

Social Network Analysis: A Case Study in Turkey

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Abstract: In the last decade, some online social networks such as YouTube, Facebook, Twitter, LinkedIn and Jhoos have been accessed by a large number of internet users. Because of these networks, most users spend their spare time surfing the internet. Although social networks provide a number of benefits in terms of developing and sharing knowledge, there are some disadvantages that can make a person's life really miserable on occasion. Within the last few years in Turkey, some secret videos and voice recordings have been broadcast on these social networks without the permission of the people involved. Therefore, some people commit suicide because of the public revelation of their private lives. More than a year ago, some people were arrested and put into jail because they had been broadcasting private recordings on social network sites. Social networks can be used as free advertising environments; even these pages can be used as a place where links can be posted to pornographic websites. Terrorist groups can use social networks not only as tools for propaganda, but also as a communication environment with their members. Because of Turkey's anti-propaganda campaign and Mustafa Kemal Atatürk, who is the founder of the Turkish Republic, access to YouTube in Turkey has been forbidden. In this study, a survey was conducted using a number of people in Turkey via the internet in order to measure and evaluate the role of social networks on human behavior. There were more than 20 statements presented to the social network users, where the number of respondents was just over 1000. They were also asked to comment on the social network situation. The survey was evaluated using SPSS software. The relationship between age, gender, income level, the person's social life etc. was investigated and critiqued. The advantages and disadvantages of social networks were discussed. At the end of this paper, some recommendations will be given.

Keywords: social networking, YouTube, Facebook, LinkedIn, Jhoos

1. Introduction

The Internet, the most powerful weapon of communication and libraries, is one of the biggest projects of the Pentagon. Although there are many advantages of having internet access, the privacy of internet users is still questionable (Varol, 2009).

When the Internet was recently introduced, keeping a record of the users could be done by distributing free eMail addresses. However, later it became believed that the information collected by eMail systems was not enough. It was decided that information about the relationships (friendships) between people should also be involved. Social network websites (SNS) are a result of this thought.

Although there are a variety of purposes of web pages, according to a report published on July 26, 2010 by Hitwise.com, a market analyst company, social networking websites are the most visited sites on the Internet. Out of all the social networks, their eBizMBA rank shows the 8 most frequently visited. The eBizMBA rank gives an average of each website's Alexa global traffic rank and U.S. traffic rank from both Compete and Quantcast, as shown in Table 1.

Table 1: The 8 most popular social networking websites

Name of Website	Monthly Individual Visitors (estimated)	eBizMBA rank	Compete	Quantcast	Alexa rank
Facebook	250,000,000	2	2	2	2
Myspace.com	122,000,000	16	16	16	17
Twitter	80,500,000	27	39	31	11
LinkedIn	50,000,000	47	61	50	29
Ning	42,000,000	143	180	120	128
Tagged	30,000,000	225	382	151	141
Classmates.com	29,000,000	228	487	425	969
Hi5	27,000,000	479	983	392	62

In the last decade, the usage of social networks has grown exponentially. People have even registered for more than one social networking website where up-to-date information can be shared.

According to Wasserman and Faust, the analysis of social networks relies on the importance of the relationships between communicating entities (Wasserman, 1994). Theories, models, applications and the analysis of social networks provide the main principles of the created network perspective. These kinds of networks can eventually make some people addicted to their computer screens.

The goals of social networking sites can vary. Some of them are given below:

- To enter into society in the cyber world;
- To avoid boring daily work;
- To offer a change of lifestyle;
- To play online games;
- To find and date other people;
- To do business;
- To fool people;
- To chat and spend time, etc.

