Impact of Culture and Age on the use of Social Networking Websites

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IMPACT OF CULTURE AND AGE ON THE USE OF SOCIAL NETWORKING WEBSITES

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Engineering

By

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2010

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I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY Ramya Ponnavolu ENTITLED Impact of Culture and Age on the Use of Social Networking Websites BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF Master of Science in Engineering.

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ABSTRACT


Social networking websites have become very popular amongst people of all ages in recent times. These websites have brought into existence a new form of data - 'User generated content'. Companies everywhere have begun to identify the potential of these sites and have commenced efforts to take advantage of the profitable opportunities available. In spite of all this, it is reasonable to say that the latent possibilities in social networking sites are yet to be fully explored. This is due to the fact that the technology is still young and research on its potential is still ongoing. The current research is also an effort in this direction.

The present study examines the impact of culture and age on the use of social networking websites by analyzing the user generated content on the most popular social networking website in USA - Facebook. Five hypotheses were derived and tested using a two-factorial between-subject quasi experiment. Instead of studying all cultural dimensions, this study focuses on the most studied cultural dimension in the literature – collectivism vs. individualism. Eight groups of American subjects were used to represent the individualistic culture and eight groups of Indian subjects were used to represent the collectivist culture. Two age groups were analyzed in both cultures - young group (25 years and below) and old group (35 years and above).
ANOVA of the experiment showed that participants from the American groups displayed a tendency to be unique and hence did not have a significant influencer within the groups, while the participants from the Indian groups chose more to be in harmony together and follow rather than lead thus having a more significant individual leader. Testing age, the results indicated that the younger subjects in both cultures were more active than the older group. In addition, the experiment indicated significant interaction effect between age and culture on the activity levels of the participants. Culture and age were also significant in the participants’ preferences of topics of discussions in Facebook.
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1. Introduction

1.1 Motivation and Background

The emergence of Web 2.0 applications in various forms including social networking websites has proved to be the harbinger of a new form of data. ‘User-generated content’ appears to be the latest buzz word. While it takes on many different connotations under different circumstances, for the purpose of the current research we shall assume it to mean exactly what it indicates – data produced through user activity.

According to Mikroyannidis, (2007) Web 2.0 can best be described as the accumulation of new Web-based collaboration technologies such as social networking sites, communication tools, and wikis. He further refers to it as the 'Social Web' and describes how it contains huge quantities of unstructured data which is unsearchable beyond keyword searches. In Web 2.0 applications there is an apparent lack of control, in contrast to the earlier approaches where the users were cajoled into responding to research questions in order to better understand online consumer and user behavior. The current methods focus on a technique of ‘listening’ as opposed to the earlier ‘asking’. The listener may initiate an event, situations or circumstance wherein the
user/consumer is given a forum to naturally interact with others and express themselves. This approach allows more room for the collection of natural behavioral attributes. This is where social networking websites, which have gained steady momentum, play a crucial role. Social networking sites are virtual places where people gather in the cyber space irrespective of their physical location. The purpose of the gathering being to communicate and socialize and indulge in any other form of self gratification that is normal to people who are a part of a social network. Simply stated, online social networks are similar to physical social networks, with the exception that the 'virtual aspect' of online social networks gives rise to many perks. These advantages are otherwise unavailable to a non-user who may still be a part of a physical social network.

"A major research study published in December 2008 on the use of digital technologies by adults from 16 industrialized nations suggests that on average [they] spend a third of their leisure time online, belong to two social networking sites and have regular contact with 16 people who they have ‘virtually’ met on the internet" (as cited in Harrison & Thomas, 2009). From this we can see that social networking sites are the latest gathering grounds for online users and hence these sites can be utilized as prime targets for marketing strategies. Companies everywhere have begun to identify the potential of these sites and have commenced efforts to take advantage of the profitable opportunities available. In spite of all this, it is reasonable to say that the latent possibilities in social networking sites are yet to be fully explored. This is due to the fact
that the technology is still young and research on its potential is still ongoing. The current research is also an effort in this direction.

1.2 Objective of the study

The primary goal of this research is studying how the culture and age of individuals affect their use of social networking websites. Instead of studying all cultural dimensions, this study focuses on the most studied cultural dimension in the literature – collectivism versus individualism. Interactions that take place between individuals in social networking websites have been systematically studied and analyzed for this purpose.

1.3 Significance of the Study

Observations made during the course of the research will be utilized to determine how targeted marketing can be further enhanced for augmenting existing profit levels. The web portal chosen for this study is Facebook, a leader in the wide range of social networking sites available to the public, free of cost today.

Many studies and have been carried out on online social networking sites and other forms of online communities and their information was mostly gathered with the help
of questionnaires and focus groups or some other means of interviewing the subjects in question. The subjects were thus, instructed to answer in a particular form in response to particular questions. The current study, however is unique in the aspect that it collects information through observation of the subjects in their natural environment amongst their friends in their online social network. No standards are set for their behaviors. In fact it is their natural attributes that are collected. A second significant area in this study is the inclusion of a young as well as adult group of subjects where the adults are 35 years or older. Nearly all the research carried out in relation to social networking sites have used a young group of subjects in the age group of 17 - 25 years. This study also incorporates two different cultures into its fold. The first being a collectivist culture for which data is collected from Indian users. The second is an individualistic culture for which data is collected from American users. Research on social networking sites prior to this has only worked on a single culture at any given time depending on where the study was carried out. For instance studies in Japan used Japanese subjects while studies in Europe used European subjects. For this research care was taken to ensure that the two control groups from two different cultures were untainted and true representatives of their respective culture. This was done to ensure that the analysis would not be contorted. A final significant aspect of this study lies in fact that the individual users are not studies as a single unit each but as part of a group. The first half of the experiment uses the relation between individuals as its unit of analysis rather than the individuals itself. The data for the entire experiment was
collected over a period of two weeks. This is something which has is not common in the research and studies carried out on social networking websites.

1.4 Roadmap

The reminder of the thesis is organized as follows. Chapter 2 details the review of literature carried out to provide a basis for all the arguments raised in the course of this research. Chapter 3 explains the three hypotheses that will be tested in the following chapters. Chapter 4 describes the design of experiment including the procedure for evaluation, the dependent and independent variables. Chapter 5 provides the results of the data analysis carried out and will also supply the interpretation of the results. The final chapter, Chapter 6 discusses the contributions and limitations of this study and concludes this thesis with ideas for future research.
2. Literature Review

2.1 Introduction

The purpose of this research is to examine the marketing implications of social networking websites by investigating the best method to target users in social networking websites with marketing material such as advertisements and offers. Several themes lend themselves to this topic which are reviewed in detail in the following pages.

The first section describes Web 2.0 technology and the subsequent arrival of social networking websites. It explains how social networking websites have not only influenced the lives of the users but also generated a new form of marketing revenue. The second section deals in general with the different types of social networking sites that are prevalent. It explains with examples the purpose for which these sites are used. The third section examines the influence of culture on technology and in the use of social networking sites in general. As culture plays an important role in the current research, its relevance to the objective of this study is dealt with clearly. Culture is an
aspect that affects our environment as a whole for we who interact with the
environment are completely influenced and governed by our own cultural identities.

The fourth section shall review existing marketing opportunities that are being made
use of by companies with relation to social networking sites. As mentioned previously
the primary purpose of this study is to examine certain marketing implications of social
networking sites. The fifth and final section discusses existing studies conducted on
social networking websites which identifies the ongoing research.

2.2 Web 2.0 and Social Networking Sites

The outbreak of the Web 2.0 technology has been an interesting trend to observe,
which has changed the way we view online content. The apparent lack of control on the
user generated content in online social networking sites has further complicated the
already complex process of information retrieval. But it is a field with immense potential
for research and can result in monetary benefit. User presence and User generated
content on the web has been a growing phenomenon that has slowly advanced over the
past 15 years. Starting off as a snowball down the mountain of web technologies, it has
built up sufficient momentum to warrant its comparison to an avalanche in today’s
world. The introduction of Web 2.0 applications has brought an immense change in the
usage of the web which originally according to Bauschard (2006) "evolved as a means of
distributing information to the majority that was produced by a minority”. The explosion in user generated content has been recognized by the Time Magazine which has named the millions of users generating the content under the title ‘You’ as person of the year.

Web 1.0 was all about the transference of print media to digital media completely. The web designed by Tim Berners Lee in CERN laboratories began to expand beyond private control. It became a gigantic store house of information, a repository of data. Anyone from anywhere in the world could delve into it and take out whatever information he or she required. The development of Web 2.0 is more the development of a new trend rather than technologies. It is the arrival of a new system of management of web based content. Control of web based content was passed on from the makers of the sites to the users of the sites leading to 'User generated content'. "The web is no more a one way publisher-reader medium but is a bidirectional knowledge creation and sharing system (Guha, 2009)." In this line came many new hosted services and social networking sites such as YouTube.com, Flicker.com, Facebook.com, Wikipedia.com, MySpace.com and many more. E-commerce applications like eBay.com and Amazon.com also belong to this generation of Web development.

However this has led to a fresh problem in terms of data retrieval. With huge quantities of user generated content flooding the virtual spaces, there is no centered control governing it. Hence the content which remains in an unstructured form does not lend
itself to easy searching. Extremely powerful and highly sophisticated logarithms are required for responding to the keyword searches initiated by the users. Hence advanced techniques of knowledge discovery is an area awaiting further research in this field of Web 2.0 development. For the transition to be made to even more advanced and intelligent web based systems, advancement in knowledge discovery techniques is highly essential.

For the first time in research, questions are not being 'asked', rather the pre-formed answers are being 'listened' to. The research industry, more specifically the field of market research has never before attempted such a foray. 'Listening' to user generated content can provide much more beneficial answers than the age old techniques of questionnaires, focus groups and interviews. This is due to the fact that users are posting their tastes, preferences, beliefs, ideas, thoughts and expressions without boundaries or barriers. Users are willing to put up information that they normally would not divulge. Personal information, market researchers generally paid to obtain before is now available on social networking sites for everyone to view. This also creates a natural and authentic source of data that was previously very hard to research. "Web 2.0 technology has caused a paradigm shift from supplier generated content to user generated content," (Enders et al, 2008).
Social Networking websites are one among the many portals that receive huge masses of user generated content. Wikis and blogs are also important sources of user generated content. However, the users flocking to social networking websites are more in number than those running blogs and participating in wikis. Over 100 such social networking websites are present on the web, however like there are giants in any field, social networking also has a select few which are more popular than all the rest put together. Clear leaders in the race to popularity are Facebook, MySpace, Orkut, Friendster, Hi5, Studiverzeichnis and many others. Each of these sites has their own domains where they are popular. For example, Facebook is the frontrunner in UK, Canada, USA and Norway while Orkut is the most popular social networking web portal in Brazil and India. Some sites use vernacular language like Studiverzeichnis which is a German social networking website popular in Austria and Germany.

