

# Recognizing Deviants in Social Networking Sites: Case Study Fupei.com

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**Abstract**— In the last few years, Social Networking Sites (SNSs) have grown rapidly as a new media used by people to create and maintain relationship. Ironically, Social Network Sites are also used to do deviant behaviors, i.e. pornography, racism, predators, and fake profiles. A need then emerges to reduce those deviances. This research tries to recognize the deviants based on their characteristics. Descriptive and inferential statistics are used to seek out the differences between deviants and nondeviants on certain attributes. Analysis finds the deviants and nondeviants are significantly different on certain attributes and not on some attributes. Some of those findings confirm the theories of deviance. Based on the findings, several design implications are proposed. A social control system then issued in order to reduce deviances in SNS.

**Keywords**— social networking sites, deviance, deviant characteristics

## I. INTRODUCTION

Currently, SNSs has become an integral part of teenagers' and young adults' life [7] [8] [12]. SNSs are used for fun and entertainment, maintaining existing relationships, finding old friends, building new relationships, building self confidence, leveraging social issues, and even be someone else [7] [8] [12]. But just like other technology products, SNS can also be misused, e.g. spending too much time in the SNS, using profiles to promote self excessively, deception through SNS, and for misbehavior [9] such as pornography, racism, fake profiles, and hoax (hereinafter referred to as deviance). One thing worth to concern is most of SNS users come from the adolescents which are vulnerable to fraud and crime. It seems SNS has now become a dangerous playground garden for them. From these backgrounds, there is a need to reduce the deviance so SNS can be a fun, safe, and convenient place for users to play.

As part of Social Informatics that studies the social aspect of ICT use, this research tries to investigate deviants and nondeviants based on their characteristics, in the context of SNSs. By doing this, the significance characters attached to the deviants can be known and may be used to characterize and recognize deviants. For that, techniques and descriptive statistics inferential are used. In research, Fupei.com—one of Indonesia SNSs—are chosen as case study.

Results show deviants have significant differences from non deviants in some characteristics as follows: deviants tend to have shorter active time, more profiles viewed, more messages received than deviants do. In addition, deviants are

also not significantly different from nondeviants on several characteristics; deviants tend to have more friends and less involvement on forum and blog than nondeviants do. Deviants also tend to express themselves not bound by marriage, join SNS to seek dating partner, their locations are unreachable or concealed, and their profiles tend to contains more taboo words than nondeviants' profiles.

This paper begins with introduction. Next, as the basis of research, SNS and some of the theory relating to the deviance and social control are described in section 2. In section 3, methods of research presented to explain how research is done. Section 4 contains the results of analysis and discussion. Section 5 proposes the design implications. In section 6, this paper is closed with conclusion.

## II. BACKGROUND

Social Network Sites defined by Boyd and Ellison [3] as a site that provides a web-based service that allows users to (1) build a public profile or semi-public in a limited system, (2) displays a list of friends (other users ) through which users can share a mutual relationship, and (3) and show their list of relationships. Ofcom [8] defines social networking sites as sites that provide services for users to create a personal page, and build online social networking. Profile page contains personal information (name, sex, religion, hobbies, etc.) In addition, social networking sites also provide page customizing, photo, video, and music sharing. User can build social network which can be displayed in as a form of friends list. People in the list could be their friend or acquaintance in the real world, or those who they only know online, or even who they do not know at all. Some users use the facilities owned by SNS as an opportunity to do deviance. Therefore, social control is necessary to reduce these deviances. Social control is the effort to bring a community to compliance and adjustment based on values or norms that apply [10], while deviance is the behavior that deviate from values and norms [11]. People who deviate called deviants.

In social science, deviants have certain characteristics distinguish them from non-deviants. Hirschi (1969) and Sampson and Laub (1990) in [6] [9] [13] states that deviants tend to have a weak social bond. Deviants are also not likely to engage in activities that are conventional or well considered by society, such as education, sports, and religious activities. Lack of socialization reduce deviants attachment to their groups, this will also reduce their groups abilities to provide

physical and psychological control to them (Hirschi, 1969; Horwitz, 1990) in [6] [9] [13]. As a result, deviants are less likely to have a bet in conformity, and tend to be different, are not sensitive to, and ignore the opinions of others (Gottfredson and Hirschi, 1990) in [6] [9] [13]. Deviants also tend to have values and culture that deviate from the main culture (subculture), for example, pornography is well accepted by the deviants but is considered taboo by the society in general [9] [13] [11]. Demetriou and Silke (2003) in [11] found that the anonymity provided by the Internet can be the main factors that support deviance in cyberspace. Their research shows that those who believe that their identity hidden are likely to behave aggressively, such as taking the opportunity provided to download pirated software. The characteristics are then used as a basis to analyze and explain the results.

