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An Analysis on the Main Reasons for using Social Networking among Indian Youth – A Fuzzy Approach

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Abstract- "Mailing Occasionally, Chatting Frequently and Social Networking Habitually"

Youth of today constitute the first generation growing up with internet. Young people use social networking in ways that are radically different from adults, in that they focus on the expressive rather than the informative use. Further, teenagers use the social networking sites for social purposes rather than for coordinating and making work more efficient. This trend shows the soon-to-be critical importance of digital personal and emotional content. This paper reports an informal study that investigated the use of social networking among Indian youth. The focus is on the ways in which youth use these sites as part of their everyday life, the purposes for which they use the social networking sites and how they handle their personal data using them. The purpose is to gain a deeper insight into the social networking usage among Indian youth.

Keywords: Fuzzy applications, social networking usage, fuzzy matrix.

I. INTRODUCTION

The world is getting smaller and smaller and geographical boundaries can only be seen on the maps or history books. This has been made possible by the immense popularity and advancement of the internet, which has opened venues for social networking to thrive. Social Networking started out to build communities for people sharing the same passion or hobby or interest. Over the years, social networking has grown in leaps and bounds and now the once small community is able to bring together men, women, boys & girls, professionals, entrepreneurs etc belonging to different cultural backgrounds, countries and ethnicity.

A **social network** is a social structure made up of a set of actors (such as individuals or organizations) and the dyadic ties between these actors (such as relationships, connections, or interactions). A social network perspective is employed to model the structure of a social group, how this structure influences other variables, or how structures change over time [1]. The study of these structures uses methods in social network analysis to identify influential nodes, local and global structures, and network dynamics. **Social networks** are distinct from information, biological, or electrical networks, but theories and methods generalizing to all of these complex networks are studied in the field of network science [2][3].

This paper reports a study that investigated the use of social networking among Indian youth. The focus is on the reasons for which youth use social networking sites as part of their everyday life, and how they handle their personal data through these sites.

II. METHODOLOGY

The study was carried out with 100 persons in Salem. In order to grasp a general feeling about everyday use of social networking, the study took place in familiar settings. Samples were interviewed in places where they normally spend time e.g. home, organizations, educational institutions, shopping mall, recreation club and internet browsing centers. The interview framework was set in advance and scheduled for one hour, but some questions were adapted to individuals during the session. In order to grasp a general feeling about everyday use of social networking among Indians, interviews were informal and toned like a friendly chat. Several types of data were collected. Later the data collected were analyzed with user-centered methods.

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A. Participants

100 numbers of youth both male and female aged 13-24, took part in the study. All youth are born into the upper middle class and living in Salem, Tamil Nadu, India. Also they are all attending fulltime public or private schools and colleges in Salem. They were regular Internet users, with all using social networking sites, email, most using instant messaging, and about half using chat rooms. Regular usage of social networking was a requirement for participating in the study.

III. MATERIALS AND METHODS

A. Materials

This was a youth-based study with a cross sectional design, evaluating all youth in the age group of 13-24. Sample size is totaled to 100. The instrument used was an interview targeting the youth. The interview was designed to include items related to the reasons for social networking sites usage given by the participants. The instrument was applied to each participant. Youth in different age group in different parts of Salem, Tamil Nadu took part in the study.

B. Reasons for Social Networking usage

The outcome used in the data analysis was **primary reasons for social networking usage** among Indian youth. The following are the primary reasons given by the youth in the age group of 13-24 for using the social networking sites.

- Purely personal reasons
- Business – Connecting with customers
- Marketing
- Entertainment
- Join interest groups
- Blog for friends and family
- Create photo album and share photos
- Help others

These reasons are hereafter referred as $\mathbf{S_1, S_2, S_3,..S_8}$ respectively.

The youth were divided into three age groups as 13-16, 17-20, and 21-24. Then, the total number of youth using the social networks for each reason in each age group is found out and tabulated.

C. Methods

The initial **raw data matrix** is formed by taking these factors as the columns and the age groups of children in years 13-16, 17-20 and 21-24 as the rows. The analysis of the reasons of social networks usage is a **five-stage** process [4].

In the **first stage**, the raw data is represented as a matrix. Entries corresponding to the intersection of rows and columns are values corresponding to responses from the participants for the interview. The 3 x 8 matrix (Number of age groups is 3 & Number of primary reasons is 8) is uniform i.e., the number of individual years in each interval is the same.