According to a report published in Forrester Research in June 2007, the two popular social networking websites, Facebook and MySpace have more than 63 million US visitors per month. A later study dated March 2008 estimates the number at 100 million US visitors per month (Freedman et al, 2008). However it is an uncontestable fact that the Netizens frequenting the social networking websites are mostly from the Generation Y group and not baby boomers. According to Forrester Research, 80 percent of the young adults use these sites as opposed to the 30 percent adults.
2.3 Types of Social Networking Websites

There is no clear classification of the types of social networking websites but they can be broadly identified under two categories. The first are those established primarily for the purpose of forming social connections, developing relationships and so on. The second type of social networking website represents those websites formed for any specific purpose other than mere social networking. An ideal example of this is Sermo, a social networking website exclusively for physicians that collects opinions and trends for sale to health care professionals and health care organizations. This site fosters natural dialogue between the members who are all trained medical professionals. The qualitative data collected is quantitatively analyzed for converting the raw data into meaningful information with financial significance.

Social networking websites such as Sermo are being used in various fields including music, education, law, business, politics and many more. Social networking sites have given the people the power to publish any content they feel like without any restrictions from the privacy of their homes, with the result that the kind of content being generated online has reached unprecedented levels. If word search and data retrieval has been a topic of discussion and an area of research where many have tried to find the ideal solution to produce the right hits for search terms, it is nothing compared to
the copious quantities of unstructured qualitative and personalized information now being made available on the web. Social networking sites have shrunk the world further by making people across the globe accessible on their browser windows.

It is this aspect that has caused concern to many about their digital footprints. Social networking sites are available for the asking to any age group from 6 to 60 year olds. Club Penguin and Webkinz are sites for 7 – 8 year olds networking with friends from different countries and studies have shown that 80 percent of the children in this age group with access to Internet use these sites from their home (Richardson, 2008). The fact that social networking sites are here to stay in spite of some concerns and issues is clearly represented in the "tectonic shift" (Richardson, 2008) in views where parents, teachers and educators are more concerned with guiding the youngsters use of social networking sites so that they interact in an effective, ethical and safe manner with other members rather than prevent them from using these sites. They have accepted that more than ever before, students have the need and potential to ‘own their learning.’ Given the fact that practically everyone can be Googled these days, the authority figures in the lives of these children are trying to ensure that they leave behind a responsible digital footprint, one that they will not regret later but one that will enhance their reputation and aid and abet their future progress. Stanford Researcher Dannah Boyd says, “We are discovering the potentials of this new public space. What we say today online will persist long into the future and not simply end up in the recycling bin when
we clean our desks at the end of the year. What we say is copyable, editable, usable and viewable by all sorts of audience by intended and unintended," (Richardson, 2008). This is certainly food for thought. A study states that a majority of Facebook users log in primarily to observe the activities of others as well as view the content posted by them (Pempek et al, 2009). It is all the more alarming when the prospect of future employers viewing personal content is considered.

However when the content concerned is not personal, rather if it is of an intellectual or professional nature, then it serves a dual purpose. It benefits the individual who will benefit from the interaction and the governors of the site can make use of opinions expressed, chart the trends from content uploaded and make use of the information made available for monetary as well as academic benefit. This leads to the situation where data on different topics are available in large quantities on different sites. Social networks in the field of law, literature, science, computers, technologies etc will present publicly available discussions and parleys between professionals and experts offering their thoughts, ideas and insights from personal experience. This results in up to date and reliable information available on various issues in the respective social networking sites. Here the issue arises whether the content is qualified as a reliable research source due to the fact that it is not peer reviewed. A law professor from the reputed university of George Washington responded to a critical question pertaining to a controversial case (while in a social networking site designed for interaction between law professionals).
Bauschard, (2006) states, "This form of an expert opinion cannot normally be made available instantly to the public except if the author chose to publish it. The authority is unclear; it is a law professor writing in a non-peer reviewed publication. It is a source that lacked peer review but is a qualified source nonetheless".

Thus, as is obvious, social networking websites have huge potential which can be used to great advantage. The content available on the sites, particularly on professional networking sites is a valuable source of information due to the fact that its origin is natural and flows freely from the personal experiences of the members themselves.

Social networking sites are being utilized by several groups in unique and innovative ways to further their interests and serve specific purposes. Libraries are a growing presence on online social networks. They are no longer restricted to their immovable brick and mortar appearance. Several libraries have online profiles, some of them being Hennepin County Public Library of Charlotte and Mecklenburg County which was put on the map due to its online presence. It receives as many as 800 hits per week. The University of Kentucky Library was shut down by Facebook on the grounds that organizations are not allowed personal profile pages. However they rallied with groups where they are now a strong presence. Libraries everywhere are following suit and going where the users are.
Universities and schools are also establishing themselves online in social networking sites. Authorities now consider it imperative to network with alumni, parents, current and prospective students. Marietta College, Ohio found that most new students expected the college to have an online presence in social networks and the fall of 2006 recorded 40 percent of the students as having used the Social Network made available by the college (Sevier, 2007). Prospective students were able to interact with existing students and professors and gain an insight into the college that would otherwise not have been possible. The institution was able to reach new and old students much more effectively and thus make college a much more stimulating experience than as usual. San Diego University is using Facebook as part of its recruiting system and is targeting preferred individuals with university information for prospective admissions (Goral, 2008).

2.4 Influence of Culture

As technology makes rapid strides every day, the world is also shrinking and gradually turning into a global village. The ease with which people communicate to a person sitting beside them is translating to communication taking place across national borders. Although the boundaries have melted, the cultural identities of the people across the globe have remained firm in the face of varied onslaughts from imperialism to modernization. Hence it is safe to assume that culture is a key factor that influences the
perception of people. Technology itself is not culture neutral for it possesses within itself the cultural values of the West, the key enforcers of modernization and advanced technologies. "Even when people migrate overseas, and come under the influence of another culture they retain and internalize both their original culture as well as the new culture leading to a form of bi-culturalism that still colors their perception of the environment," (Boucher, 2009).

Given that culture permeates our surroundings to such an extent, it is important to identify the level to which it will influence the users of social networking sites in the current context for they are also a part of today's technology revolution. The use of social networking sites is universal and users anywhere will be governed by their own individual characteristics as well as those formed as a result of being a member of group, in the usage of the social networking sites. Honold (2000) defines culture as follows,

"Culture does not determine the behavior of individuals but it does point to probable modes of perception, thought and action. Culture is therefore both a structure and a process."

Geert Hofstede's famous cultural model (as cited in Young, 2008) aptly sums up culture in 5 dimensions. They are power-distance, uncertainty avoidance, masculinity-feminity, individualism, collectivism and time orientation (Hofstede 1980). For the purpose of this study we adopt only one of these dimensions namely individualism-collectivism. This is a
concept which has been expounded upon by many researchers. Culture in itself is such a complex entity that studying one dimension of it at a given time is more advisable than summing it in its entirety.

Honold (2000) elaborates on the Activity theory which has its roots in the ideas of Russian psychologists of the early 1920's. Primarily it sets forth the following ideas,

- The theory takes on activities as the unit of investigation. Each activity is defined by the purpose or objective for the achievement of which he/she carries out a set of operations or actions that are influenced by his/her beings as part of a larger culture.
- The author assumes that cognitions and activities are interdependent. They affect each other equally.
- Individuals are locked into a physical context which is taken to be a social construct of reality.
- Lastly, all individuals use tools with which they carry out the activity or interact with the environment. These tools may be internal such as concepts and idea or external such as actual physical tools. These also retain the quality of culture within themselves.

With regard to social networking sites, the activities of the users within the site will accordingly be taken as the unit of examination in order to determine the influence of
culture on their performance of these activities in order to identify the differences between the groups of individuals.

Many researchers have proposed the concept of individuality being the norm in the West while collectivism is the norm in the East. This belief has been around for a period of time (quite awhile) and proven through many behavioral experiments and observations. Kim and Markus (1999) go a step further and argue that "uniqueness has positive connotations of freedom and independence while conformity has negative connotations of societal oppression and passivity in the US; at the same time, uniqueness and conformity have negative connotations of deviance and positive connotations of affiliation (connectedness) and harmony respectively in East Asia".

Boucher (2009) proposes that if actions can be split into "taking the lead" actions such as those that bring merit and excellence and "seeking attention" actions such as those that seek attention for the wrong reasons, or attention for the sake of attention itself; Euro-Americans scored higher on the second action while Asian Americans scored higher on the first action in his study. Thus we can observe a more independent mental state in the West while in the East it is more interdependent. The complex (collectivist) cultures of the East still retain their desire to stand out for merit and excellence rather than simply seek attention even after coming under the influence of an individualistic culture such as in the case of Boucher's (2009) study. In fact an important aspect that Boucher (2009) underlines is that 'taking the lead' actions are seen as more socially
appropriate than 'seeking attention' actions in the East while they are the opposite in the West. The flexibility and ingrained desire to be identified as a part of a larger group or family and their desire to stand out only for merit or excellence prevents the East from feeling comfort in 'seeking attention' actions. The same goes for the West when they prefer 'Seeking attention' actions to 'taking the lead' for the former is considered more appropriate socially while the latter is not so accepted, for the unwritten norm is not to follow the norm.

2.5 Marketing Implications of Social Networking Sites

Marketing firms have already started to take advantage of the opportunity, although they have not succeeded in fully exploiting the potential of social networking sites. An attempt has been made at targeted marketing which has resulted in partial success. Facebook, the most popular of all the social networking sites, generates revenue through targeted marketing. It provides an online website for business organizations to visit and buy certain phrases or parameters for a sum of money. The phrase could be anything from a color to the name of a brand. The organization then leaves its advertisements with Facebook which then forwards the advertisements to all those profiles on Facebook which were a positive match to the parameter bought by that organization for they contain that phrase or parameter within their profile. This has been an immense hit with business firms who were previously willing to pay for clicks on
their sites but are now being supplied with personal inspection of their advertisements by users through Facebook.

The area where Facebook failed was in the launch of Beacon. "Beacon tracked user activity on third party websites and sent the user's friends information on the products purchased by the user" (Rapoza, 2007). This turned into a Public Relations nightmare for Facebook when users began to complain about the invasion of privacy. However the users' response to the targeted advertisements was not hostile. Thus utilizing the user generated content for marketing purposes is not completely out of consideration.

Two years ago, in 2008 a published article indicated that Google had registered three patents with the U.S. Patent and Trademark Office that allowed it to tap the potential of social networking sites and convert the potential into profit. The three patents were for Open Profile Content Identification, Custodian Based Content Identification and Related Entity Content Identification. The last named can search a person's profile for all information related to the person's friends on their friends list or user groups. Open Profile Content Identification and Custodian patents allow Google to mine data from profiles with open security settings. They use smart language processing algorithms that can read as well as comprehend the user’s tastes and preferences based on linguistic
cues. The next step is targeting advertisements that fit the user’s profile tastes. In June of the same year the social ad firm SocialMedia Networks said it had invented an algorithm called FriendRank that also searches a user’s friendship lists for friends whose names might be used in a targeted advertisement (Anderson, 2008).

Google has not introduced a revolutionary technology, however it has made significant development in the area of harnessing the masses of unstructured user generated content now being found on the various social networking sites. Google has developed an innovative algorithm which is actually able to understand and process user preferences on a subjective scale, a feat which has not been accomplished before, although other algorithms have been able to search for related words and ideas in the data. Jeremy Pinkham, chief technical officer of social-media advertising company Lotame Solutions, based in Elkridge, Md., opines that Google’s new patents help to "validate that this industry is worth people's attention" (Anderson, 2008).