### III. METHOD

The data acquisition from Fupei.com was held on 23 December 2008 and 10 March 2009. 98.323 user profiles and other data are obtained, Sensitive data, such as personal identity: name, address, email, and phone numbers, are not included in order to maintain user privacy. Next, data cleaning is performed which then left 87.418 user profiles. This number of profiles is referred to as population. In this population there were 73 users who are banned from SNS, hereinafter referred to as deviants (deviant users). The rest, 87.345 profiles, referred to as nondeviants (nondeviant users).

By employing Mann-Whitney Test, the significant differences between deviants and nondeviants can be obtained. Mann-Whitney tests whether two samples come from the same population or not. Mann-Whitney was selected because the data does not normally distributed. Mann-Whitney Test performed on the attributes of age, active duration, the number of times a profile seen by other users, number of friends, age, number of messages received from other users, and involvement on blogs and forums.

For sex, marital status, intention to join SNS, user location, and profiles that contain taboo terms attributes, descriptive statistics is used. The deviants and the nondeviants are compared based on the relative frequency of occurrence on each attributes (in percent).

### IV. RESULTS AND DISCUSSION

In this section, results of analysis are presented and discussed.

#### A. Active Duration

Active Duration is the duration of time from the time a user registers himself to SNS until the last time he login. Results in

Table 1 show that there is a significant difference ( $p$ -value = 0.00\*) between deviants and nondeviants on the characteristic of active duration. The average of deviants' active time (94.49 days) is shorter than the average of nondeviants' active time (97.93 days). It seems, investing time to create and maintain relationships is not deviants' main priority, moreover to be loyal users. Possibly, they join SNS for other purposes.

#### B. Number of Times Profile Seen by Other Users

Results in Table 1 show that there is a significant difference (0.00) between deviants and nondeviants on the number of times profile seen by other users. The number of times deviants' profiles seen by other users (198.3 times) is higher than the number of times nondeviants' profiles seen by other users (66.59 times). Possibly, because of the attractiveness of their profiles, deviants' profiles are more often seen by others than nondeviants' profiles.

#### C. Number of Messages Received

Results in Table 1 shows that there is a significant different (0.00\*) between deviants and nondeviants on the number of messages they received from other users. The average number of message received by deviants (15.51 messages) is higher than the average number of message received by nondeviants (5.19 messages). Probably, deviants receive more messages because they present themselves interesting to attract other users.

#### D. Number of Friends

Results in Table 1 show that there is no significant different (0.14) between deviants and nondeviants on the number of friends. The average numbers of deviants' friends (21.71 profiles) are relatively higher than average number of nondeviants' friends (10.81 profiles). These findings are in contradiction with the theory of social control which states deviants are socially less integrated than nondeviants. It means deviants should have fewer friends than nondeviants.

To illuminate this contradiction, active duration and number of friends of deviants and nondeviants are compared. The average of deviants' active duration (94,49 days) is shorter than the nondeviants' active duration (97.93 days), but deviants has higher average number of friends (21,71 friends) higher than non deviants has (10,81 friends).It seems that deviants tend to collect more friends in shorter duration than nondeviant does.

This research then decided to test the correlation between active duration and number of friends using Spearman Correlation Test. The correlation test results deviants'

TABLE 1. COMPARISON OF MEAN, MEDIAN, AND MANN-WHITNEY BETWEEN DEVIANTS AND NONDEVIANTS.

Group	Active Duration		Number of Times Profile seen		Number of Friends		Number of Messages received	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
<i>Deviant</i>	94,49	12	198,3	125	21,71	0	15,51	5
<i>Non-deviant</i>	97,93	1	66,59	17	10,81	1	5,19	1
<i>Mann-Whitney</i>	2386962,00		1121173,50		2890208,00		1534242,50	
<i>p-value</i>	0,00*		0,00*		0,14		0,00*	

\*significance level  $\alpha < 0,01$ ; Number of deviance = 73 profiles, Number of nondeviants = 87.345 profiles

correlation ( $cor = 0.517$ ;  $sig = 0.00$ ;  $\alpha = 0.01$ ) is lower than nondeviants' ( $cor = 0.625$ ;  $sig = 0.00$ ;  $\alpha = 0.01$ ). This finding shows deviants' number of friends is less predictable than nondeviants' number of friends.