In the **second stage**, in order to obtain an unbiased uniform effect on each and every data so collected, transform this initial matrix into an **Average Time Dependent** Data (ATD) matrix. The ATD matrix is obtained by dividing each entry with the interval of years in the corresponding age group (i.e., 4).

To make the calculations easier and simpler, in the **third stage** using the simple average techniques convert the above average time dependent data matrix into a matrix with entries $e_{ij} \sum \{-1, 0, 1\}$. This matrix is named as **Refined Time Dependent** data matrix **(RTD)** matrix or as the **fuzzy matrix**. The value of e_{ij} corresponding to each entry is determined in a special way as follows.

$$\text{If } a_{ij} \leq (u_j - \alpha * \sigma_j) \text{ then } e_{ij} = -1$$
$$\text{Else if } a_{ij} \sum (u_j - \alpha * \sigma_j , u_j + \alpha * \sigma_j) \text{ then } e_{ij} = 0$$
$$\text{Else if } a_{ij} \geq (u_j + \alpha * \sigma_j) \text{ then } e_{ij} = 1$$

where a_{ij}'s are the entries in the ATD matrix, u_j is the average and σ_j is the standard deviation of the j^{th} column.

At the **fourth stage**, using the fuzzy matrices, we obtain the **Combined Effect Time Dependent** Data matrix (CETD), which gives the cumulative effect of all these entries. In the **final-fifth** stage, we obtain the row sums of the CETD matrix. The tables given are self-explanatory at each stage. The graphs of the RTD matrix and CETD matrix are given.

IV. EXPERIMENTAL ANALYSIS

A. First Stage

Initial **raw data matrix** with youth age group as the rows and prime reasons of social networks usage (**S_1**, **S_2**,... **S_8**.) as the columns is as follows.

Age Group	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
13-16	26	19	20	16	14	14	18	9
17-20	15	34	19	24	23	19	25	14
21-24	33	23	40	31	39	25	35	27

B. Second Stage

The **ATD matrix** is calculated as follows. (Dividing each entry with the interval of age group i.e. 4)

Age Group	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
13-16	6.50	4.75	5.00	4.00	3.50	3.50	4.50	2.25
17-20	3.75	8.50	4.75	6.00	5.75	4.75	6.25	3.50
21-24	8.25	5.75	10.00	7.75	9.75	6.25	8.75	6.75

Average	6.17	6.33	6.58	5.92	6.33	4.83	6.50	4.17
Standard Deviation	2.27	1.94	2.96	1.88	3.17	1.38	2.14	2.32