Social networking sites have succeeded in creating value for its users and hence can retain them for a long time to come. Converting this value into a sustainable revenue model is a field which has much scope for innovation. Marketing is certainly a prime contender as a revenue generator for social networking sites. Enders, Hungenberg and Denker (2008) have suggested some interesting revenue models for social networking sites that can be made use of to gain profits.
But first what is the value provided by online social networks that ensures the return of users? Primarily, online social networking enables us to keep in contact with individuals who are close friends as well as those with whom we are merely acquainted.

“Sociological Research has proved that such acquaintances can prove more useful to us than our close friends in situations of advice seeking, employment search etc. By granting access to such acquaintances, social networking sites offer a much larger pool of potentially more interesting contacts than traditional means of networking can typically provide,“ (Enders et al, 2008). The second aspect is the "self actualizing address book form" (Enders et al, 2008) that the social networking site assumes. It is simply too much effort to update one’s traditional address book or excel sheet through physical contact from time to time. Relationships expire over a period of time in traditional networking, not from a lack of interest but because they lose track of information. Social networking sites on the other hand allow you to maintain contact with close friends and mere acquaintances for any length of time as each one updates his/her profile periodically along with regular posts of latest occurrences and events in their life. This allows the user to keep abreast of updates at his/her own pace.

The key to generating revenue in social networking sites is to gain the trust of its users. Only then will it be able to retain consumer base and achieve monetary gain. Based on these, three models of revenue have been proposed currently for revenue generation
namely, the advertising model, the subscription model and the transaction model. The advertising model is similar to that followed by Facebook. This model is generally implemented where the user willingness to pay is very low.

Advertising can be of two types, affiliate advertising and banner advertising. In affiliate advertising, social networking sites steer traffic towards an affiliate website in return for a referral fee or a percentage of revenues from resulting sales. For example, Facebook allows platform operators to charge fees in exchange for the display of advertisements on their website. Banner advertising is when sites allow the display of advertisements in exchange for a pre-determined fee. The more the number of users in the social networking site, the higher the fee that is charged to the advertiser and the lesser for which services are offered to the users. Hence the prerogative is to recruit more users for it is not merely a question of which site is more popular, but which site can generate more revenue through advertising.

The second model is the Subscription model. This model works purely on the basis of trust. Generally basic features are offered for free and advanced features are made available at a reasonable price. For example the Stay Friends website which introduced a subscription model after a year and half of free service. They formed a two-tier membership where Gold members where allowed exclusive services for a fee of €18 a year.
The third model is the Transaction model where a fee is received for enabling or executing a transaction. Two types of transactions can take place in this model namely, Endogenous and Exogenous transactions. The former takes place when a user purchases physical or digital content from his platform provider while the latter occurs when the platform provider facilitates a transaction between a third party and the user for a fee. This model is yet to gain popularity as social networking sites have to build high levels of trust with their users in order to execute transactions with them or on their behalf. A further improvisation of this model is encouraging transactions between members of the site, similar to eBay or Amazon where anyone can transact business with anyone else. This can be a success if effectively implemented for as opposed to eBay or Amazon, the trust factor is higher during transactions for the user is dealing with a friend or friend of a friend.

Since little research is prevalent on how exactly social networking sites influence social ties, most sites opt for a combination of two of the above described revenue models. However due to the fact that users continue to post personal information in large quantities, the advertising model is a failsafe that will assuredly guarantee revenue to the platform operator. The other two models have certain conditions that need to be fulfilled in order to function as revenue generators.
Market Research is another field which can benefit from tapping into the reservoir of unstructured data found in social networking websites. Research facilities could compensate platform operators for the information that they can provide on the established consumer database they control. Online Market Research conducted through social networking sites has several advantages over traditional methods. It is able to provide more timely results than the time and effort consuming techniques of interviews, questionnaire surveys and focus groups. Facebook Polls offers answers to a custom survey in 30 minutes (Freedman et al, 2008) as opposed to the weeks it takes to gather critical data following conventional research techniques. Also online social networks have provided ample access to the students, the key community sought after by researcher, previously inaccessible for surveys. Not only have the social networking sites provided access to a database of students, but also to huge quantities of data, pertaining to their tastes and preferences.

The primary advantage that researchers gain from gathering data on an online social network is the obvious lack of control in the data. This will provide them with data, the likes of which they could not have collected before. The lack of control in the data allows the natural flow of authentic dialogue thus generating content that the researcher could not have hoped to obtain with the keenest of surveys.
One aspect of marketing that has not changed is its reliance on word of mouth. The technique has not changed but its appearance has. A much more polished title 'Buzz marketing’ is used to hide the common word of mouth. Buzz marketing originated from "buzz tracking" (Freedman et al, 2008) which, simply stated, indicates tracking where the entire buzz is centered and around what product or service. Buzz tracking monitors pre-determined areas of the internet and informs a client how much a certain site, service or product are being discussed. "Similar approaches currently use technologies like ‘data scrapping and ‘crawling’ to gain insights into broad public discourse in any field," (Goral, 2008).

In order to understand how word of mouth information spreads in online social networks, it is important to understand the categories of people present online. Two types which are essential for our understanding are the "Social Clickers and the Content Kings" (Riegner, 2007). The Social Clickers represent the generation of young adults who spend over half of their time (57 percent to be exact) online in social interaction and communication activities. They actively engage in content creation such as creating personal profiles on social networking sites, posting comments online, chatting and so on. They are the key influencer group for products that interest them and they are always ready to express their opinions regarding their likes and dislikes. Content Kings on the other hand are more often young male adults who spend more time on entertainment such as peer to peer file transfers, posting comments on blogs, reading
opinions for further content creation etc., rather than on communication. A study has proved that in spite of the fact that these young adults don't have the purchasing power to follow up on their preferences to purchase the items of their liking, they have a major influence on general opinion.

In particular, high tech electronic products purchased by adults are also influenced by online opinions rather than personal references and physical advertisements. The higher priced and more high tech the product, the more research that goes into the purchase of the product. Baby boomers do not spend as much time communicating or socializing online. Yet they tend to follow the opinions posted in online sites for making purchase decisions where some products are concerned. "User generated content is more likely to influence items that are more complex, higher priced, and highly coveted – like technology and consumer electronics. But it is less likely to influence low-involvement products and/or those primarily purchased in stores" (Riegner, 2007).

2.6 Related Research conducted on the use of Social Networking Websites

Social networking websites are a fairly recent phenomenon when compared to most existing technology. As a result, one can feel the lack of appropriate studies and research concerning the sites. However, it would not be fair to say that studies on social
networking websites are non-existent. There is a certain amount of literature available and this has been classified very aptly as follows by Boyd and Ellison (as cited in Harrison & Thomas, 2008).

i. Impression Management studies: The study of the identities that individuals create to represent themselves through the profile information that they post online. The extent to which they guard the privacy is also a part of impression management studies as it is a clue to their identities.

ii. Friendship Management studies: These studies are partially linked to Impression Management studies for they investigate how users utilize the profile information of other users in order to determine who to include in their lists of friends.

iii. Network Structure studies: These studies focus on the activity levels of the users in question. They determine the level of passivity or activeness of the user which can vary from restricted users to highly active users to users who undertake to involve the whole community in the social networking website in some activity or the other.

iv. Studies of the bridging of offline and online networking: These studies focus on the extent to which online activities become a part of the users' real life.

A review of a few studies related to social networking sites indeed proved Boyd and Ellison true for the above stated classifications are the primary areas of interest for
studying in the use of social networking sites. For example, Raacke & Raccke (2008) investigated the reasons why users are attracted to social networking sites. They made use of the "Uses and Gratification theory to analyze how each individual uses the media (in the case the social networking sites), with emphasis on the individual." The study was however conducted only on college students with an average age of 19.7 years. Another study examined the psychosocial variables that influenced the use of social networking sites. This study was also performed on a group of 17-24 years old college students and analyzed with the aid of the Theory of Planned Behavior (Pelling & White, 2009). An interesting observation that can be drawn from the review of these studies is that all of them, without exception have been conducted only on college students and care was taken to ensure that all of them were below the age of 25 years. Social networking sites serve many users well over the age of 25 years and hence all these studies are lacking in this area by leaving out a section of the user population. The present research is an attempt in this direction, aiming to bridge the gap in age by studying two groups namely Young (25 years and below) and Adult (35 years and above).

A certain study conducted in the year 2008 contradicted another study conducted in the same year. Coyle & Vaughn (2008) performed a study on why people use social networking websites and they concluded that it was for the primary purpose of keeping in touch with existing friends and socializing with them but not for making new ones.
Harrison & Thomas (2008) investigated the same question only to conclude that online social networking is used to explore new relations and not to merely maintain existing ones. The difference could lay in the fact that Harrison & Thomas exclusively studied Livemocha.com, which is an online foreign language learning social networking site while Coyle and Vaughn studies social networking sites in general. Also the former conducted their study in New Jersey while the latter conducted theirs in Japan. Both studies used college students. The aspect of culture could possibly have had a major influence on the results of the study. The current research shall also be examining culture as a major factor which influences the use of social networking sites.

A very useful study although not directly related to the current research is the analysis carried out by Vergeer & Hermans (2008) on online political discussions in online discussion forums and social communities dedicated to politics. They make use of content analysis and network analysis on downloaded Usenet messages to determine density of discussions. They are of the opinion that while performing a network analysis, the relation between the individuals is the unit of analysis and not the individual. This is of great importance to the current research. In fact it is relevant to all studies performed on networks. A normal study performed on a group of individuals can be analyzed by treating the data as separate entities. In network analysis the analysis of the relation between individuals serves as a stumbling block for traditional statistical analyses, as it
treats the data as independent pieces and does not provide for a relational analysis. Thus this area is yet to be researched more thoroughly.

Kim & Han (2009) proposed a method of identifying the influencer within a group on a social networking website and tested the method through an experiment. This is perhaps the most relevant example to the current research. A two pronged approach is used in the study; the first of which is a structural analysis that uses a degree centrality computation to identify active groups within the social networking site. The second step is an activity index which is used to identify the most active members within the group by assigning weights to each of the activities that the users engage in. However, the study, like all its predecessors is performed on subjects in their twenties and restricted to people of Korean ancestry.

The current research moves on from this step to incorporate two cultures and also an older age group, both of which are aspects that have so far not been dealt with in the realm of social networking websites.
3. Hypotheses

3.1 Research Questions

The questions dealt with by the research are described in the table given below.

\textit{Table 1 Overview of research questions}

<table>
<thead>
<tr>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>How does age and culture influence or impact the use of social networking websites?</td>
</tr>
<tr>
<td>Specific Questions:</td>
</tr>
<tr>
<td>1. Is there an influencer within the groups of users on social networking websites? Does culture influence the presence or absence of an influencer?</td>
</tr>
<tr>
<td>2. Are the younger users more active than the adult users of social networking websites?</td>
</tr>
<tr>
<td>3. Are the activity levels (on social networking sites) of users influenced by their age and the culture they belong to?</td>
</tr>
<tr>
<td>4. Are the users preference for certain topics of conversation influenced by their age and the culture they belong to?</td>
</tr>
</tbody>
</table>
3.2 Hypothesis One

Alternate Hypothesis: An influencer has a higher significance in collectivist cultures than in individualistic cultures.

