SCRUTINIZING USER PERCEPTIONS IN SOCIAL NETWORKS

[1]S. SURYA KUMARI, [2]G. ANJAN BABU

[1,2]Sri Venkateswara University, India
E-mail: g.anjanbabu.svu@gmail.com

Abstract- -Human-Computer Interaction specifies the combined performance of functions by human and machine. The main purpose of HCI is to improve interactions between human and machine by making computer more serviceable to the user requirements. HCI cognitive factors concerns how the users interact with the proposed designs. The purpose of this article is to identify how the cognitive process and capabilities of HCI influencing the users encouraging to use Social Networking Sites. . The top 4 SNS has been taken to examine the satisfaction levels of users'; both Online and Offline surveys were conducted among 40 and 57 respondents respectively. The results showed that the HCI cognitive factors in user perception which concerns motivation, enjoyment, satisfaction and experience levels are the basic elements that affecting users' regularity intention to use SNS. As a result, proposed research estimates the HCI user perception factors influencing users' satisfaction towards usage of social networking sites and association among these factors.

Keywords- Cognitive, Perception, Intention

I. INTRODUCTION

A. Human Computer Interaction [HCI]

HCI specifies the interaction between humans and machines, the particular interest in computers and the composition of the user population [1]. Interaction can be any communication between a user and computer, be direct or indirect. HCI arose as a field from intertwined roots in computer graphics, O.S, human factors, ergonomics, industrial engineering, cognitive psychology, and the systems parts of computer science.

HCI is the design, implementation and evaluation of user interfaces. Designing concerns the users' understanding of the process, reduce complexity and support visualization of information. It support pattern recognition, identification of important relations, emphasizing of information, navigation, communication and cooperation etc., The design for people should satisfy the people's tasks, goals, attention to people's abilities and situation, working with users throughout the process.

Prototyping is an execution strategy for efficiently dealing with things that are hard to predict, the prototype constructs ―Feel -what might it look like? Implementation – what might it work like? , Role – what might the experience be like?―. Evaluation helps to find usability problems in a design, this step through design several times examine details, flow and architecture, usability principles etc., [1]. In this study, human factors are chosen to identify the user satisfaction in social networking sites. From HCI factors, cognitive process and capabilities of the user are taken as research elements to find out which Social Networking Site giving the maximum level of satisfaction to the user. Cognitive process specifies the learning of systems, the transfer of that learning, the mental representation of systems by humans and human performance on such systems. The cognitive model applied to experienced users, focused on errorless performance and thus, gave no account of the errors that frequently occur even in skilled performance [2].

B. Social Networking Sites [SNS]

The Social Networks playing an important role in present communication and interaction. The Social Network is a platform which providing the sharing of information through the connections with their friends [3]. The SNS have emerged as a powerful and effective means for people to not only link and get linked but to use these services as effectively as possible. SNS groups' people get in touch with people they have lost touch with. They also help people to stay in touch despite their geographical distances.

As said by Miles Walker, the social networking began in 1978 with ―Bulletin Board System [BBS]‖. Later the very first copies of web browsers were distributed using the bulletin board ―Usenet‖. The difference between Usenet and other BBS and forums was that it didn't have a dedicated administrator or central server; these are modern forums that use the same idea as Usenet today, including Yahoo groups and Google groups [4].

The first version of instant messaging came in 1988. It was used for link and file sharing. The first social networking site on the internet, launching its website in 1994. In 1995 theGlobe.com was launched, two years later in 1997, AOL instant messenger and SixDegrees.com was launched. Friendster was the pioneer of social networking. Later websites like classmates.com, LinkedIn and Tribe.net started. Facebook was launched in 2004 with intent to connect U.S. College students; In 2008 FB surpassed myspace and the leading social networking websites [4].

TABLE I

Website	URL	Registered Users
Facebook	www.facebook.com	900,000,000
Twitter	www.twitter.com	310,000,000
LinkedIn	www.linkedin.com	255,000,000
Pinterest	www.pinterest.com	250,000,000
Google Plus+	www.plus.google.com	120,000,000

The top 5 most popular SNS as on July-2014 as derived from the website eBiZMBA which is a continually updated average of each websites shown in Table I [5]. In this research, the 4 top most SNS has been taken to study how the HCI cognitive factors satisfying in user perception and to find the best among the four which satisfying the user interests and needs.