The **Average and Standard Deviation** of the above ATD matrix is

C. Third Stage

The **RTD** matrix for α = 0.15 is

0	-1	-1	-1	-1	-1	-1	-1
-1	1	-1	0	0	0	0	0
1	-1	1	1	1	1	1	1

The **ROW SUM** matrix is

-7
-1
7

The **RTD** matrix for α = 0.30 is

0	-1	-1	-1	-1	-1	-1	-1
-1	1	-1	0	0	0	0	0
1	-1	1	1	1	1	1	1

The **ROW SUM** matrix is

-7
-1
6

The **RTD** matrix for α = 0.45 is

0	-1	-1	-1	-1	-1	-1	-1
-1	1	-1	0	0	0	0	0
1	0	1	1	1	1	1	1

The **ROW SUM** matrix is

-7
-1
7

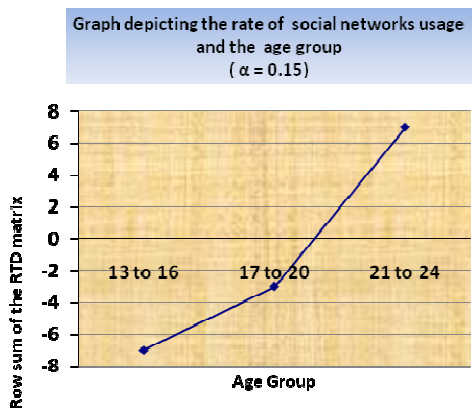
The **RTD** matrix for α = 0.75 is

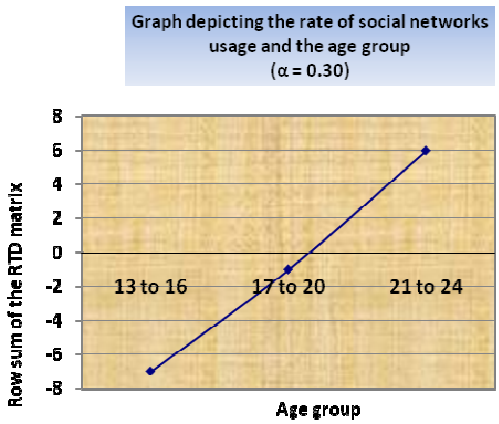
0	-1	0	-1	-1	-1	-1	-1
-1	1	0	0	0	0	0	0
1	0	1	1	1	1	1	1

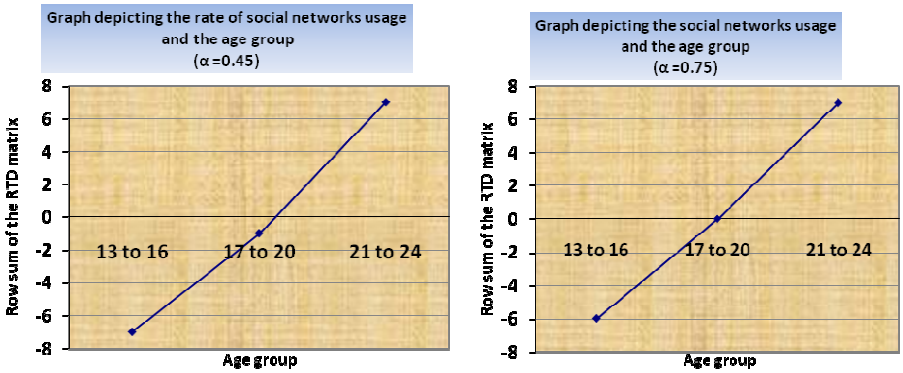
The **ROW SUM** matrix is

-6
0
7

Now the results are shown in graphs

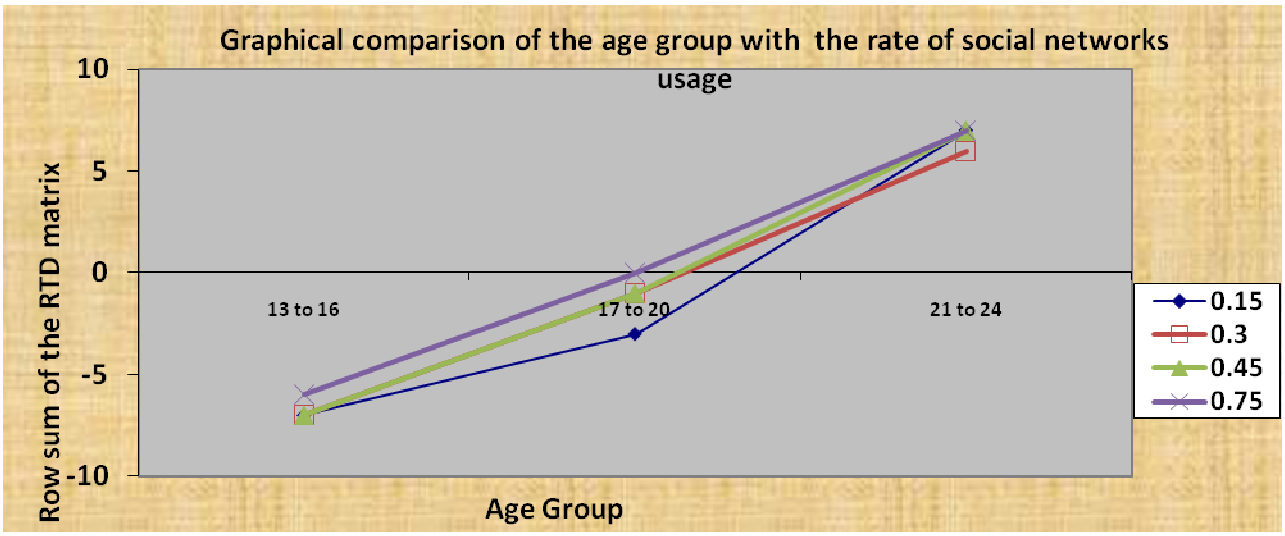






V. RESULTS

The following graph shows the results of the analysis of youth of different age group and their social networks usage rates due to different primary reasons for various values of α.