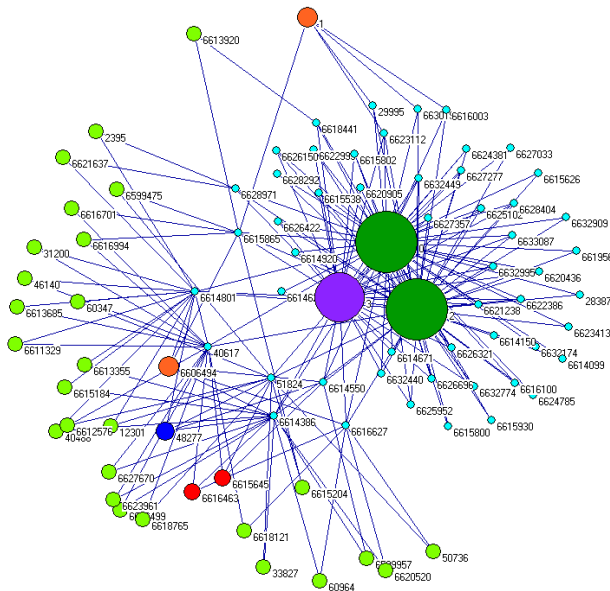


FIGURE 1. DEVIANTS' FRIENDSHIP NETWORK.

Explanation can be given is friendship on SNS is not like friendship in the real world. In SNS, a user can be other users' friend easily just by sending a friendship request to a receiver and the receiver just authorize the request. There is possibility deviants are more active in sending friendship request and the receiver easily authorizes the request. To strengthen the hypothesis, deviants friendship network are visualized using Pajek 1.23 (see Figure 1). Visualization only visualizes deviants and their friends which have degree (number of relationship) higher than one. Deviants also make a friend with popular users (dark green and purple) and other users (other colors). This finding shows friendship in SNS is not like in the real world, where in SNS, deviants are also friends of popular and other users.

**E. Participation in Forum and Blog**

To recognize deviants participation in forum and blog, analysis uses friendfeed data started from May 15th 2008 to March 10th 2009. From the data, there are 30.468 user profiles which consist of 54 deviants and 30.414 nondeviants. From analysis (see Table 2), it is found that the deviants never participate in forum or blog (mean = 0.00 times, median = 0.00 times). For the nondeviants, 1.75% of them participate in forum (mean = 0.08 times, median = 0.00 times) and 1.53% of them participate in blog (mean = 0.08 times, median = 0.00 times). Using Mann-Whitney, it is found that there is no significant difference between deviants and nondeviants on their participation in forum (0.33) or blog (0.36).

If blog and forum are assumed as involvement on SNS, then the finding which states deviants never participate in forum or blog confirms one of social control theory statements; deviants are lack of social investment. However, the difference between deviants and nondeviants are not significant. Explanation can be given is forum and blog are not interesting and suitable avenues for investment according to users' perspective.

TABLE 2. SIGNIFICANCES OF DIFFERENCE BETWEEN DEVIANTS AND NONDEVIANTS BASED ON THEIR NUMBER OF PARTICIPATION IN FORUM OR BLOG.

Group	Blog		Forum	
	Mean	Median	Mean	Median
Deviant	0,00	0,00	0,00	0,00
Non-deviant	0,08	0,00	0,08	0,00
Mann-Whitney	806767,00		808596,00	
p-value	0,33		0,36	

\*Number of deviants = 54 profiles, number of nondeviants = 30.414 profiles

**F. Marital Status**

Figure 2 shows that 76.71% deviants state themselves as single (higher 12.7% than nondeviants), 6.85% deviants state themselves are in serious relationship (lower 6.34% than nondeviants), and only 4.11% which are married (lower 6.34% percent than nondeviants). The rest 12.33% deviants conceal their marital status (lower 0.98% than nondeviants). This findings show deviants tend to present themselves as single or likely untied to emotional and traditional bond.

Deviants and Nondeviants based on User's Marital Status

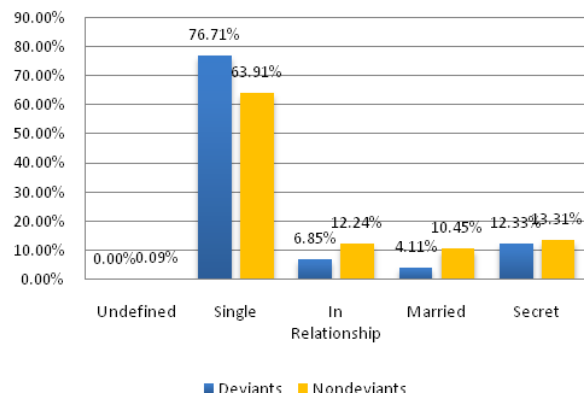


FIGURE 2. PERSENTASE JUMLAH DEVIANTS AND BUKAN DEVIANTS BERDASARKAN STATUS MARITAL.

