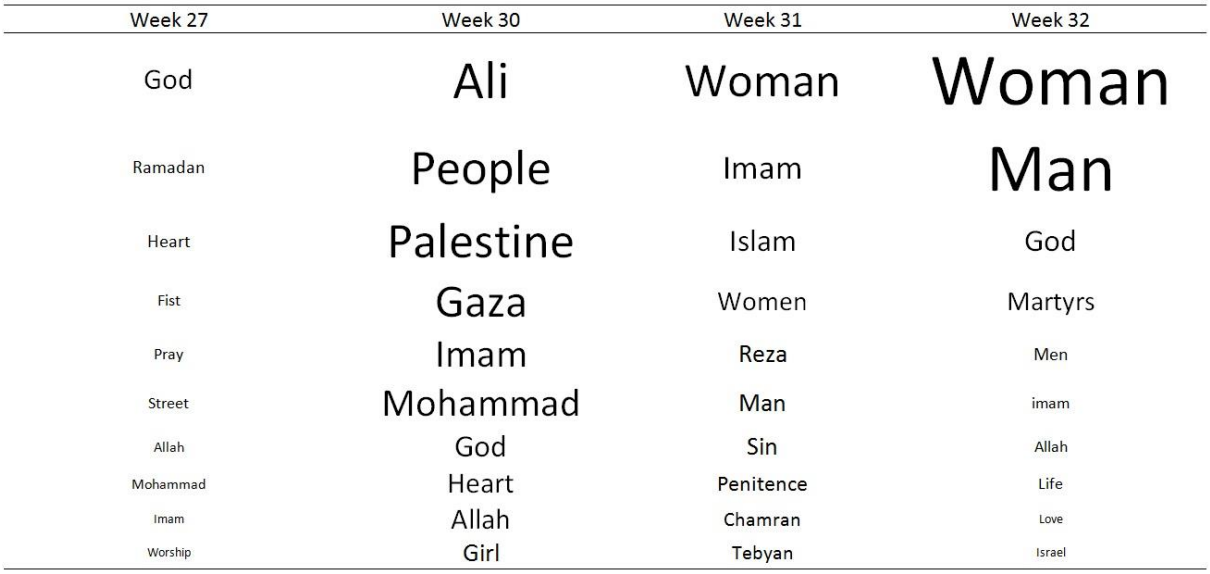
Zooming on in each category reveals that the prevalent issue in terms of getting votes is foreign affairs issues, and the least is moral message. The foreign affairs posts in the period of the research were more related to Gaza crisis and brought emotionally driven votes. The posts relating to political issues get more negative votes than others and religious issues get fewer. This means the most controversial posts are related to political issues and the least controversial are about religious issues. (see Table 9)

Table 9. The number of posts and votes in Tebyan by categories

	# posts	votes + (mean)	votes – (mean)
Social	18	83.1	1.1
Religious	62	80.0	0.0
Political	19	85.2	**1.4**
Poem and Art	20	77.2	0.8
Moral Message	**65**	75.7	1.1
Foreign Affairs	20	**89.1**	0.3
Entertaining	52	78.0	0.8
Community	28	79.4	0.5
TOTAL	284	79.6	0.7

The word frequency shows how the Ramadan was dominant in the first week, then in the next week the Gaza crisis, and in the last two week discussing the role of women and men and women relationship was the most prevalent issues (Figure 8).

Figure 9. Word frequency in each week within the contents of Tebyan hot posts



SUMMARY OF FINDINGS

In this section, I first summarize the issues that I have identified in online communities. Then, I compare online communities/platforms in terms of issues that are most prevalent. In the last part of this section, I will conclude with discussing some limitations and implications of the study.

Issues - Platforms

Personal issues are discussed and expressed in *blogosphere*. Findings show that 25% of blogs are created for the purpose of sharing personal experiences, telling routine stories, discussing personal concerns, getting advice and confabulating. Some bloggers discuss the personal issues within a broader context of the Iranian society. These blogs attract higher educated and more socio-political active audiences. Families issues, marital problems, affairs/marital infidelity, women matters, parenting problems, romantic relationships, work related problems are most frequently discussed in *personal issues* blogs.

Contrary to the general expectations, ***political issues*** are not widespread on social networks, neither are they limited to oppositional users. The current study found that political issues are prevalent in discussions in Balatarin, however, not in other platforms and online communities. Only four percent of blogs hosted by Persianblog.ir are about political issues. Consistently, in *cloob.com,* only 3.6% of clubs are categorized as society and social sciences, which includes also political related clubs. The political Facebook pages are not in the list of most popular pages. While the Facebook pages that belong to musicians/bands, athletes, artists and even authors have from 500K to 2M likes, the most popular politician Facebook page has about 400K likes. Nevertheless, the political community of Facebook pages is the fifth largest community among other clusters of Facebook pages. It contains about 8.5% of Facebook pages which is considerably large. It is important to note that the salience of political issues and the political topics in all platforms depend on global and local events and circumstances. In contrast to Balatarin, political 'hot' posts of Tebyan, which are 6% of total hot posts, are in favor of conservatives.