Social networks can be seen as a knowledge sharing platform. People can discuss and share their ideas and manage their knowledge. They can send instant messages to each other or they can communicate directly using video and audio facilities. On the other hand, social networks can be misused by some people who lie about their sex and name. For example, a man can appear as a woman on the platform with photos that belong to another person. A person who hides his/her own identity and acts as a different person has probably suffered from identity crises. Moreover, social networks can be used as a blackmailing tool. Some videos and audio material showing some military and political figures in Turkey were broadcast on YouTube in the last decade. Because of these broadcasts, two military officers committed suicide, some other people were arrested and a number of military officers had to appear in court.

Another big concern is the protection of privacy. According to Gaudin, out of 12 social networking platforms they tested, 11 of them (including Facebook) intentionally or unintentionally leaked personal information allowing third parties to recognize users' web browsing habits (Design Nine, 2009).

In order to address users' views, in this particular study, we measured and evaluated the role of social networks on human behavior by conducting an online survey in Turkey. The results of the survey were evaluated and criticized. The findings were evaluated using SPSS software.

2. The structure of social networking websites

Social networking has become a common way to stay in touch with friends and family and more in the last decade. With the change in networking systems, websites can now meet users' demands by knowing the identity or interests of the user (Exforsys Inc., 2010). These kinds of social networking websites have some fundamental principles such as the control of knowledge, basic equality, relationship status, idea sharing, community values, general interest etc.

Analyzing the community structure can become a vital tool in order to recognize the development of communities in offline social networks as well as studying the online social networks of universities, according to Traud et al (Traud 2010). When algorithmically-identified communities in Facebook are observed by grouping individuals according to self-identified characteristics, it can be seen that z-scores of pair counting gives a result of random values, where at least 12 of them indicates that a strong relationship exists between the algorithmically-identified communities and multiple self-identified characteristics. These kinds of calculations show the effectiveness of the organizational structure at Caltech, which is related to house affiliation, and which is different from the other universities that were studied (Porter et al., 2009). The evaluation of this experiment and also observing different factors involved in social websites can increase the understanding of the structures involved and the needs of users.

3. Methodology

The survey was sent to the whole country using online facilities. The online survey was sent to around 30,000 personal eMail addresses. There were 1004 respondents from different cities. The respondent's cities were divided into 3 groups named large, mid and small size based on their

population size. Large size cities have a population of at least 3,000,000, while mid size cities have a population between 1,000,000 and 3,000,000 and small size cities have a population of less than 1,000,000. There were 300 respondents from small size cities, 148 from mid size cities and 556 from large size cities, as shown in Table 2.

Table 2: Grouping of cities in which respondents live

	Frequency	Percentage	Cumulative percentage
Small size cities (population under 1 million)	300	29.9	29.9
Mid size cities (population between 1 and 3 million)	148	14.7	44.6
Large size cities (population more than 3 million)	556	55.4	100.0
Total	1004	100.0	

There were a total of 22 statements in the survey. The statements, the number of respondents, the mean and the standard deviation results can be seen in Table 3.

3.1 Demographic information of respondents

While 75.8% (761) of the respondents were male, 24.2% (243) were female. Figure 1 shows the age distribution of the respondents. As shown in Figure 1, most of the respondents (58.3%) are aged between 19 and 35. This is followed by the people whose ages are between 36 and 54. Table 4 shows the educational status of the respondents. It is very interesting that most respondents had associate degrees. Only 5.0% of the respondents had a graduate degree. In Table 5, the marital status of the respondents is given. Contrary to expectations, more than half of the total respondents were married, instead of being single.