From the above analysis, we observe that the social networks usage is the highest in the age group of **21 to 24** and it **was not changed** with the change in the value of the parameter α from 0 to 1.

The mathematical inference is that the age group of youth with high social networks usage rate is 21 to 24.

A. Fourth Stage

*The **Combined Effect Time Dependent** data matrix also confirms the **same result**.*

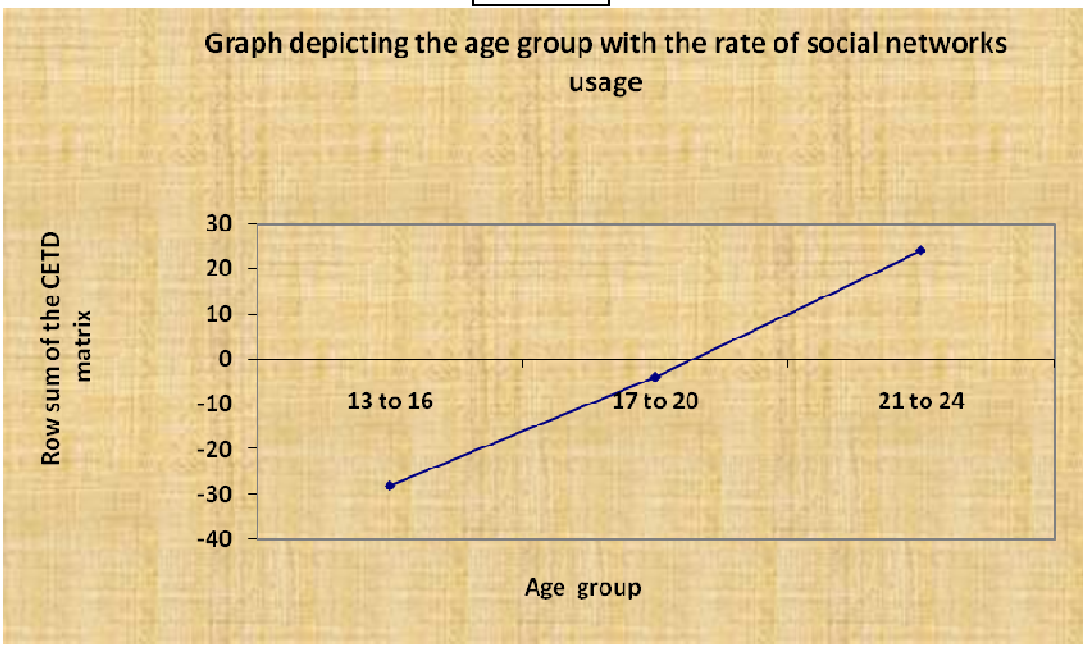
This matrix is the cumulative sum of all the entries in the RTDs. The CETD matrix is