II. LITERATURE

In this section, reviewing the literature focused on HCI factors in user perception, those includes

- Motivations
- Enjoyment
- Satisfaction
- Experience Level

A. Motivations

In Motivation, the factors that encouraging the user to use SNS comes under this discussion. The five uses of SNS: meet new people, entertain, relationships, social events, media Creation [3] and different needs of people, migrating online relationships to other channels [6] are motivating the users to use Social Networking. A process suggested by victor perotti who, where, what and why of social network use and specified a set of motivations and reasons for using Social Networking [7]. Some of the Research surveys declared that people using SNS were ―Keeping in touch with friends‖ [8]. Some of the factors that we identified under motivation according to our survey are

- Interaction among friends
- Sharing information
- Group sharing/Instant Messaging
- Integrating Services
- Video/Voice Calls
- Advertising
- Notifications etc.,

B. Enjoyment

The entertainment and need satisfying factors comes under this discussion. Those includes

- Games
- Videos
- Shopping
- Birthday reminders[7]
- Personality Quizzes etc.,

C. Satisfaction

As Duygu said satisfaction concerns information quality, system quality, environmental and affective issues [9]. There are three ―use‖ words that must be true for a product to be successful and to satisfy the user [1] is Useful: accomplish what is required Usable: do it easily and naturally Used: make people what to use

D. Experience Level

All activities a user done while using SNS comes under this category. Experimental Computing, relationships, searching, entertainment, communication, sharing [7] are the key factors of experience. A good interface of a SNS provides good experience for the user that may include

- Good Design
- Navigation
- Logo
- Color etc.,

III. METHODOLOGY

A. Survey 1

To test the impact of Cognitive process and Capability of a user concerns motivations, enjoyment, satisfaction and experience. To test which SNS satisfying all these 4 HCI factors, we selected a group of 40 users who registered for Twitter, Facebook, Google Plus+, and LinkedIn. A questionnaire with 30 questions was sent through Gsheet to their personal mail ids. The questionnaire is prepared by including all specified 4 factors of HCI. The purpose of the Gsheet (Google Sheet) is to provide access for multiple users to answer the questionnaire at a time. The names of the SNS users are specified in rows and the questions are in columns so that the user can answer the questions in their specified columns. Among 40 people 24 responded to the mails and answered the sheet.

The respondents of the questionnaire 41.6% were female, 58.3% were male. Most of the respondents were between 23 to 28 years old and had a Master degree or above. The resultant graph Fig.1 shows the feedback of the respondents. Most of the respondents replied Facebook is the networking site which satisfying all 4 HCI factors. Figure 1 represents that the Facebook stood in 1st place with 76%, Google+ with 13%, LinkedIn with 6% and Twitter got 4% respectively. So we can say Facebook is the most famous and familiar communication medium as it reaching the user expectations and satisfaction levels.

B. Survey2

In addition to online survey, an offline survey was appropriate for this study to get fast responses. A total of 5 questionnaires each includes 15 questions were prepared. The first questionnaire is all about general questions on Social Networking Sites, the second,

third, fourth and fifth questionnaires are all about Facebook, Google+, Twitter and LinkedIn simultaneously. The total 75 questions and all questions are prepared related to HCI Factors which concerns motivation, enjoyment, satisfaction and experience. This questionnaire was distributed among 57 students who is pursuing their Master degree in a known educational institution. Among these 57 students, 34% were male and 66% were female. Most of the students were between 21 and 23 years old. At the time of survey, a majority of the students had a usage experience of Social Networking Sites for more than 1 year [3].

i. Facebook

The feedback of the students about Facebook features as shown in the Table II.

TABLE II

Question	Good	Bad	Very Bad	Very Satisfied
Business	48	6	3	0
Education	35	16	2	4
User friendly	19	23	10	5
Logo	37	5	5	10
Business services	24	8	8	17
Interests	23	9	2	23
Groups	15	10	10	22
Advertising	43	4	6	4
Design	42	7	7	1
Notifications	29	16	3	8
Game apps	28	15	9	5
A/c dress Up	24	16	9	8
Shopping	23	15	14	5
Knowledge	35	5	5	12
Useful	17	20	15	5

The detailed graph for the above data is shown in Fig.2 and Fig.3. Among 57 people 52% said that Facebook functionalities and features are good, 15% said that they are very satisfied and 33% mentioned that they are not satisfied with some features of Facebook. The pie chart shows the satisfaction levels of these 57 users.

ii. Google+ The areas of interest of the 57 student's about Google+ is shown in the Table III.