Null Hypothesis: An influencer has a lower significance in collectivist cultures than in individualistic cultures.

According to Hofstede (as cited in Gaspay, Legoretta & Dardan, 2009), "the relationship between the individual and the collectivity in human society is not only a matter of ways of living together; it is intimately linked with societal norms". Therefore it affects the mental makeup of people and consequently influences their behavior as well. Cultural identity is ingrained into the personality of every individual and will impact his interaction with his environment. Uniqueness and individuality have positive connotations in individualistic cultures while it is the opposite in collectivist cultures. Conformity has positive connotations in collectivist cultures where the norm is more to follow a leader than everyone choosing a separate path. Given this direct link between ethnicity and behavior of an individual within a group we frame Hypothesis 1 to test whether there is an influencer with the online network group or not in the two cultures under observation for the current study. The results will be impacted based on which culture the subjects belong to.

The word significance in the statements refers to the level of activity that the influencer is producing. His or her activity level is higher than the average of the activity level of
the remaining members of the group. The higher the difference, the greater the significance of the influencer.

### 3.3 Hypothesis Two

Alternate Hypothesis: The young group in both cultures is more active than the adult group on social networking sites.

Null Hypothesis: The young group in both cultures is not more active than the adult group on social networking sites.

Research in social networking sites is still making progress and has barely scratched the surface of its potential. Hence there are still many aspects of social networking sites and many different angles of these sites that are yet to be researched. One of these aspects is the influence of age in the usage of these sites. Given the fact that it is difficult to obtain users of an age over 30 for an experiment or observation, most studies performed on social networking websites have made use of college students, a readily available section of the population. As a result all age groups are not equally represented. The present analysis is an attempt to bridge such a gap in the literature. Based on the observation of the behavior of the users of social networking websites, the above given hypothesis was formulated to test, whether young users of social networks are more active than elder ones.
3.4 Hypothesis Three

Alternate Hypothesis: There is an interaction effect between age and culture with respect to activity levels on social networking sites.

Null Hypothesis: There is no interaction effect between age and culture with respect to activity levels on social networking sites.

The first two hypotheses discussed above test the individual effects of culture and age, while the third hypothesis tests the interaction effect between age and culture with respect to the activity levels of the users on social networking sites.

3.5 Hypothesis Four

Alternative hypothesis: Users from different cultures have different preferences in conversation topics on social networking sites.

Null Hypothesis: Users from different cultures do not have different preferences in conversation topics on social networking sites.

As seen in Chapter 2 under the subsection 2.4 'Influence of Culture', Hofstede suggests 5 dimensions in which individuals of different cultures may differ from each other. Hence it is reasonable to hypothesize that users from different cultures have different preferences in conversation topics on social networking sites. The topics have been
divided and the reasons for division in such a manner will be explained in the following chapter - 'Design of Experiment'.

"Collectivistic cultures stress the importance of group harmony and fitting in with others (Boucher, 2009)." This characteristic of collectivist cultures suggests that a person from a collectivist culture would most likely engage in an activity that would not draw much attention from everyone. Socializing can be an activity which can be put under such a heading where the interaction is just a normal exchange of conversation between two or more people.

Several studies suggest that 'seeking attention' for no specific purpose other than to seek the attention or raise one's image is a more socially appropriate action in individualistic cultures than collectivist cultures. Boucher (2009) suggests that "Individuation in the U.S. is likely part of a cultural imperative to find and assert one's unique identity." Hence we may expect to see a preference for topics that emphasize the individual's uniqueness, among the subjects who are a part of individualistic culture.

3.6 Hypothesis Five

Alternative hypothesis: Users of different ages have different preferences in conversation topics on social networking sites.

Null Hypothesis: Users of different ages do not have different preferences in conversation topics on social networking sites.
Age is an aspect that has not yet been examined thoroughly with respect to the use of social networking websites. The younger age group of about 18 - 25 is the most studied for the simple reason that they are readily and easily accessible. Hence the present study tests to see whether age has an impact on the choice of topic of conversation through the current hypothesis. Since the study makes use of two disparate age group young and adult, it has a wider scope than studies which have utilized only a young group.
4. Experimental Design

The experiment is a 2 x 2 between subject quasi experimental design with limited control over the participants or the subjects involved in the study. This is due to the fact that the activity on an online social networking website is being observed and no questions are asked, nor any instructions or guidance is given to the subjects. Their normal behavior in their routine environment is observed for two weeks. Thus user generated content is simply being gathered for an analysis without modifying it artificially by means of any inputs from the investigator. The social networking website used for this experiment is Facebook.

4.1 Participants

All the participants in the study have university level educational qualifications, in different fields. Participants were chosen on the basis of their levels of activity in Facebook; the higher the level of a person’s activity is, the more preferred he/she is. The standard for active users was set at a minimum login (into Facebook) of at least once a day. Care was taken to ensure that participants recruited from each culture were
representative of pure samples of that culture and not tainted by another culture. For example an Indian who has resided in the United States of America for a number of years is not a good subject to pick for the collectivist culture because there is an influence of both individualistic and collectivist cultures on the subject.

The participants were contacted directly or by email depending on their physical location and requested to participate in the study. If their approval was received then they were added to the friend's list of an evaluation account opened on Facebook.

The criteria used for selecting and handling the research participants were as follows.

1. Any individual above the age of 18 and an active member of Facebook was allowed to participate in the research.

2. He/she was accepted only as a part of a group as the research is essentially the study of interactions within an online group.

3. Care was taken to ensure that the participants accepted into the group fell into one of the categories described above. Any overlapping was not ignored and if it did occur, that participant/group was removed and replaced by a fresh participant/group. This is because the inclusion of a particular group of individuals/individual may violate the control of the experiment.
The unit of analysis for the current research is the relation between the subjects within a group, not the subjects themselves specifically. Hence participants were only recruited as part of a group. Each group has a set number of 4 participants and the data collected in relation to this group was treated as one unit for the purpose of analysis, which shall be explained in chapter five. The number of participants recruited and the categories that they fall into are described in subsection 4.2.

### 4.2 Layout of the Experiment

*Table 2 Layout of the Experiment*

<table>
<thead>
<tr>
<th>Division of Participants</th>
<th>Culture(Nationality)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Collectivism(Indian) - C1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>G₁₁₁</th>
<th>G₁₁₂</th>
<th>G₁₂₁</th>
<th>G₁₂₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young - A1 (25 years &amp; below)</td>
<td>G₁₁₃</td>
<td>G₁₁₄</td>
<td>G₁₂₃</td>
<td>G₁₂₄</td>
</tr>
<tr>
<td>Adult - A2 (35 years &amp; above)</td>
<td>G₂₁₁</td>
<td>G₂₁₂</td>
<td>G₂₂₁</td>
<td>G₂₂₂</td>
</tr>
</tbody>
</table>

| | G₂₁₃ | G₂₁₄ | G₂₂₃ | G₂₂₄ |
The layout of the experiment for the research is given above in Table 1. Hence a total of 16 groups were involved in the experiment, but they were never brought to one physical location. There were 4 treatment conditions in the study:

1. Young users from a collectivist culture
2. Young users from an individualistic culture
3. Adult users from a collectivist culture
4. Adult users from an individualistic culture

Boucher (2009) gave clear demarcations between the behavior of people belonging to individualistic cultures and those belonging to collectivist cultures. It was also pointed out that Asians are examples of collectivist cultures and Euro-Americans are examples of individualistic cultures. Hence, for the purpose of this study, India was chosen to represent the collectivist culture while America was chosen to represent the individualistic culture.

4.3 Data Collection

The observations for the evaluation were made online. Each participant's interactions with members of his/her group were observed for a period of 2 weeks. After 2 weeks the participants were automatically removed from the friend’s list of the principal investigator’s evaluation account. The participant was not required to perform any special task for the study other than consenting to take part in the study.
4.4 Independent Variables

4.4.1 Hypotheses One, Two and Three:

The two independent variables for hypotheses one, two and three are age and culture.

Age - Two age groups were considered in the experiment: young groups consisting of users who were no more than 25 years of age and adult group who were at least 35 years old.

Culture - Two levels of culture were tested in the study: collectivist culture and individualistic culture. Participants of Indian origin were used to represent the collectivist culture while participants of American origin were used to represent the individualistic culture.

4.4.2 Hypotheses Four and Five:

There are 3 independent variables for hypotheses four and five. In addition to age and culture, the two independent variables of hypotheses one through three discussed above, the third independent variable is the topic of discussion.

Topic of Discussion - The topic of discussion is considered an important factor to be evaluated in order to identify the most popular topic that draws the maximum attention from users and results in the highest level of User generated content. Park, Kee & Valenzuela, (2009) proposed a classification of topics that has been adapted for the
current experiment. The topics are divided into four major types: status seeking, entertainment, information and socializing.

- **Status Seeking**

  The conversations that have been grouped under this topic relate to any updates or posts that point towards the user's effort to involve in gaining a desirable image in the eyes of other member of the user's group. Any attempt at trying to create a unique and covetable portrait of oneself in order to increase their popularity is also viewed as status seeking.

- **Entertainment**

  Entertainment indicates all forms of games, individual and group games provided by Facebook (including quizzes). The amount of content generated while users are employed in playing games falls under Entertainment.

- **Information**

  Conversations in which users communicate issues of common interest to each other that are of some moment like sharing of information on classes among students, posting a message of official but not confidential nature to a colleague among the adults.

- **Socializing**

  General comments to each other and all manner of friendly and casual interaction fall under this topic.
4.5 Dependent Variables

4.5.1 Hypothesis One:

Kim & Han (2009) have proposed a method of identifying an influence within a group of users with the help of an activity index. They identified a set of 6 activities, each with an associated weight and calculated an index which represented the activity level of each user in order to determine the influencer in each group. The measure of activity index is also adopted in our experiment. (Six activities are considered important in using Facebook, which are groups (A1), pages (A2), applications (A3), updates/posts (A4), friends (A5) and photos/videos (A6). The weights assigned to the six activities are 0.1, 0.1, 0.3, 0.2 and 0.2 respectively.)

The first of these six activities i.e. 'Groups' refers to the number of online groups that the user is a part of. Facebook has the ability to allow users to form a group for any purpose. The purposes may vary from a group consisting of alumnae to a group of people who may like rain. The second activity 'Pages' indicates the number of pages and links to pages that the user has listed under his profile for everyone to see. The third activity 'Applications' refers to the total number of Facebook applications used by the user. The fourth activity 'Updates/posts' is the average number of posts made by the user in one day. The average is taken across the two week observation period. The fifth activity 'Friends' refers to the number of friends in the friends list of the user and the last activity 'Photos/videos' is the total number of photos and videos uploaded by the
user on Facebook. Of all these activities, 'Friends' and 'Updates/posts' and considered the most important for they are a measure of the user's interaction with other users. Hence they help us identify how far the influence of the user reaches. The other activities are considered to be secondary to these two activities. So, the highest weights were assigned to 'Friends'(0.3) and 'Updates/posts'(0.2) while all the other activities received a weight of 0.1.