**G. Intention to Join SNS**

Figure 3 shows deviants join SNS with intention to find date partners or to start serious relationships. 63.01% deviants intend to find date partners, 31.82% higher than nondeviant,

and 65.75% deviants intend to start serious relationships, 38.83% higher than nondeviants do. These contradict with nondeviants' intention joins SNS to find friends (66.58%) and is relatively low on finding date partners (31.19%) or starting new serious relationships (26.92%). There is an assumption that deviants tend to find date partners and to start serious relationship are strongly related to sexual misbehavior. These show us the deviants tend to be different from nondeviants on the intention of using SNS.

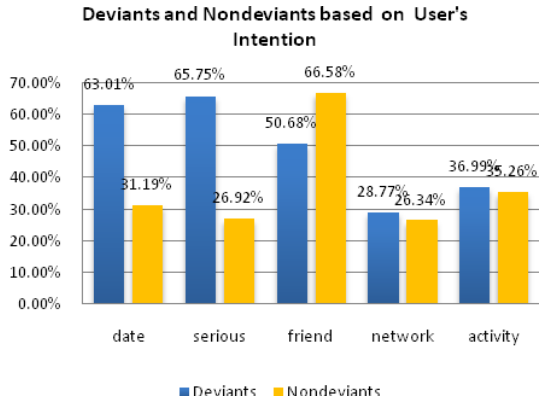


FIGURE 3. PERCENTAGE OF DEVIANTS AND NONDEVIANTS BASED ON THEIR INTENTION JOINING SNS.

H. Location

Figure 4 shows the percentage of deviants' location, which 27.40% deviants conceal their origin location or use idioms which can't be understand clearly (misal: "above earth"). 24,66% deviants state themselves are from Afrika, 15,07% deviants are from North America, 4.11% deviants are from Europe, and the rest 28.77% deviants are from Indonesia. If combined, most of the deviants (71.23%) declare themselves are from outside Indonesia (43.84%) or unidentifiable (27.40%). It seems there is tendency deviants declare their locations are far away from Indonesia or unidentifiable to give sense of untouchable. This state gives them freedom to deviate.

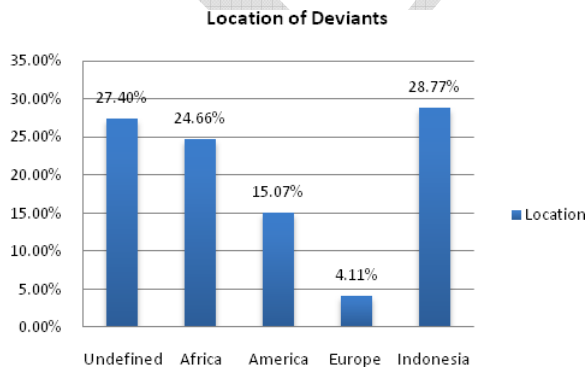


FIGURE 4. PERCENTAGE OF DEVIANTS BASED ON THEIR LOCATIONS.

As comparison, Table 3 shows Top 10 countries based on users location. From Table 3 Indonesia (90.99%) is in the first place, followed by U.S. (2.38%) in the second place. In contradiction to Figure 4, Two African countries (Ghana and Nigeria) in Table 3, their amount does not reach 0.5%. while in Figure 4 Africa reaches 24.66%.

TABLE 3. TOP TEN COUNTRIES BASED ON USERS' LOCATION (FUPEI.COM REPORT, DECEMBER 23RD, 2008).

No.	Country	Percentage	Total
1.	Indonesia	90.99%	82520
2.	U.S.	2.38%	2158
3.	Malaysia	0.72%	651
4.	Philippines	0.51%	460
5.	India	0.48%	431
6.	U.K.	0.32%	291
7.	Japan	0.29%	259
8.	Egypt	0.24%	215
9.	Ghana	0.22%	201
10.	Nigeria	0.22%	195

I. Number of Profiles Contain Taboo Words

Characterizing deviants and nondeviants also performed based on number of profiles which contain taboo words (Figure 5). On the user profile there are fields which contain information about user interest and his school (some fields such as hobbies, favorite movies, books, TV shows, food, and drinks are not given by Fupei.com). Using these fields, profiles which contain taboo words are then counted. The results are 12.32% of deviants' profiles contain taboo words and only 1.05% of nondeviants' profiles contain taboo words. This results show the percentage of profiles which contain taboo words is likely higher on deviants than nondeviants.