0	-4	-4	-4	-4	-4	-4	-4
-4	4	-4	0	0	0	0	0
4	-4	4	4	4	4	4	4

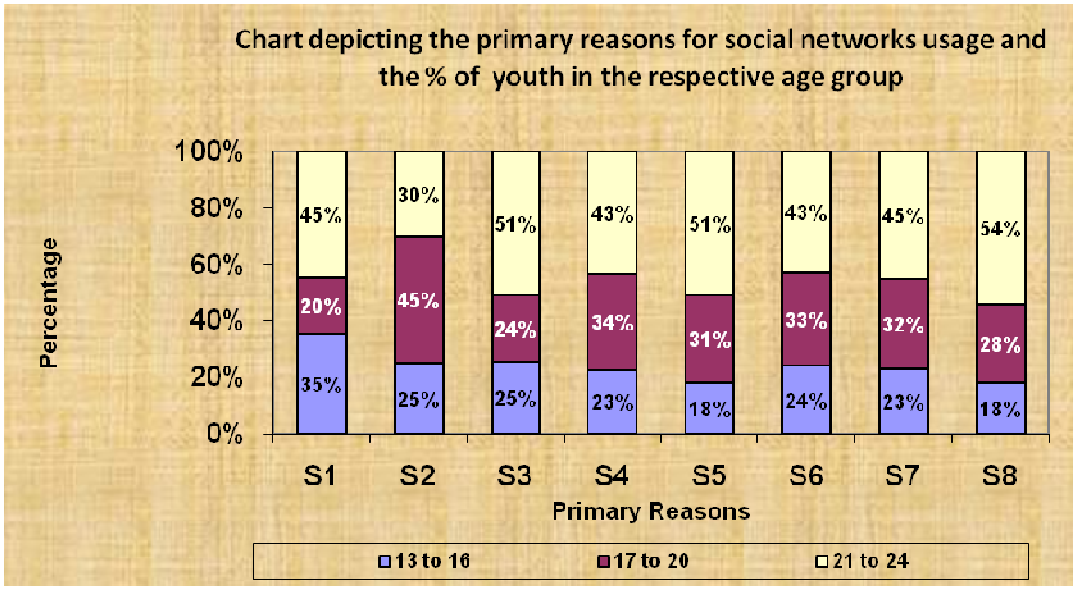
B. Fifth Stage

The **Row Sum Matrix** for CETD is

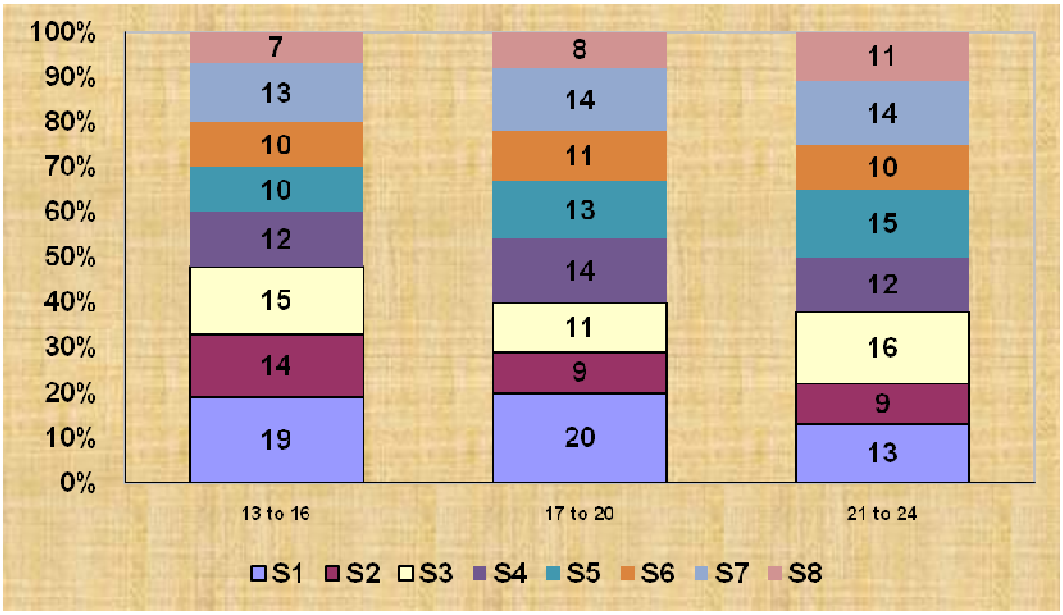
-28
-4
24



From the raw data matrix, the following graph is plotted which gives the percentage of youth in each age group who are using the social networks for each of the primary reasons.



The following graph gives the percentage of individual reasons for social networks usage in the age group.



VI. CONCLUSION

Social Networks enhance and invigorate youths' social learning skills and communication abilities. Youths' lives revolve around internet and a highly developed sub-culture exist that shapes the way they behave and interact. Social Networks are not just used by youth for chatting or even text messaging – they have other evolved uses. For example, sharing views in social networking sites helps to consolidate friendships and relationships of trust; showing information and details displayed to friends nearby forms topics of conversation.

The study highlighted that the social networks were used to initiate and stimulate conversations. Some interviews took place in public places, and they watched and discussed in the social networking sites as messages arrived. Some of these messages were even forwarded immediately to their friends. They feel they have to receive and be in contact by these sites every day, otherwise they feel left out. Interestingly, the study showed that voice messaging in social networking did not have the same appeal as messages could not be shared so easily or seen.

Social networks have come a long way since the implementation of the idea several years ago. Social networking sites such as Friendster, Facebook, Twitter and MySpace all had a big part in making social networks what they are today. They have all evolved since then and become something more than what they were back then.

Now that youth do so much more with a social network than just meet people and send messages. They need to **focus** on the **informative use** rather than just the **expressive use** of these social networking sites.

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