Entertaining issues is the most highly demanded category of issues overall. Entertaining issues is the second largest category of blogs hosted by Persianblog.ir, the largest community of Facebook pages, the most frequent category of clubs in cloob.com and the third most prevalent issue of hot posts in Balatarin – after social and political issues - and Tebyan – after moral and religious issues. It includes topics as diverse as jokes, fun messages/pictures, music tracks, video movies and topics related to life style of youth.

Issues related to social problems and concerns of people in society are frequently discussed on the Iranian Web. These issues are not only discussed in the ***social issues*** category but are also reflected in contents of other categories. In the blogosphere only a very slight portion of blogs can be categorized as social issues. However, discussions of social problems are found in other blogs that belong to other categories, particularly in personal/diaries. Social issues that mostly attract audiences and are frequently discussed among users in all platforms are women issues, environmental issues, inequality and poverty, social immorality, and children problems. Women's issues are discussed not only by people that want to improve women's situation in society, but also by people that resist any change in women's situations. However, what I found frequently in blogosphere and other communities, except Tebyan, is the fight for equality for women in society.

The findings of the current study reveal that one of the issues that most appeal the Iranian users is ***educational issues***. A considerable number of online communities/groups provide users with

some training programs, educational information and consulting services. Some of these communities/groups are specifically created for educational and learning purposes, which are categorized as educational issues in our analyses; however, in almost all other categories and issues I found a large number of groups that are partly allocated to training and teaching users. English language, cooking, health and beauty, psychological issues are some of topics that elicited the greatest demanded for training and education.

Our findings indicate ***science and technology*** is one of the interests of users. While in blocked platforms, such as Balatarin, discussing science and technology is dominated by Internet security, tips for circumventing filtering, and ICT, in other platforms science and technology encompasses a wide range of issues; from instructions on using gadgets and electronic devices to medical breakthroughs. ***Religious issues***, ***sport***, ***cultural issues***, ***art***, ***literature***, and ***work related issues***, are other issues that are frequently discussed among users on the Iranian Web.

Comparisons

Accessible vs. Blocked Platforms (Cloob.com - Facebook)

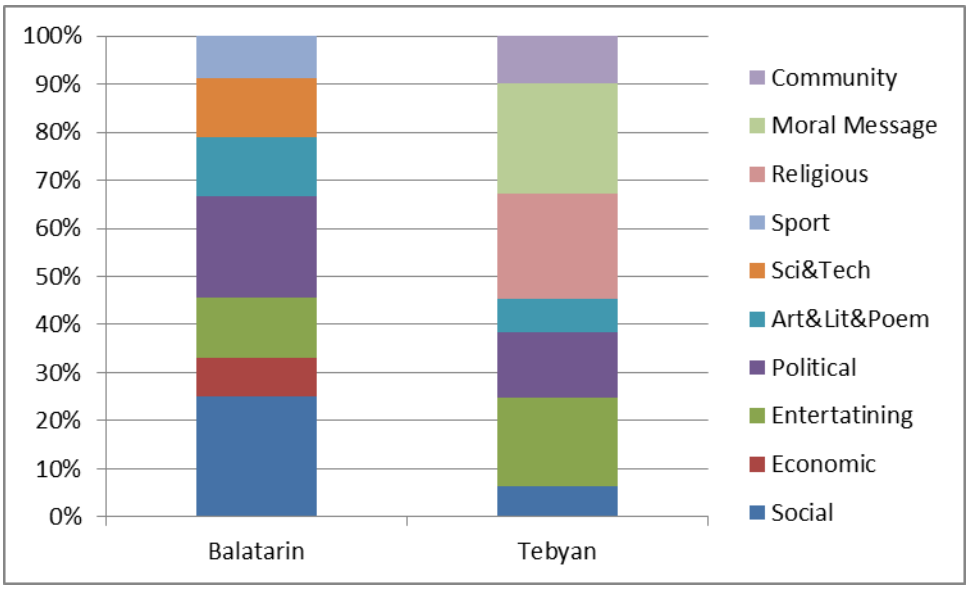
Comparing Clubs in cloob.com and pages in Facebook shows that issues that attract most users are to some degree the same in both platforms. However, there are some differences in the prevalence of issues. Despite the large number of areas of overlap in the views and opinions that are expressed in both platforms, there are a number of areas of disagreement. Most importantly, there is a major divergence on the issue of politics, religion, and social morality. While there is a clear tendency towards democracy, secularism and political change among political Facebook pages, the views presented in political-social clubs in cloob.com were so diverse that one cannot derive a meaningful pattern. On social morality, on the one side, among majority of Facebook pages tolerance, equality and human rights are important values drives discussions, on the other side in cloob.com religious beliefs is central to the discussions.