TABLE III

Question	Good	Bad	Very Bad	Very Satisfied
G+ Communities	2	1	48	6
Profile Design	46	2	1	8
Info security	43	6	1	7
Uploading videos	32	16	0	9
finding friends	19	25	9	4
hangout feature	18	3	12	24
User Friendly	32	15	1	9
Apps	38	5	7	7
Navigation	38	11	4	4
Commercial	39	10	2	6
Security	36	12	2	7
notifications	31	11	4	11
Searching	35	9	3	10
Advertising	35	11	3	8
Sharing personal info	38	10	6	3

Among 57 people 70% are happy with the Google+ provided services. Most of the users said that they are very satisfied with the security features of Google+ and the user interface too. The remaining 30% said that they have some dissatisfaction in some areas like G+ Communities etc., Fig.4 and Fig.5 represents the satisfaction levels of Google+.

iii. Twitter The following Table IV specifies the opinion's of the students regarding Twitter is shown.

TABLE IV

Twitter is best for	Yes! I Agree	No! I don't	Very Bad	Very Satisfied
Sharing	47	7	1	2
Entertainment	26	18	8	5
Interaction With Celebrities	37	10	3	7
Makes Us Famous	37	9	6	5
Security	29	20	6	2
Logo	41	9	4	3
User Interface	37	14	1	5
Profile Design	32	10	9	6
Commercial	29	15	11	2
Misuse Of Profiles	19	22	11	5
Language Translation	30	10	6	11
Followers / Following	45	6	3	3
Security Options	39	9	8	1
Finding Info	32	15	7	3
Navigation	25	22	7	3

The above table results that 66% of the students agreed that twitter providing best features to its users and remaining 34% people among 57 are not satisfied with the twitter services. Many of the students very much liked the following/follower feature of twitter. The bar chart and pie charts, Fig.6 and Fig.7 represents the satisfied levels of Twitter user's.

iv. LinkedIn

LinkedIn is a commercial and education related social networking site by which most of the students liked it's educational and business services. The following table 5 is the resultant opinion of the students about LinkedIn features and services.

TABLE V

Question	Good	Bad	Very Bad	Very Satisfied
Business	48	6	3	0
Education	35	16	2	4
User Friendly	19	23	10	5
Logo	37	5	5	10
Business Services	24	8	8	17
Interests	23	9	2	23
Groups	15	10	10	22
Advertising	43	4	6	4
Design	42	7	7	1
Notifications	29	16	3	8
Game Apps	28	15	9	5
A/C Dress Up	24	16	9	8
Shopping	23	15	14	5
Knowledge Center	35	5	5	12
Useful	17	20	15	5

Among 57 students, 67% are responded positively and remaining 33% negatively. The bar and pie charts, Fig.8 and Fig.9 shows the areas of LinkedIn that are liked and disliked by the students.

v. Survey2 Result

By Comparing all four tables of feedback data that has been taken by the 57 students, a resultant table 6 has been created as shown below.

TABLE VI

SNS Name	Good & Satisfied (In %)	Not Satisfied (In %)
Facebook	56	44
Google+	70	30
Twitter	66	34
LinkedIn	65	35

From the specified graph Fig.10, it is clear that Google+ providing good security features and options to its users so that 70% of the students liked Google+ features and the features of remaining Twitter, LinkedIn and Facebook are liked by 66%, 65% & 56% people respectively.

CONCLUSION

The above two surveys results two different outputs. In the first survey, we had given 30 questions and the answer for those questions is one of the top 4 social networking site names as Facebook, Google+, LinkedIn and Twitter.

Many people chosen as Facebook because they had been using it regularly and familiar with its features, options and its applications. Where as in 2nd survey we separately listed out the questions about each SNS separately so that we able to know how the cognitive factors of HCI like interface, design, entertainment, experience and security options of each SNS satisfying the user requirement.

In 2nd survey the Google+ stood in top with 70% because of its security options and secure saving of information. This paper explores the satisfaction levels of HCI factors in user perception, user needs and experiences in online social networking sites. Further research might extend to reach different perspectives of HCI.

REFERENCES

[1] Human-Computer Interaction 3rd edition by Alan Dix, Janet Finley, Gregory D.Abowd, Russell Beale.

[2] Jakob Nielsen, Heuiristic Evaluation, http://en.wikipedia.org/wiki/Heuristic_evaluation

[3] Na Shi, Matthe K.O.Lee, Christy M.K.Cheung and Huaping Chen, ―The Continuance of Online Social Networks: How to keep people using Facebook?―, Proceedings of the 43rd Hawaii International Conference on System Sciences-2010.