Table 3: Survey statements

Statements	Number of respondents	Mean	Std. deviation
1. I already use social networking sites like Facebook, Twitter, Netlog, etc.	1004	3.76	1.414
2. I visit social networking sites daily.	1004	3.32	1.665
3. When I open my computer, the first thing that I check is my profile on a social networking site.	1004	2.46	1.639
4. I use a cell phone in order to access a social network.	1004	1.69	1.384
5. I find social networking sites very useful.	1004	3.11	1.384
6. I use social networking sites for fun.	1004	3.11	1.567
7. I use my Internet connection mostly in order to access social networking sites.	1004	1.72	1.267
8. I use social networking sites to stay in contact with my friends.	1004	3.39	1.584
9. I use social networking sites because a lot of my friends already use them and they want me to be part of it.	1004	2.33	1.497
10. I use social networking sites because of a lack of my friends' interest in me.	1004	1.32	0.957
11. I use social networking sites because they are part of daily life.	1004	2.21	1.504
12. I use social networking sites to make new friends.	1004	1.75	1.289
13. I use social networking sites because I want to follow my friends' relationship statuses.	1004	1.45	1.066
14. I follow the relationship statuses of people in whom I am interested by creating profiles using different and false information.	1004	1.22	0.874
15. I use them to learn personal information (cell phone, MSN addresses, etc.) of people whom I have an interest in. If necessary I would pay a membership fee.	1004	1.11	0.699
16. I feel secure when I use social networking sites.	1004	1.86	1.246
17. I spend a lot of time on social networking sites.	1004	1.79	1.276
18. I suspect that private information cannot be safely secured on social networking sites.	1004	3.43	1.596
19. I can build mutual relationships in my daily life.	1004	4.03	1.595

Statements	Number of respondents	Mean	Std. deviation
20. I cannot spend enough time with my family so I use social networking sites.	1004	1.42	1.063
21. I share my personal photos and videos on social networking sites.	1004	2.81	1.770
22. I set my private information thoughtfully.	1004	3.16	1.904

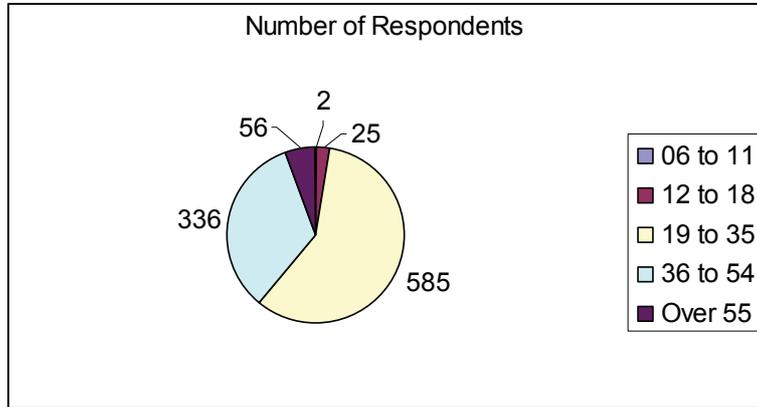


Figure 1: Age distribution of the respondents

Table 4: Educational status of the respondents

	Frequency	Percentage	Cumulative Percentage
Elementary school	4	0.4	0.4
Secondary school	115	11.5	11.9
Associate degree	491	48.9	60.8
Bachelor degree	162	16.1	76.9
Graduate degree	50	5.0	81.9
Doctorate	182	18.1	100.0
Total	1004	100.0	

Table 5: Marital status of the respondents

	Frequency	Percentage	Cumulative Percentage
Single	411	40.9	40.9
Married	546	54.4	95.3
Divorced	47	4.7	100.0
Total	1004	100.0	

The income level of the respondents is shown in Table 6. 53.1% of respondents had a monthly income between 1000 and 2999 Turkish Lira which indicates middle class people in Turkey.

Table 6: The income status of the respondents

Turkish Lira	Frequency	Percentage	Cumulative Percentage
Under 999	193	19.2	19.2
Between 1000 - 2999	533	53.1	72.3
Over 3000	278	27.7	100.0
Total	1004	100.0	

3.2 Evaluation of the answers received for the first and second statements

As reflected in Table 7, more than half of the respondents were from large cities. This can be explained as the substructure of the Internet connection is more developed in large size cities

compared to mid and small size cities in Turkey. Moreover, we can argue that since face to face communication is more easily done in small size cities, the users of the social networks do not need to use these services as frequently. However, due to traffic problems in large cities, people are more willing to stay at home and communicate with their friends online.