In cloob.com there are a considerable number of communities related to cities and regions that are not remarkable in Facebook pages. Similar to Facebook pages, public figures, musicians, politicians shaped a large community of fans and clubs in cloob.com. However, there are a large number of actresses/actors, musicians, politicians that work inside Iran who only have clubs/pages –particularly verified ones - in cloob.com, but not in Facebook. As compared to cloob.com, Facebook pages are more dominated by political issues.

Oppositionists vs. Conservatives in Online Communities (Balatarin - Tebyan)

Based on the findings of this research, it is clear that political and social issues are discussed more in oppositional online communities (Balatarin as an example) than in conservative online communities. Furthermore, one finds an overwhelming occurrence of moral and religious issues among government-based online platforms (Tebyan as an example). Figure 9 indicates the differences and similarities in the issues that attract most attention in both platforms (Tebyan and Balatarin). There is also a major divergence on political issues between two groups of people. Interestingly, the position of women in society and the relationship between women and men is a prevalent topic of discussions in both platforms. Furthermore, over the course of this research, discussions in both platforms were influenced by global events, namely the Gaza crisis and ISIS.

Figure 10. Comparison between the categories of hot posts in Balatarin and Tebyan



Users and Issues

This study suggests that in general the users of the Iranian Web encompass a relatively wide spectrum of people in terms of socio-economic traits. Data extracted from the users of cloob.com also shows that demographic variables and socio-economic traits significantly affect the issue of interests of each communities. In cloob.com, which is an accessible online platform, users are geographically widespread. Its users are also not limited to higher-educated people. I found that women are more interested in educational issues and discuss more about women's matters than men, while men are more often discussing engineering and technical issues. Women are also more concerned by social issues than men.

DISCUSSION AND CONCLUSION

This study was designed to lay a foundation for a broader understanding of digitally enabled social movements as agents of social change in Iran. Therefore, I attempted to capture the social issues that are most frequently discussed through online communities. A comprehensive frame of the Iranian web is offered that led to a systematic sample of online communities. From the main sectors of the Iranian web, which cover the main areas of interests of Iranian users, I identified and selected online platforms which are most likely to attract a diversity of Iranian users. The most obvious finding to emerge from this study is that the issues that are discussed among Iranians through online communities are diverse in terms of views and interests, and a wide range of issues and topics are being discussed online. However, different issues are prevalent in different online communities and online platforms. These findings broaden our knowledge about the role these communities potentially play in effecting social change. The study reveals that the formation of consensus is taking place in different issues and areas of interests among Iranian users. This can serve as a base for future studies on Iranian digitally mediated social movements that address different issues. Future research should therefore concentrate on the investigation of social, environmental, women issues-driven social movement activities through the Iranian online communities.

Steps towards participation in social movements not only require very different activities, but they also require different theories of analysis (Klandermans & Oegema, 1987). Accordingly, understanding digitally mediated social movements requires the important distinction between the different steps in the processes through which people participate in the movement. This study provides insights into the initial process of consensus formation, which breeds potential participants in social movements. Although this study focuses on the social concerns of Iranians, the methods that were introduced can be employed for other societies. Overall, this study strengthens the idea that we can understand social phenomena in repressive contexts through the online behavior of Internet users.

Similar to other studies, this research also faces 'the challenge of generalizing from online to offline' (Golder & Macy, 2014). This research approach recognizes that those Iranians who go online may not be representative of all Iranians; in other words, they are not entirely "ordinary." The research did, nevertheless, target ordinary internet users in the sense that it looked at a diversity of users, rather than focusing on activists, opposition figures, public figures and the like. It did this by examining online platforms that have been shown to be widely popular among Iranians. In addition, demographic data are not readily available for all users, so I could not make statistically weighted inferences about either those whose posts were being studied or their relationship to the larger population in the way a conventional social study based on population sampling might do so. One source of weakness in this study could be the remarkable transition in Iranian Internet usage. Over the past two years, since this study was designed and performed, Iranians have seen incredible developments in Mobile Internet penetration which resulted in a boom in instant messaging apps use among Iranians. The author acknowledges this ongoing change. Further research may explore the formation and development of consensus through instant messaging apps such as Telegram and WhatsApp.

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APPENDIX 1: DESCRIPTION OF CLOOB.COM USERS

APPENDIX 2: MEANS OF VARIABLES PER CATEGORY IN CLOOB.COM