[4] The History of Social Networking - Miles Walker http://www.webmasterview.com/2011/08/social-networking-history

[5] Top 5 most popular Social Networking Sites, www.ebizmba.com

[6] Schaefer, Cora, ― Motivations and Usage Patterns On Social Network Sites‖, University of Karlsruhe (TH), Institute of Information Systems and Management, Kaiserstr. 12, 76128 Karlsruhe

[7] Victor Perotti and Neil Hair, ―User experience in Social Networks: A Qualitative Analysis of Key Activities and Associated Features‖, Proceedings of the 44th Hawaii International Conference on System Sciences-2011.

[8] Cheryl L. Coyle and Heather Vaughn, ―Social Networking: Communication Revolution or Evolution?‖, Bell Labs Technical Journal 13(2), 13-18(2008) © 2008 Alcatel-Lucent. . DOI: 10.1002/bltj.20298

[9] Duygu Findik Coskuncay. ―Identifying the factors Affecting Users' Adoption of Social Networking‖. International Journal of Human Computer Interaction(IJHCI), Volume(4): Issue(1):2013

[10] Alfred C. Weaver and Benjamin B. Morrison, ―Social Networking‖, University of Virginia, Feb-2008.

[11] Enas AL-Lozi, Mutaz M. Al-Debei, and Anas Aloudat, ―Value Capturing and Role Playing in Social Netorking Sites‖, Digital Object Identifier, IEEE Technology and Society Magazine| Spring 2014.

[12] Judith Reitman Olson and Gary M. Olson, ―The Growth of Cognitive Modelling in Human- Computer Interaction Since GOMS‖, The University of Michigan. Human-Computer Interaction, 1990, Volume 5.

[13] Fakhreddine Karray, Milad Alemzadeh, Jamil Abou Saleh and Mo Nours, ―Human-Computer Interaction: Overview on State of the Art‖, Arab Pattern Analysis and Machine Intelligence Lab., Department of Electrical and Computer Engineering University of Waterloo, Waterloo, Canada. International Journal on Smart sensing and Intelligent Systems, Vol.1,No.1,march 2008

[14] Wikipedia,Human-Computer-Interaction, http://en.wikipedia.org/wiki/Human%E2%80%93computer_interaction.

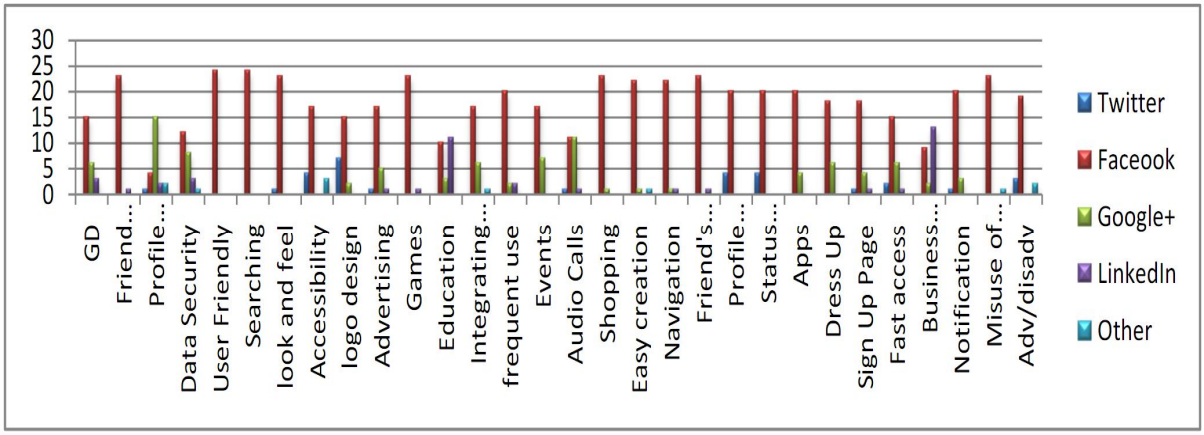


Fig.1. Survey1 Result (Respondents' Feedback)