3.3 Membership situation

There were 1004 respondents who completed the survey; 243 were female and 761 were male. 35 women and 173 men answered that they think most of the information on social networking sites does not represent the truth, and some shared the opinion that information distributed through these websites damages the social structure of the people, and that they think that people waste their time on social networking sites. Therefore, they claimed that they do not use these tools. According to answers to the statement 'I already use social networks like Facebook, Twitter, Netlog, etc.', women (mean 4.01) use social networking sites more than men (mean 3.69), as shown in Figure 2. The detailed results are shown in Table 8.

Table 7: Number of respondents and means of city groups

		Number of respondents	Mean	Std. deviation	Std. Error	95% confidence interval for Mean	
						Lower Bound	Upper Bound
I already use social networking sites like Facebook, Twitter, Netlog, etc.	Small size cities	300	3.82	1.418	0.08	3.66	3.98
	Mid size cities	148	3.85	1.352	0.11	3.63	4.07
	Large size cities	556	3.71	1.428	0.06	3.60	3.83
	Total	1004	3.76	1.414	0.04	3.68	3.85
I visit social networking sites daily.	Small Size Cities	300	3.38	1.63	0.09	3.19	3.56
	Mid Size Cities	148	3.41	1.62	0.13	3.14	3.67
	Big Size Cities	556	3.27	1.70	0.07	3.13	3.41
	Total	1004	3.32	1.67	0.05	3.22	3.42

According to the survey, single and married women (mean 4.06) use social networking sites more than single (mean 3.92) and married men (3.53) (see Table 9). However, this habit changes after divorce. Most male users leave social networking sites after getting married while the women continue with their habit for a while. Moreover, divorced men continue to use social networking sites, but divorced women use SNS less than anyone else.

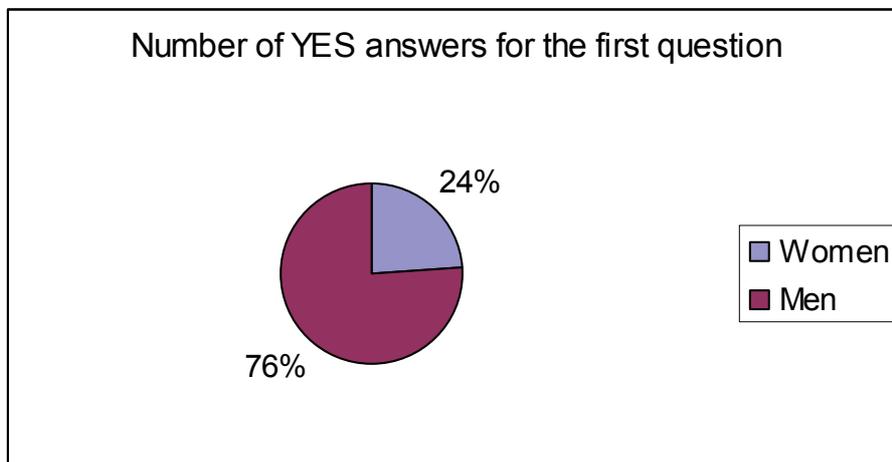


Figure 2: Number of yes answers for the first question

Table 8: The usage of social network sites (SNS) according to sex

Sex	Number	Mean	Std. deviation	Std. error mean
Women	243	4.01	1.330	0.085
Men	761	3.69	1.432	0.052

Table 9: The usage of SNS according to marital and sex

Marital status	Sex	N	Mean	Std. deviation	Std. error mean
Single	Women	139	4.06	1.309	0.111
	Men	272	3.92	1.306	0.079
Married	Women	82	4.06	1.260	0.139
	Men	464	3.53	1.500	0.070
Divorced	Women	22	3.45	1.625	0.346
	Men	25	4.16	0.943	0.189

Table 10 shows usage of SNS according to educational and sex. One thing that we should point out is that users at every stage from elementary school to masters level education tend to leave behind their habit of using SNS. On the other hand, at doctorate level they regain their habits and start to use SNS once again. It can be argued that the people tend to use social networking sites less when becoming more educated. However, due to the stress levels and extensive research work required during study for a PhD, students start to use these social networks more frequently.