Activity Index = $\sum_{i=1}^{6} w_i \times \frac{|A_i|}{\max |A_i|}$  (Equation 1)

where,

$|A_i|$ = The number of actions in Activity $A_i$

$w_i$ = The weights assigned to $A_i$

$\max |A_i|$ = The maximum number of actions of $A_i$ among members in a social group.

Once the activity index for each individual is calculated, the highest value in the group is picked out. The average of the remaining values is taken and this average is subtracted from the highest value in the group. This resulting value is the influencer value for the respective group.

4.5.2 Hypotheses Two and Three:

The dependent variable used for Hypotheses two and three is also calculated using Equation 1. However in this case, no further calculations are performed on the activity index values of all the participating individuals. In hypothesis one, only one value is
obtained from each group. In the hypotheses two and three however, there are totally 64 values, one for each of the 64 participating individuals.

4.5.3 Hypotheses Four and Five

The dependent variable of hypothesis four is the proportion of the number of words generated under each topic, calculated as the total number of words for each topic within each group divided by the total number of words for all topics in the group. Because there are 16 groups, each with four topics of discussion, there are totally 64 observations of the independent variable.
5. Data Analysis

ANOVA was utilized to analyze the experiment results.

5.1 Hypothesis One

Hypothesis One: An influencer has a higher significance in collectivist cultures than in individualistic cultures.

One way ANOVA was used to analyze the data. The results show culture is highly significant \((p = 0.0001)\). In particular, the significance of the influencer \((\text{mean} = 0.44, \text{s.t.d} = 0.01)\) is higher in collectivist cultures than in individualistic cultures \((\text{mean} = 0.13, \text{s.t.d.} = 0.01)\). Thus the test supports the hypothesis that an influencer has a higher significance in collectivist cultures than in individualistic cultures.

5.2 Hypotheses Two and Three

Hypothesis Two: The young group in both cultures is more active than the adult group on social networking sites.
Hypothesis Three: There is an interaction effect between age and culture with respect to activity levels on social networking sites.

A Two way ANOVA was used to analyze the data. The results suggest that age (p = 0.0001), and the interaction effect between age and culture (p = 0.0038) both significantly affected the level of activity. In particular, the young groups (mean = 0.74, s.t.d = 0.04) were more active than the adult group (mean = 0.62, s.t.d. = 0.04) in using Facebook. Figure 1 illustrates the interaction effect between age and culture on activity index. It suggests that the difference between the young and adult groups in their activity levels is larger in the individualistic cultures than in the collectivist culture.

![Figure 1. Illustration of the Interaction Effect between Age and Culture on Activity Index](image-url)
5.3 Hypotheses Four and Five

Hypothesis Four: Users from different cultures have different preferences in conversation topics on social networking sites.

Hypothesis Five: Users of different ages have different preferences in conversation topics on social networking sites.

A Three Way ANOVA was used to analyze the data for testing this hypothesis. The results suggest that topic (p = 0.0001), the interaction between age and topic (p = 0.0001), the interaction of culture and topic (p = 0.0001) and the three way interaction of age, culture and topic (p = 0.0002) are significant effects. Table 2.3 summarizes means and standard deviations of the proportion of the number of words generated under each topic for each combination of culture and age groups.

<table>
<thead>
<tr>
<th>IC</th>
<th>Entertainment</th>
<th>Information</th>
<th>Socializing</th>
<th>Status Seeking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>20.58(2.10)</td>
<td>5.68(2.10)</td>
<td>45.73(2.10)</td>
<td>28.05(2.10)</td>
</tr>
<tr>
<td>Young</td>
<td>23.83(2.10)</td>
<td>5.40(2.10)</td>
<td>23.80(2.10)</td>
<td>47.03(2.10)</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>Young</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>---------</td>
<td>---------</td>
<td>-------</td>
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</tr>
<tr>
<td>CC</td>
<td>26.13(2.10)</td>
<td>36.73(2.10)</td>
<td>12.45(2.10)</td>
<td>6.28(2.10)</td>
</tr>
<tr>
<td></td>
<td>57.38(2.10)</td>
<td>47.75(2.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.03(2.10)</td>
<td>9.25(2.10)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thus the test supports hypothesis four since the interaction between topic and culture is indeed found to be significant. The Tukey's test was performed to study the interactions, and interesting observations were made based on the results. It showed that the individualistic cultures preferred the topic status seeking (mean = 37.54) more when compared to collectivist cultures (mean = 6.64). Collectivist cultures on the other hand preferred the topic socializing (mean = 52.57) more when compared to individualistic cultures (mean = 34.77). Figure 2 indicates the preference of subjects from collectivist culture for socializing while Figure 3 illustrates the preference of subjects from individualistic culture for the topic status seeking. These figures suggest that the difference between participants of collectivist and individualistic cultures is larger for the young group than for the adult group. Since the interaction effect of age and topic is also significant hypothesis five is also supported by the analysis.
Figure 2 Illustration of the Interaction Effect between Age and Culture for the Topic Socializing

Figure 3 Illustration of the Interaction Effect between Age and Culture for the Topic Status Seeking
6. Conclusion and Discussions

6.1 Research Findings

The significance of an influencer within a group is higher in collectivist cultures than in individualistic cultures. This is in keeping with the literature that was reviewed on culture which suggested that individualistic cultures tend towards individuation while collectivist cultures prefer to follow someone rather than lead unless if it is for a purpose. Hence there is a significant leader in the group in collectivist cultures while in individualistic cultures, the natural tendency to maintain a uniqueness from others creates a more equal group. There is an influencer in the individualistic culture groups too. However his/her significance or difference from the rest of the group is less marked than it is in collectivist cultures.

The second hypothesis suggests that the Young group in both cultures are more active than the Adult group in both cultures. This is a natural assumption that can be used in most cases and has been statistically justified in the case of the usage of social networking sites through the current research.
The third hypothesis tests to check whether there is interaction between Age and Culture with respect to Activity levels. The analysis of the data collected revealed that the Age and Culture do affect the activity levels of the users of social networking websites.

The fourth hypothesis that was tested revealed that individuals from different cultures have different preferences in topics of conversations in online social networking sites. Their mindset is influenced by their cultural characteristics which prevents them from indulging in conversation on topics that are not considered socially appropriate in their cultural environment. It turned out that each culture preferred topics of conversation that emphasized their cultural identity. For example, subjects from collectivist culture preferred a topic which would allow them to be a part of a group and interact in harmony while individualistic culture preferred topics that set them apart from everyone else and underlined their uniqueness. The test showed that individuals from collectivist cultures would prefer involving themselves in a conversation that allowed them to interact with other on equal level. This allows them to identify themselves as part of the group rather than as separate and detached from it. It also indicated that when compared to people from collectivist cultures, people from individualistic cultures prefer topics of conversation such as status seeking. This is because the topic enables
them to create an image for themselves and increase their status in the eyes of their list of online friends.

The fifth and final hypothesis suggested that people of different ages on social networking sites have different preferences in topics of conversation. This hypothesis was also supported as the interaction effect between age and topic was found to be significant.

6.2 Contributions

The current research has made several contributions to the field of research in social networking sites. They are discussed below in detail.

The study examines the impact of culture on the usage of a social networking site, which has not been done before. It focuses on the most popular Hofstede's cultural dimension, Collectivism vs. Individualism and examines its influence on the users and their preferences. Usually a study performed on such sites recruits subjects from the country of the author itself and does not test for the influence of culture. Hence the use of culture as a significant influential factor in the study of the use of social networking websites is a prominent contribution of this study.
The review of literature will show that studies carried out in this field primarily employ college students as subjects. This may be because they are easy to access and retain throughout the duration of the study. However other age groups are left out, making the sample rather biased. The current study however makes use of two separate and disparate age groups Young and Adult. The Young group consists of subjects 25 years and below while the Adult group consists of subjects 35 years and above. The 10 year gap between the two groups was purposefully created in order to avoid overlapping in preferences and behavior of the subjects. This is likely to happen if the differentiation were to resemble 25-30 years, 31-35 years and so on.

All studies that were carried out prior to the current research have used some form or the other of questioning the subjects, whether in questionnaire form or interview form or any other. The current research makes use of an observation method to 'listen' to the content generated by the user rather than 'ask' questions. This is an important contribution in the present research for it is keeping with the latest trend of Web 2.0 technology which is an observation of user generated content and user control rather than control in the hands of the creator of the technology.
The main contribution of the study lies in the fact that the conclusions drawn from the hypothesis testing can be made use of for marketing purposed. Although they may not be a straightforward direction toward profit, they can lead to an understanding of how users use the social networking sites. This knowledge can be very powerful in terms of creating new ways of generating income. The study points out the various ways in which the content is generated by users and the triggers behind the generation such as the topic and the influencer. These can provide a base from which marketing firms can evolve strategies for income generation and profit increase.

6.3 Limitations

The current study also has several limitations which shall be discussed now.

Culture is a multi-dimensional entity. In the current study however, all the dimensions could not be dealt with. Only the influence of cultural identity on the preferences of individuals was a part of the study.

The United States of America was taken as a broad example of an individualistic culture while India was taken as a broad example of a collectivist culture. It is possible that other countries which are also representative of the above mentioned two cultures might differ in specific ways from their counterparts that have been chosen for this
The purpose of the study is to obtain data from the online social networking site profile over a period of two weeks. The idea was to take the data generated as is and then analyze it. No questions were asked, nor any instructions given to the subject. However, once the subjects agreed to participate in the study, they are aware of the time period during which they are being observed. Hence there is a possibility that this awareness might bring in an element of consciousness of being observed on their part. This could lead to an alteration of their behavior from the normal course that it usually takes. It
was not possible to avoid this particular aspect because data could not be collected without the prior consent of the subject.

6.4 Challenges of the study

Unlike other experiments where individuals participating in the experiment are treated as separate and independent units, this experiment required a group to be treated as one unit. This was due to the fact that the unit of analysis was the relation between individuals in a group was being tested as opposed to the individual itself. Hence it was very difficult to find participants for the study for if one individual was recruited, 4 of his/her friends should also be willing to participate. All four individuals must match the conditions set for their control group or else they could not be used for the study. There was a case in which 4 individuals who were all a part of one group and active users of Facebook agreed to participate in the study. However they were family members, the four being, the mother, father, daughter and her husband. This clashed with the age requirements for, as a group, they neither fit in with the Adult group nor the Young group. The mother and father were in their 50's while the daughter and her husband were in their early 20's.

While recruiting participants was hard enough, retaining them also proved a problem. In spite of going through the details of the study prior to consenting to participating,
several subjects withdrew abruptly stating privacy concerns as an issue. This was a common problem among subjects recruited from the American nation. The subjects from India did not have any issues or concerns with participating in the study and stuck with the study till the end of the two week experiment.