Percentage of Profiles contain Taboo words between Deviants and Nondeviants

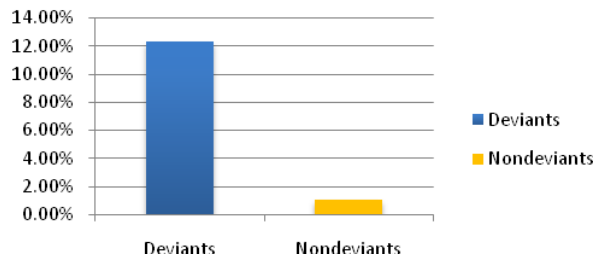


FIGURE 5. PERCENTAGE OF NUMBER OF PROFILES CONTAIN TABOO WORDS BETWEEN DEVIANTS AND NONDEVIANTS.

Some of the findings confirm the social control theory which stated deviants have certain characteristics stick on them. Deviants tend to be different on their purpose of using SNS. Deviants don't use friendship SNS to find friends, but

more to find partner for dating or serious relationship. Deviants also tend to present themselves socially untied, both emotional and conventional bonds (in relationship or marriage). Deviants tend to have subcultures, i.e. having taboo words on their profiles. It seems deviants don't invest themselves into SNS community, such as participation in forum or blog. Deviants tend to present sense of unreachable which indicated by their locations are far and outside Indonesia or they enclosed their locations. This sense is close related to anonymity which gives them more freedom to deviate. In addition, deviants tend to attract other users intention indicated by the number of messages they received and the number of their profiles seen by other users are higher than nondeviants.

## V. DESIGN IMPLICATION

In SNS, deviants also have many friends (section IV.D). This is contrary to the theory of social control stated deviants are weak in social integration. The reason can be given here is the poor meaning of friendship in SNS (e.g. there is no different between friend and acquaintance) comparing to the real world. In addition, the easiness of creating friendship by merely clicking button makes users can have (so) many friends, while in the real world, friendship is not as simple as a click. Therefore, two attitudes are recommended. First, an SNS is just an extension of phonebook which contains various information about users in the friend list. Hence, a new meaning of friend emerges beside the meaning of friendship in the real world, the 'friendship' of SNSs. Second, giving meaning to every tie created in SNSs. The meaning of tie can be clear up by enriching its type (friend, family, colleague) and its quality (friend, close friend) [2][5]. The meaning is expected not merely a variation of label but more to the processes that define the meaning. Technology needs to accommodate the processes and its mechanism still need a further research. The meaning of tie can also be cleared up by giving the reasons behind users' interaction, e.g. users interact one another because they have the same object of interest. Breslin and Decker propose *object-centered social network* to give meaning to every ties of social network using semantic. Users are connected by their object of interest [4].

In section IV.E, deviants are found never involve in forum and blog, while in the real world one's social involvement is the predictor of his misbehavior. Thus, two recommendations are proposed. First, there's a need to encourage users to involve themselves in SNS and to contribute constructively. It can be done by implementing award and credibility system or using system which can explain the advantages users can get if they participate in SNS. Second, integrate SNS with other SNSs, forums, and blogs. By doing so, a user doesn't have to construct a new profile again when he register in a new SNS, forum, or blog. Besides, he can easily share his investment in other sites to his networks.

A collection of users banned from an SNS can be used to acquire the aggregation of social judgment of deviance—what is good, bad, proper, or not proper in SNS. By identifying their common characteristics, it's possible to identify other

deviants haven't been handled. Techniques of identification, clustering, and classification can be used to realize this.

## VI. CONCLUSION

In this research, using statistical approach, it's found that users which are banned from SNSs tend to have the same characteristics as deviants do as stated by social control theory, which indicates misbehaviors are indeed exist in SNSs. SNS is a social software. It's not merely people-machine interaction. It's also about people-people interaction which values and norms are central in guiding community's behaviors. Some people will not let their children join SNSs and see pornographic contents there (or be the contributor of the unwanted contents). Thus, a social control system is needed to control the community of SNS. What can technology contribute? Are they merely about identification, surveillance, manipulation, limitation, and deletion? Or something that is more constructive, like changing users' attitudes and behaviors, or increase their awareness, motivation, and initiative to contribute constructively to the SNS communities? These questions could be our next research questions.

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