Table 10: SNS usage according to educational and sex

Educational status	Sex	N	Mean	Std. deviation	Std. error mean
Elementary	Women	1	5.00	.	.
	Men	3	1.67	2.082	1.202
Secondary	Women	30	4.50	0.820	0.150
	Men	85	3.76	1.333	0.145
Associate	Women	96	3.98	1.289	0.132
	Men	395	3.61	1.469	0.074
Bachelor	Women	43	4.40	1.072	0.164
	Men	119	3.66	1.486	0.136
Masters	Women	13	3.00	1.683	0.467
	Men	37	3.65	1.783	0.293
Doctorate	Women	60	3.73	1.517	0.196
	Men	122	3.97	1.113	0.101

According to Table 11, men earn a higher salary and, accordingly, have fewer memberships to social networking sites. In the middle income level (between 1000 and 2999 Turkish Lira (TL)), women tend to use social networking sites more. Generally, we can argue that as the level of income increases, usage of social networking sites decreases.

Table 11: SNS usage according to income level and sex

Income level (TL)	Sex	N	Mean	Std. deviation	Std. error mean
Under 999	Women	66	3.91	1.475	0.182
	Men	127	3.87	1.369	0.121
Between 1000 - 2999	Women	133	4.19	1.122	0.097
	Men	400	3.75	1.354	0.068
Over 3000	Women	44	3.61	1.588	0.239
	Men	234	3.48	1.570	0.103

3.4 Usage frequency

Table 12 shows that users do not access the Internet just to visit social networking sites. Women visit SNS more often than men when they open their computers. It is worth noting that women are more interested SNS than men.

Table 12: Usage frequency of SNS according to sex

Statement	Sex	N	Mean	Std. deviation	Std. error mean
I mostly use my Internet connection to access social networking sites.	Women	243	1.82	1.323	0.085
	Men	761	1.68	1.247	0.045
I visit social networking sites daily.	Women	243	3.60	1.567	0.101
	Men	761	3.23	1.686	0.061
When I open my computer, the first thing that I check is my profile on a social networking site.	Women	243	2.78	1.666	0.107
	Men	761	2.35	1.618	0.059

According to Table 13, women find social networking sites more useful than men. Women feel secure when they use social networks. Women can build mutual relationships more easily compared to men. For the statement 'I cannot spend enough time with my family so I use social networking sites', the mean values for women (1.40) and men (1.42) are almost equal. Moreover, both women and men responded very similarly to the 'I use social network sites because of a lack of my friends' interest in me' statement.

Table 13: The effects of SNS on people

Statement	Sex	N	Mean	Std. deviation	Std. error mean
I find social networking sites very useful.	Women	243	3.28	1.309	0.084
	Men	761	3.06	1.403	0.051
I feel secure when I use social networking sites.	Women	243	2.02	1.266	0.081
	Men	761	1.81	1.236	0.045
I can build mutual relationships in my daily life.	Women	243	4.16	1.546	0.099
	Men	761	3.98	1.609	0.058
I cannot spend enough time with my family so I use social networking sites.	Women	243	1.40	1.045	0.067
	Men	761	1.42	1.070	0.039
I use social networking sites because of a lack of my friends' interest in me.	Women	243	1.26	0.863	0.055
	Men	761	1.34	0.985	0.036

3.5 The reason for membership

Table 14 shows that women want to be in contact with their friends more than men. Moreover, more women think that social networking sites are a part of life. It can be concluded that users join SNS of their own volition, not because of the wishes of their friends. Compared to women, men use social networking sites more often to make new friends. According to the table, most users do not use SNS because they wish to follow their friends' relationship statuses.