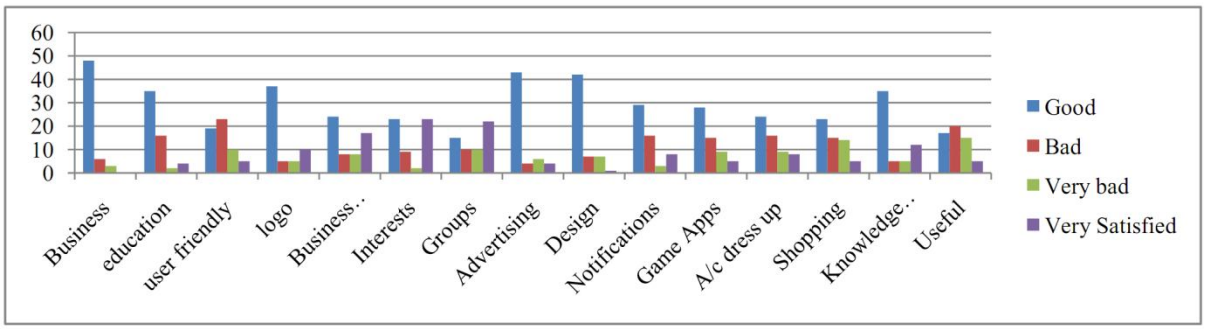


Fig.2. User Feedback on Facebook

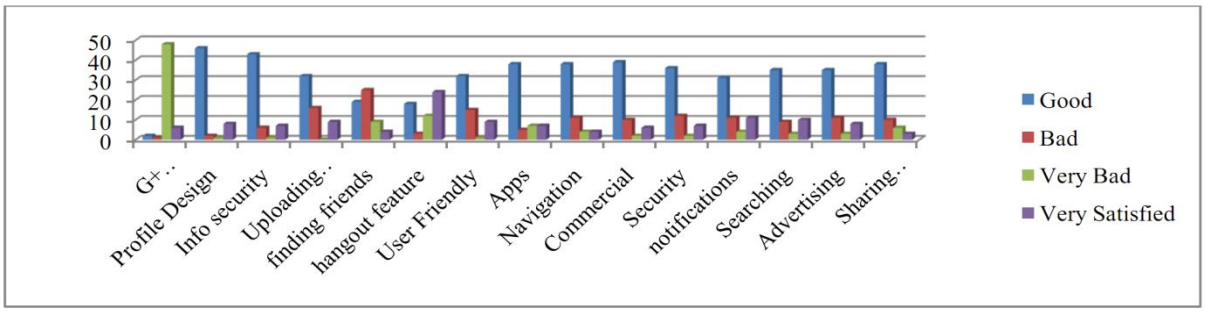


Fig.4. User Feedback on Google+

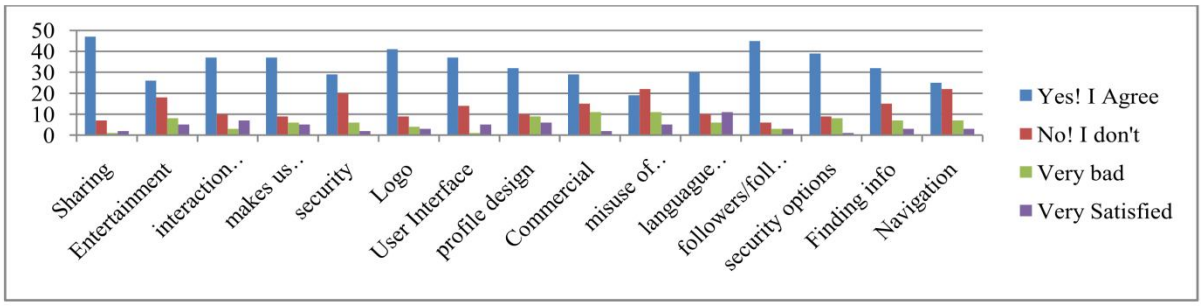


Fig.6. User feedback for Twitter

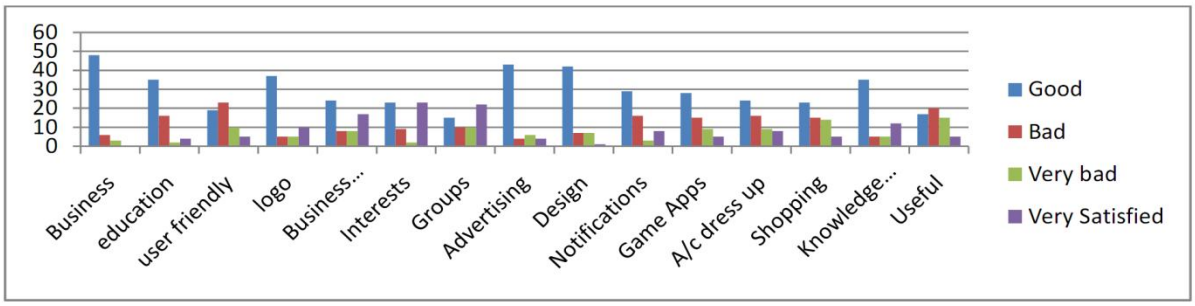


Fig.8. User Feedback on LinkedIn

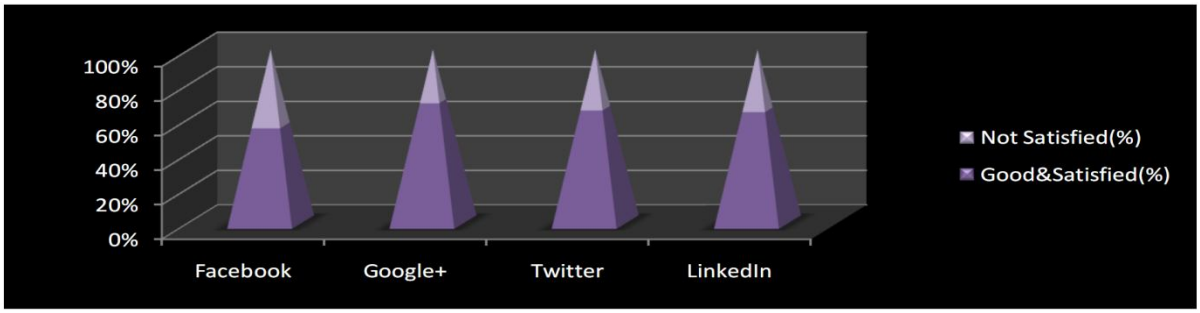


Fig.10. Survey2 Result (Respondents' Feedback)