6.5 Future Work

Further research can be conducted on this very study by including age groups that have not been covered in the current research. More examples of the two cultures can be used to further justify the results. The influence of Age and Culture on the usage of social networking sites was examined in the present study. The study suggests that they indeed can have an effect on the said usage. Future research can be conducted to identify exactly how and in what ways they affect the usage. However, researchers can further study and learn how they can be utilized to increase the potential of social networking sites as a tool for marketing. Researchers can also examine whether they can be utilized for other purposes as well. The current research has examined the topic from a theoretical point of view and showed a theoretical method to identify the influencers within a group as well as popular topics of conversation that generate user content. Electronic methods of identifying similar results using computer software can be devised in the future for the purpose of structuring such unstructured data. The current research is only a step towards a progressive direction. Plenty of further
research can be carried out and huge profits gained by tapping into the potential of social networking sites. This is still a young field and awaits further research.
7.0 List of References


APPENDIX A

Consent Form

CONSENT FOR PARTICIPATION IN RESEARCH

PURPOSE AND BACKGROUND

Ramya Ponnavolu, Graduate Research Assistant, in the Department of Biomedical, Industrial, and Human factors Engineering, at Wright State University, is conducting a research study to evaluate interactions in online social networking websites. I am being asked to participate in this study because I am active user of Facebook or Orkut and am part of a group of friends who are also active.

PROCEDURES

Upon my agreeing to participate in above mentioned study I will be asked to 'befriend' the investigator's Facebook or Orkut evaluation account online. I will allow this account to remain on my online friend's list for a period of three weeks which corresponds to the period of study. I am not required to do anything specifically for the study except grant the investigator permission to observe my daily activity in Facebook or Orkut for the given period of time. My online interactions with other participants of the study will be observed in particular.

RISKS/DISCOMFORT

I will not undergo any physical or mental risk due to my participation in this experiment as I am not required to perform any task outside of my usual routine.

CONFIDENTIALITY

Participation in the research may result in a loss of privacy during the study period due to the investigator's observation. The investigator will not record any identifying information about me as part of her observations of interaction on the network. This being done to keep my personal identification anonymous once observation is completed. The researcher (Ms. Ramya Ponnavolu), her faculty advisor (Dr. S Narayanan), his research associates and the Wright State University Institutional Review Board may access study records for required review related to the study. My name will not appear in any published reports of the study.

Keeping Study Records: Ramya Ponnavolu will retain her research records for one year after the study is completed, after which all records will be destroyed. However, no personal information about me will be included in these records.

BENEFITS
I will not benefit from my participation in this study.

COSTS

I will incur no cost for participating in this study.

PAYMENT

I will not be paid for participating in this evaluation.

QUESTIONS

If I have any questions about this research study, phrase deleted I may contact the researcher Ramya Ponnavolu at (408) 597-7641 or Dr. S. Narayanan at (937) 775-5044. If I have general questions about giving consent or my rights as a research participant in this research study, I may call the Wright State Institutional Review Board at (937) 775-4462. If I would like a copy of the group (not individual) results of this study, I may contact the researcher. It is estimated that these results will be available on or after January 31, 2010.

CONSENT

I will be given a copy of this consent form to keep.

VOLUNTARY PARTICIPATION

I am free to decline to be in this study. I have voluntarily chosen to participate in this evaluation and am under no compulsion to do so other than by my own will and personal choice. My decision as to whether or not to participate in this study will have no influence on my present or future status as a student at Wright State University. I am also aware that I have the freedom to withdraw from this study whenever I choose to do so and I will not be penalized in any way for doing so.

If I withdraw my authorization, the information already collected may continue to be used, to maintain the integrity of the study.

If I agree to participate I should sign below.

_______________________  ______________________________________
Date                                                                                          Signature of Study Participant

_______________________  ______________________________________
Date                                                                                          Signature of Person Obtaining Consent

_______________________
Individual Obtaining Consent
APPENDIX B

Data collected from American subjects 25 years and below for the analysis of activity index

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APPENDIX C

Data collected from American subjects 35 years and above for the analysis of activity index

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APPENDIX D

Data collected from Indian subjects 25 years and below for the analysis of activity index

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**APPENDIX E**

Data collected from Indian subjects 35 years and below for the analysis of activity index

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## APPENDIX F

Data collected for the analysis of popularity of topic. (Tables show total number of words under each topic)

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IMPACT OF CULTURE AND AGE ON THE USE OF SOCIAL NETWORKING WEBSITES

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Engineering

By

RAMYA PONNAVOLU

B.Sc., Madras University, 2006
M.A., Madras University, 2008

2010

Wright State University
I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY Ramya Ponnavolu ENTITLED Impact of Culture and Age on the Use of Social Networking Websites BE ACCEPTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF Master of Science in Engineering.

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Yan Liu, Ph.D.
Co Thesis Director

Committee on Final Examination

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ABSTRACT


Social networking websites have become very popular amongst people of all ages in recent times. These websites have brought into existence a new form of data - 'User generated content'. Companies everywhere have begun to identify the potential of these sites and have commenced efforts to take advantage of the profitable opportunities available. In spite of all this, it is reasonable to say that the latent possibilities in social networking sites are yet to be fully explored. This is due to the fact that the technology is still young and research on its potential is still ongoing. The current research is also an effort in this direction.

The present study examines the impact of culture and age on the use of social networking websites by analyzing the user generated content on the most popular social networking website in USA - Facebook. Five hypotheses were derived and tested using a two-factorial between-subject quasi experiment. Instead of studying all cultural dimensions, this study focuses on the most studied cultural dimension in the literature – collectivism vs. individualism. Eight groups of American subjects were used to represent the individualistic culture and eight groups of Indian subjects were used to represent the collectivist culture. Two age groups were analyzed in both cultures - young group (25 years and below) and old group (35 years and above).
ANOVA of the experiment showed that participants from the American groups displayed a tendency to be unique and hence did not have a significant influencer within the groups, while the participants from the Indian groups chose more to be in harmony together and follow rather than lead thus having a more significant individual leader. Testing age, the results indicated that the younger subjects in both cultures were more active than the older group. In addition, the experiment indicated significant interaction effect between age and culture on the activity levels of the participants. Culture and age were also significant in the participants' preferences of topics of discussions in Facebook.
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For her tireless efforts and dedication towards this research, I would like to thank Dr. Liu who was always there for me. She taught me how to work methodically and systematically and she also made sure that I put in maximum effort and achieved only the best results. I would like to thank her for all the time she gave for this research and the promptness with which she always responded to me.

I would like to express my thanks to my thesis committee, Drs. Narayanan, Liu and Mr. Kender for all their time and effort and providing me with the guidance I needed.

My gratitude also goes to my lab mates especially to Phani Kidambi for always lending a hand when I needed help.
Finally, I would like to thank all the people who participated in my study for without them I would not be able to complete this research. I also thank my family and Sri Sainathuni Sarath Babuji for their constant love and support.
1. Introduction

1.1 Motivation and Background

The emergence of Web 2.0 applications in various forms including social networking websites has proved to be the harbinger of a new form of data. 'User-generated content' appears to be the latest buzz word. While it takes on many different connotations under different circumstances, for the purpose of the current research we shall assume it to mean exactly what it indicates – data produced through user activity.

According to Mikroyannidis, (2007) Web 2.0 can best be described as the accumulation of new Web-based collaboration technologies such as social networking sites, communication tools, and wikis. He further refers to it as the 'Social Web' and describes how it contains huge quantities of unstructured data which is unsearchable beyond keyword searches. In Web 2.0 applications there is an apparent lack of control, in contrast to the earlier approaches where the users were cajoled into responding to research questions in order to better understand online consumer and user behavior. The current methods focus on a technique of 'listening' as opposed to the earlier 'asking'. The listener may initiate an event, situations or circumstance wherein the
user/consumer is given a forum to naturally interact with others and express themselves. This approach allows more room for the collection of natural behavioral attributes. This is where social networking websites, which have gained steady momentum, play a crucial role. Social networking sites are virtual places where people gather in the cyber space irrespective of their physical location. The purpose of the gathering being to communicate and socialize and indulge in any other form of self gratification that is normal to people who are a part of a social network. Simply stated, online social networks are similar to physical social networks, with the exception that the 'virtual aspect' of online social networks gives rise to many perks. These advantages are otherwise unavailable to a non-user who may still be a part of a physical social network.

"A major research study published in December 2008 on the use of digital technologies by adults from 16 industrialized nations suggests that on average [they] spend a third of their leisure time online, belong to two social networking sites and have regular contact with 16 people who they have ‘virtually’ met on the internet" (as cited in Harrison & Thomas, 2009). From this we can see that social networking sites are the latest gathering grounds for online users and hence these sites can be utilized as prime targets for marketing strategies. Companies everywhere have begun to identify the potential of these sites and have commenced efforts to take advantage of the profitable opportunities available. In spite of all this, it is reasonable to say that the latent possibilities in social networking sites are yet to be fully explored. This is due to the fact
that the technology is still young and research on its potential is still ongoing. The current research is also an effort in this direction.

1.2 Objective of the study

The primary goal of this research is studying how the culture and age of individuals affect their use of social networking websites. Instead of studying all cultural dimensions, this study focuses on the most studied cultural dimension in the literature - collectivism versus individualism. Interactions that take place between individuals in social networking websites have been systematically studied and analyzed for this purpose.

1.3 Significance of the Study

Observations made during the course of the research will be utilized to determine how targeted marketing can be further enhanced for augmenting existing profit levels. The web portal chosen for this study is Facebook, a leader in the wide range of social networking sites available to the public, free of cost today.

Many studies and have been carried out on online social networking sites and other forms of online communities and their information was mostly gathered with the help
of questionnaires and focus groups or some other means of interviewing the subjects in question. The subjects were thus, instructed to answer in a particular form in response to particular questions. The current study, however is unique in the aspect that it collects information through observation of the subjects in their natural environment amongst their friends in their online social network. No standards are set for their behaviors. In fact it is their natural attributes that are collected. A second significant area in this study is the inclusion of a young as well as adult group of subjects where the adults are 35 years or older. Nearly all the research carried out in relation to social networking sites have used a young group of subjects in the age group of 17 - 25 years. This study also incorporates two different cultures into its fold. The first being a collectivist culture for which data is collected from Indian users. The second is an individualistic culture for which data is collected from American users. Research on social networking sites prior to this has only worked on a single culture at any given time depending on where the study was carried out. For instance studies in Japan used Japanese subjects while studies in Europe used European subjects. For this research care was taken to ensure that the two control groups from two different cultures were untainted and true representatives of their respective culture. This was done to ensure that the analysis would not be contorted. A final significant aspect of this study lies in fact that the individual users are not studies as a single unit each but as part of a group. The first half of the experiment uses the relation between individuals as its unit of analysis rather than the individuals itself. The data for the entire experiment was
collected over a period of two weeks. This is something which has is not common in the research and studies carried out on social networking websites.

1.4 Roadmap

The reminder of the thesis is organized as follows. Chapter 2 details the review of literature carried out to provide a basis for all the arguments raised in the course of this research. Chapter 3 explains the three hypotheses that will be tested in the following chapters. Chapter 4 describes the design of experiment including the procedure for evaluation, the dependent and independent variables. Chapter 5 provides the results of the data analysis carried out and will also supply the interpretation of the results. The final chapter, Chapter 6 discusses the contributions and limitations of this study and concludes this thesis with ideas for future research.
2. Literature Review

2.1 Introduction

The purpose of this research is to examine the marketing implications of social networking websites by investigating the best method to target users in social networking websites with marketing material such as advertisements and offers. Several themes lend themselves to this topic which are reviewed in detail in the following pages.