Table 14: The reasons for SNS membership

Statement	Sex	N	Mean	Std. deviation	Std. error mean
I use social networking sites to stay in contact with my friends.	Women	243	3.67	1.471	0.094
	Men	761	3.30	1.610	0.058
I use social networking sites because a lot of my friends already use them and they want me to use social networking sites.	Women	243	2.34	1.489	0.096
	Men	761	2.32	1.501	0.054
I use social networking sites because they are a part of daily life.	Women	243	2.35	1.541	0.099
	Men	761	2.17	1.491	0.054
I use social networking sites to make new friends.	Women	243	1.37	0.919	0.059
	Men	761	1.87	1.365	0.049

Statement	Sex	N	Mean	Std. deviation	Std. error mean
I use social networking sites because I want to follow my friends' relationship statuses.	Women	243	1.44	1.036	0.066
	Men	761	1.45	1.076	0.039

834 respondents responded to the statement about 'creating profiles using different and false information in order to follow the relationship statuses of people in whom I am interested' with 'Do not agree', as shown in Table 15. A number of respondents commented on this statement as well. Some of them admitted that they follow their ex-boy/girl friend, their ex-wife/husband or children using a fake identity on social networking sites. Some wives or husbands who had been cheated upon also followed their spouses by using social networking sites.

Table 15: Creating profiles using different and false information

I follow the relationship statuses of people in whom I am interested by creating profiles using different and false information.	N	Percentage (%)
Not answered	52	5
Do not agree	834	83
Undecided	27	3
Partially agree	68	7
Totally agree	23	2
Total	1004	100

3.6 Privacy

Table 16 shows that women and men both have their suspicions about private information stored on social networking sites.

3.7 Sharing knowledge and data

SNS users share their personal photos, videos and private information on the Internet. Compared to men, the mean value for such activities is higher for female respondents.

Table 16: Privacy

Statement	Sex	N	Mean	Std. deviation	Std. error mean
I suspect that private information cannot be safely secured on social networking sites.	Women	243	3.40	1.556	0.100
	Men	761	3.43	1.609	0.058

Table 17: Sharing knowledge and data

Statement	Sex	N	Mean	Std. deviation	Std. error mean
I share my personal photos and videos on social networking sites.	Women	243	3.05	1.781	0.114
	Men	761	2.73	1.762	0.064
I set my private information thoughtfully.	Women	243	3.35	1.897	0.122
	Men	761	3.10	1.903	0.069

4. Conclusions

Social networking sites (SNS) have become a very important tool in order to communicate with others in the last decade. Hundreds of millions of Internet users access SNS daily and share their information. When we consider the results of this survey, it is almost certain that most Internet users do not feel secure about the protection of their identities.

Some SNS users confess that they use such sites in order to follow their spouses' behavior, by creating fake identities. In addition, there are some crimes which have been committed because of the broadcasting of private information on SNS.

As the usage of these social networks increases dramatically, the number of people who intend to misuse these websites increases each day. Such behavior is not supported or allowed in some countries, including Turkey, where such websites are forbidden. Also, some people believe that social networking sites destroy the family unit and people's morals. Moreover, they concur that SNS should be controlled by a governmental institution in order to reduce possible problems.

Social networking sites are very beneficial for both personal and business use because they are usually free. Companies can advertise/sell products which are popular without spending a penny and the income from such activities would be high since no fee is paid to market the products.

Social networking enables people who share the same interests to socialise together which means that they are also able to make new friends. As we know, most social networking is done over the Internet, where you get the chance to meet new people from other countries and learn about their culture. Using the information that is submitted to the site, you can communicate with a person who shares the same interests, in a similar fashion to meeting up after school or work.

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