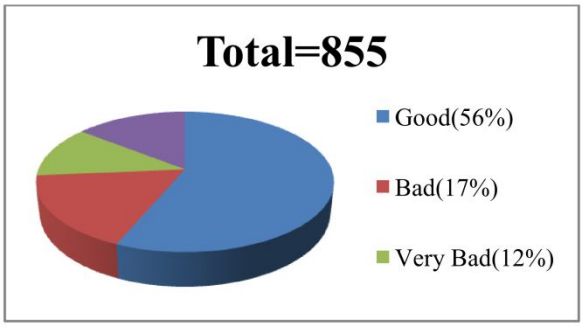


Fig.3. Percentage levels of User feedback for Facebook

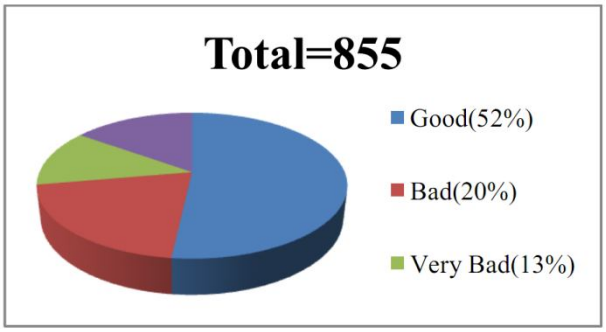


Fig.5. Percentage levels of User feedback for Google+

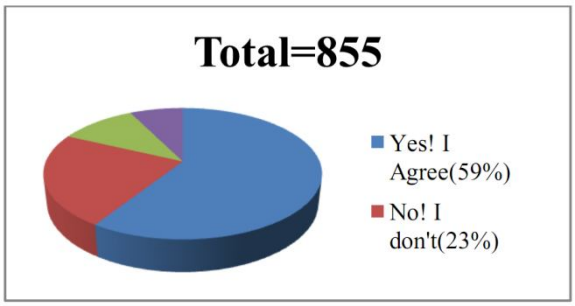


Fig.7. Percentage levels of User feedback for Twitter.

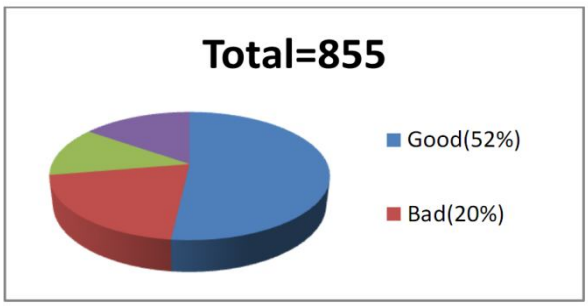


Fig.9. Percentage levels of User feedback for LinkedIn

★★★