The first section describes Web 2.0 technology and the subsequent arrival of social networking websites. It explains how social networking websites have not only influenced the lives of the users but also generated a new form of marketing revenue. The second section deals in general with the different types of social networking sites that are prevalent. It explains with examples the purpose for which these sites are used. The third section examines the influence of culture on technology and in the use of social networking sites in general. As culture plays an important role in the current research, its relevance to the objective of this study is dealt with clearly. Culture is an
aspect that affects our environment as a whole for we who interact with the
environment are completely influenced and governed by our own cultural identities.

The fourth section shall review existing marketing opportunities that are being made
use of by companies with relation to social networking sites. As mentioned previously
the primary purpose of this study is to examine certain marketing implications of social
networking sites. The fifth and final section discusses existing studies conducted on
social networking websites which identifies the ongoing research.

2.2 Web 2.0 and Social Networking Sites

The outbreak of the Web 2.0 technology has been an interesting trend to observe,
which has changed the way we view online content. The apparent lack of control on the
user generated content in online social networking sites has further complicated the
already complex process of information retrieval. But it is a field with immense potential
for research and can result in monetary benefit. User presence and User generated
content on the web has been a growing phenomenon that has slowly advanced over the
past 15 years. Starting off as a snowball down the mountain of web technologies, it has
built up sufficient momentum to warrant its comparison to an avalanche in today’s
world. The introduction of Web 2.0 applications has brought an immense change in the
usage of the web which originally according to Bauschard (2006) “evolved as a means of
distributing information to the majority that was produced by a minority”. The explosion in user generated content has been recognized by the Time Magazine which has named the millions of users generating the content under the title ‘You’ as person of the year.

Web 1.0 was all about the transference of print media to digital media completely. The web designed by Tim Berners Lee in CERN laboratories began to expand beyond private control. It became a gigantic store house of information, a repository of data. Anyone from anywhere in the world could delve into it and take out whatever information he or she required. The development of Web 2.0 is more the development of a new trend rather than technologies. It is the arrival of a new system of management of web based content. Control of web based content was passed on from the makers of the sites to the users of the sites leading to 'User generated content'. "The web is no more a one way publisher-reader medium but is a bidirectional knowledge creation and sharing system (Guha, 2009)." In this line came many new hosted services and social networking sites such as YouTube.com, Flicker.com, Facebook.com, Wikipedia.com, MySpace.com and many more. E-commerce applications like eBay.com and Amazon.com also belong to this generation of Web development.

However this has led to a fresh problem in terms of data retrieval. With huge quantities of user generated content flooding the virtual spaces, there is no centered control governing it. Hence the content which remains in an unstructured form does not lend
itself to easy searching. Extremely powerful and highly sophisticated logarithms are required for responding to the keyword searches initiated by the users. Hence advanced techniques of knowledge discovery is an area awaiting further research in this field of Web 2.0 development. For the transition to be made to even more advanced and intelligent web based systems, advancement in knowledge discovery techniques is highly essential.

For the first time in research, questions are not being ‘asked’, rather the pre-formed answers are being ‘listened’ to. The research industry, more specifically the field of market research has never before attempted such a foray. ‘Listening’ to user generated content can provide much more beneficial answers than the age old techniques of questionnaires, focus groups and interviews. This is due to the fact that users are posting their tastes, preferences, beliefs, ideas, thoughts and expressions without boundaries or barriers. Users are willing to put up information that they normally would not divulge. Personal information, market researchers generally paid to obtain before is now available on social networking sites for everyone to view. This also creates a natural and authentic source of data that was previously very hard to research. "Web 2.0 technology has caused a paradigm shift from supplier generated content to user generated content," (Enders et al, 2008).
Social Networking websites are one among the many portals that receive huge masses of user generated content. Wikis and blogs are also important sources of user generated content. However, the users flocking to social networking websites are more in number than those running blogs and participating in wikis. Over 100 such social networking websites are present on the web, however like there are giants in any field, social networking also has a select few which are more popular than all the rest put together. Clear leaders in the race to popularity are Facebook, MySpace, Orkut, Friendster, Hi5, Studiverzeichnis and many others. Each of these sites has their own domains where they are popular. For example, Facebook is the frontrunner in UK, Canada, USA and Norway while Orkut is the most popular social networking web portal in Brazil and India. Some sites use vernacular language like Studiverzeichnis which is a German social networking website popular in Austria and Germany.

According to a report published in Forrester Research in June 2007, the two popular social networking websites, Facebook and MySpace have more than 63 million US visitors per month. A later study dated March 2008 estimates the number at 100 million US visitors per month (Freedman et al, 2008). However it is an uncontestable fact that the Netizens frequenting the social networking websites are mostly from the Generation Y group and not baby boomers. According to Forrester Research, 80 percent of the young adults use these sites as opposed to the 30 percent adults.
2.3 Types of Social Networking Websites

There is no clear classification of the types of social networking websites but they can be broadly identified under two categories. The first are those established primarily for the purpose of forming social connections, developing relationships and so on. The second type of social networking website represents those websites formed for any specific purpose other than mere social networking. An ideal example of this is Sermo, a social networking website exclusively for physicians that collects opinions and trends for sale to health care professionals and health care organizations. This site fosters natural dialogue between the members who are all trained medical professionals. The qualitative data collected is quantitatively analyzed for converting the raw data into meaningful information with financial significance.

Social networking websites such as Sermo are being used in various fields including music, education, law, business, politics and many more. Social networking sites have given the people the power to publish any content they feel like without any restrictions from the privacy of their homes, with the result that the kind of content being generated online has reached unprecedented levels. If word search and data retrieval has been a topic of discussion and an area of research where many have tried to find the ideal solution to produce the right hits for search terms, it is nothing compared to
the copious quantities of unstructured qualitative and personalized information now being made available on the web. Social networking sites have shrunk the world further by making people across the globe accessible on their browser windows.

It is this aspect that has caused concern to many about their digital footprints. Social networking sites are available for the asking to any age group from 6 to 60 year olds. Club Penguin and Webkinz are sites for 7 – 8 year olds networking with friends from different countries and studies have shown that 80 percent of the children in this age group with access to Internet use these sites from their home (Richardson, 2008). The fact that social networking sites are here to stay in spite of some concerns and issues is clearly represented in the "tectonic shift" (Richardson, 2008) in views where parents, teachers and educators are more concerned with guiding the youngsters use of social networking sites so that they interact in an effective, ethical and safe manner with other members rather than prevent them from using these sites. They have accepted that more than ever before, students have the need and potential to ‘own their learning.’ Given the fact that practically everyone can be Googled these days, the authority figures in the lives of these children are trying to ensure that they leave behind a responsible digital footprint, one that they will not regret later but one that will enhance their reputation and aid and abet their future progress. Stanford Researcher Dannah Boyd says, “We are discovering the potentials of this new public space. What we say today online will persist long into the future and not simply end up in the recycling bin when
we clean our desks at the end of the year. What we say is copyable, editable, usable and viewable by all sorts of audience by intended and unintended," (Richardson, 2008). This is certainly food for thought. A study states that a majority of Facebook users log in primarily to observe the activities of others as well as view the content posted by them (Pempek et al, 2009). It is all the more alarming when the prospect of future employers viewing personal content is considered.

However when the content concerned is not personal, rather if it is of an intellectual or professional nature, then it serves a dual purpose. It benefits the individual who will benefit from the interaction and the governors of the site can make use of opinions expressed, chart the trends from content uploaded and make use of the information made available for monetary as well as academic benefit. This leads to the situation where data on different topics are available in large quantities on different sites. Social networks in the field of law, literature, science, computers, technologies etc will present publicly available discussions and parleys between professionals and experts offering their thoughts, ideas and insights from personal experience. This results in up to date and reliable information available on various issues in the respective social networking sites. Here the issue arises whether the content is qualified as a reliable research source due to the fact that it is not peer reviewed. A law professor from the reputed university of George Washington responded to a critical question pertaining to a controversial case (while in a social networking site designed for interaction between law professionals).
Bauschard, (2006) states, "This form of an expert opinion cannot normally be made available instantly to the public except if the author chose to publish it. The authority is unclear; it is a law professor writing in a non-peer reviewed publication. It is a source that lacked peer review but is a qualified source nonetheless".

Thus, as is obvious, social networking websites have huge potential which can be used to great advantage. The content available on the sites, particularly on professional networking sites is a valuable source of information due to the fact that its origin is natural and flows freely from the personal experiences of the members themselves.

Social networking sites are being utilized by several groups in unique and innovative ways to further their interests and serve specific purposes. Libraries are a growing presence on online social networks. They are no longer restricted to their immovable brick and mortar appearance. Several libraries have online profiles, some of them being Hennepin County Public Library of Charlotte and Mecklenburg County which was put on the map due to its online presence. It receives as many as 800 hits per week. The University of Kentucky Library was shut down by Facebook on the grounds that organizations are not allowed personal profile pages. However they rallied with groups where they are now a strong presence. Libraries everywhere are following suit and going where the users are.
Universities and schools are also establishing themselves online in social networking sites. Authorities now consider it imperative to network with alumni, parents, current and prospective students. Marietta College, Ohio found that most new students expected the college to have an online presence in social networks and the fall of 2006 recorded 40 percent of the students as having used the Social Network made available by the college (Sevier, 2007). Prospective students were able to interact with existing students and professors and gain an insight into the college that would otherwise not have been possible. The institution was able to reach new and old students much more effectively and thus make college a much more stimulating experience than as usual. San Diego University is using Facebook as part of its recruiting system and is targeting preferred individuals with university information for prospective admissions (Goral, 2008).

2.4 Influence of Culture

As technology makes rapid strides every day, the world is also shrinking and gradually turning into a global village. The ease with which people communicate to a person sitting beside them is translating to communication taking place across national borders. Although the boundaries have melted, the cultural identities of the people across the globe have remained firm in the face of varied onslaughts from imperialism to modernization. Hence it is safe to assume that culture is a key factor that influences the
perception of people. Technology itself is not culture neutral for it possesses within itself the cultural values of the West, the key enforcers of modernization and advanced technologies. "Even when people migrate overseas, and come under the influence of another culture they retain and internalize both their original culture as well as the new culture leading to a form of bi-culturalism that still colors their perception of the environment," (Boucher, 2009).

Given that culture permeates our surroundings to such an extent, it is important to identify the level to which it will influence the users of social networking sites in the current context for they are also a part of today's technology revolution. The use of social networking sites is universal and users anywhere will be governed by their own individual characteristics as well as those formed as a result of being a member of group, in the usage of the social networking sites. Honold (2000) defines culture as follows,

"Culture does not determine the behavior of individuals but it does point to probable modes of perception, thought and action. Culture is therefore both a structure and a process."

Geert Hofstede's famous cultural model (as cited in Young, 2008) aptly sums up culture in 5 dimensions. They are power-distance, uncertainty avoidance, masculinity-feminity, individualism, collectivism and time orientation (Hofstede 1980). For the purpose of this study we adopt only one of these dimensions namely individualism-collectivism. This is a
concept which has been expounded upon by many researchers. Culture in itself is such a complex entity that studying one dimension of it at a given time is more advisable than summing it in its entirety.

Honold (2000) elaborates on the Activity theory which has its roots in the ideas of Russian psychologists of the early 1920's. Primarily it sets forth the following ideas,

- The theory takes on activities as the unit of investigation. Each activity is defined by the purpose or objective for the achievement of which he/she carries out a set of operations or actions that are influenced by his/her beings as part of a larger culture.
- The author assumes that cognitions and activities are interdependent. They affect each other equally.
- Individuals are locked into a physical context which is taken to be a social construct of reality.
- Lastly, all individuals use tools with which they carry out the activity or interact with the environment. These tools may be internal such as concepts and idea or external such as actual physical tools. These also retain the quality of culture within themselves.

With regard to social networking sites, the activities of the users within the site will accordingly be taken as the unit of examination in order to determine the influence of
Many researchers have proposed the concept of individuality being the norm in the West while collectivism is the norm in the East. This belief has been around for a period of time (quite awhile) and proven through many behavioral experiments and observations. Kim and Markus (1999) go a step further and argue that "uniqueness has positive connotations of freedom and independence while conformity has negative connotations of societal oppression and passivity in the US; at the same time, uniqueness and conformity have negative connotations of deviance and positive connotations of affiliation (connectedness) and harmony respectively in East Asia".

Boucher (2009) proposes that if actions can be split into "taking the lead" actions such as those that bring merit and excellence and "seeking attention" actions such as those that seek attention for the wrong reasons, or attention for the sake of attention itself; Euro-Americans scored higher on the second action while Asian Americans scored higher on the first action in his study. Thus we can observe a more independent mental state in the West while in the East it is more interdependent. The complex (collectivist) cultures of the East still retain their desire to stand out for merit and excellence rather than simply seek attention even after coming under the influence of an individualistic culture such as in the case of Boucher's (2009) study. In fact an important aspect that Boucher (2009) underlines is that 'taking the lead' actions are seen as more socially
appropriate than 'seeking attention' actions in the East while they are the opposite in the West. The flexibility and ingrained desire to be identified as a part of a larger group or family and their desire to stand out only for merit or excellence prevents the East from feeling comfort in 'seeking attention' actions. The same goes for the West when they prefer 'Seeking attention' actions to 'taking the lead' for the former is considered more appropriate socially while the latter is not so accepted, for the unwritten norm is not to follow the norm.

2.5 Marketing Implications of Social Networking Sites

Marketing firms have already started to take advantage of the opportunity, although they have not succeeded in fully exploiting the potential of social networking sites. An attempt has been made at targeted marketing which has resulted in partial success. Facebook, the most popular of all the social networking sites, generates revenue through targeted marketing. It provides an online website for business organizations to visit and buy certain phrases or parameters for a sum of money. The phrase could be anything from a color to the name of a brand. The organization then leaves its advertisements with Facebook which then forwards the advertisements to all those profiles on Facebook which were a positive match to the parameter bought by that organization for they contain that phrase or parameter within their profile. This has been an immense hit with business firms who were previously willing to pay for clicks on
their sites but are now being supplied with personal inspection of their advertisements by users through Facebook.

The area where Facebook failed was in the launch of Beacon. "Beacon tracked user activity on third party websites and sent the user’s friends information on the products purchased by the user" (Rapoza, 2007). This turned into a Public Relations nightmare for Facebook when users began to complain about the invasion of privacy. However the users’ response to the targeted advertisements was not hostile. Thus utilizing the user generated content for marketing purposes is not completely out of consideration.

Two years ago, in 2008 a published article indicated that Google had registered three patents with the U.S. Patent and Trademark Office that allowed it to tap the potential of social networking sites and convert the potential into profit. The three patents were for Open Profile Content Identification, Custodian Based Content Identification and Related Entity Content Identification. The last named can search a person's profile for all information related to the person's friends on their friends list or user groups. Open Profile Content Identification and Custodian patents allow Google to mine data from profiles with open security settings. They use smart language processing algorithms that can read as well as comprehend the user’s tastes and preferences based on linguistic
cues. The next step is targeting advertisements that fit the user’s profile tastes. In June of the same year the social ad firm SocialMedia Networks said it had invented an algorithm called FriendRank that also searches a user’s friendship lists for friends whose names might be used in a targeted advertisement (Anderson, 2008).

Google has not introduced a revolutionary technology, however it has made significant development in the area of harnessing the masses of unstructured user generated content now being found on the various social networking sites. Google has developed an innovative algorithm which is actually able to understand and process user preferences on a subjective scale, a feat which has not been accomplished before, although other algorithms have been able to search for related words and ideas in the data. Jeremy Pinkham, chief technical officer of social-media advertising company Lotame Solutions, based in Elkridge, Md., opines that Google’s new patents help to "validate that this industry is worth people's attention" (Anderson, 2008).

Social networking sites have succeeded in creating value for its users and hence can retain them for a long time to come. Converting this value into a sustainable revenue model is a field which has much scope for innovation. Marketing is certainly a prime contender as a revenue generator for social networking sites. Enders, Hungenberg and Denker (2008) have suggested some interesting revenue models for social networking sites that can be made use of to gain profits.
But first what is the value provided by online social networks that ensures the return of users? Primarily, online social networking enables us to keep in contact with individuals who are close friends as well as those with whom we are merely acquainted.

“Sociological Research has proved that such acquaintances can prove more useful to us than our close friends in situations of advice seeking, employment search etc. By granting access to such acquaintances, social networking sites offer a much larger pool of potentially more interesting contacts than traditional means of networking can typically provide,” (Enders et al, 2008). The second aspect is the "self actualizing address book form" (Enders et al, 2008) that the social networking site assumes. It is simply too much effort to update one's traditional address book or excel sheet through physical contact from time to time. Relationships expire over a period of time in traditional networking, not from a lack of interest but because they lose track of information. Social networking sites on the other hand allow you to maintain contact with close friends and mere acquaintances for any length of time as each one updates his/her profile periodically along with regular posts of latest occurrences and events in their life. This allows the user to keep abreast of updates at his/her own pace.

The key to generating revenue in social networking sites is to gain the trust of its users. Only then will it be able to retain consumer base and achieve monetary gain. Based on these, three models of revenue have been proposed currently for revenue generation.
namely, the advertising model, the subscription model and the transaction model. The advertising model is similar to that followed by Facebook. This model is generally implemented where the user willingness to pay is very low.

Advertising can be of two types, affiliate advertising and banner advertising. In affiliate advertising, social networking sites steer traffic towards an affiliate website in return for a referral fee or a percentage of revenues from resulting sales. For example, Facebook allows platform operators to charge fees in exchange for the display of advertisements on their website. Banner advertising is when sites allow the display of advertisements in exchange for a pre-determined fee. The more the number of users in the social networking site, the higher the fee that is charged to the advertiser and the lesser for which services are offered to the users. Hence the prerogative is to recruit more users for it is not merely a question of which site is more popular, but which site can generate more revenue through advertising.

The second model is the Subscription model. This model works purely on the basis of trust. Generally basic features are offered for free and advanced features are made available at a reasonable price. For example the Stay Friends website which introduced a subscription model after a year and half of free service. They formed a two-tier membership where Gold members where allowed exclusive services for a fee of €18 a year.
The third model is the Transaction model where a fee is received for enabling or executing a transaction. Two types of transactions can take place in this model namely, Endogenous and Exogenous transactions. The former takes place when a user purchases physical or digital content from his platform provider while the latter occurs when the platform provider facilitates a transaction between a third party and the user for a fee. This model is yet to gain popularity as social networking sites have to build high levels of trust with their users in order to execute transactions with them or on their behalf. A further improvisation of this model is encouraging transactions between members of the site, similar to eBay or Amazon where anyone can transact business with anyone else. This can be a success if effectively implemented for as opposed to eBay or Amazon, the trust factor is higher during transactions for the user is dealing with a friend or friend of a friend.

Since little research is prevalent on how exactly social networking sites influence social ties, most sites opt for a combination of two of the above described revenue models. However due to the fact that users continue to post personal information in large quantities, the advertising model is a failsafe that will assuredly guarantee revenue to the platform operator. The other two models have certain conditions that need to be fulfilled in order to function as revenue generators.
Market Research is another field which can benefit from tapping into the reservoir of unstructured data found in social networking websites. Research facilities could compensate platform operators for the information that they can provide on the established consumer database they control. Online Market Research conducted through social networking sites has several advantages over traditional methods. It is able to provide more timely results than the time and effort consuming techniques of interviews, questionnaire surveys and focus groups. Facebook Polls offers answers to a custom survey in 30 minutes (Freedman et al, 2008) as opposed to the weeks it takes to gather critical data following conventional research techniques. Also online social networks have provided ample access to the students, the key community sought after by researcher, previously inaccessible for surveys. Not only have the social networking sites provided access to a database of students, but also to huge quantities of data, pertaining to their tastes and preferences.

The primary advantage that researchers gain from gathering data on an online social network is the obvious lack of control in the data. This will provide them with data, the likes of which they could not have collected before. The lack of control in the data allows the natural flow of authentic dialogue thus generating content that the researcher could not have hoped to obtain with the keenest of surveys.
One aspect of marketing that has not changed is its reliance on word of mouth. The technique has not changed but its appearance has. A much more polished title 'Buzz marketing' is used to hide the common word of mouth. Buzz marketing originated from "buzz tracking" (Freedman et al, 2008) which, simply stated, indicates tracking where the entire buzz is centered and around what product or service. Buzz tracking monitors predetermined areas of the internet and informs a client how much a certain site, service or product are being discussed. "Similar approaches currently use technologies like ‘data scrapping and ‘crawling’ to gain insights into broad public discourse in any field," (Goral, 2008).

In order to understand how word of mouth information spreads in online social networks, it is important to understand the categories of people present online. Two types which are essential for our understanding are the "Social Clickers and the Content Kings" (Riegner, 2007). The Social Clickers represent the generation of young adults who spend over half of their time (57 percent to be exact) online in social interaction and communication activities. They actively engage in content creation such as creating personal profiles on social networking sites, posting comments online, chatting and so on. They are the key influencer group for products that interest them and they are always ready to express their opinions regarding their likes and dislikes. Content Kings on the other hand are more often young male adults who spend more time on entertainment such as peer to peer file transfers, posting comments on blogs, reading
opinions for further content creation etc., rather than on communication. A study has proved that in spite of the fact that these young adults don't have the purchasing power to follow up on their preferences to purchase the items of their liking, they have a major influence on general opinion.

In particular, high tech electronic products purchased by adults are also influenced by online opinions rather than personal references and physical advertisements. The higher priced and more high tech the product, the more research that goes into the purchase of the product. Baby boomers do not spend as much time communicating or socializing online. Yet they tend to follow the opinions posted in online sites for making purchase decisions where some products are concerned. "User generated content is more likely to influence items that are more complex, higher priced, and highly coveted – like technology and consumer electronics. But it is less likely to influence low-involvement products and/or those primarily purchased in stores" (Riegner, 2007).

2.6 Related Research conducted on the use of Social Networking Websites

Social networking websites are a fairly recent phenomenon when compared to most existing technology. As a result, one can feel the lack of appropriate studies and research concerning the sites. However, it would not be fair to say that studies on social
networking websites are non-existent. There is a certain amount of literature available and this has been classified very aptly as follows by Boyd and Ellison (as cited in Harrison & Thomas, 2008).

i. Impression Management studies: The study of the identities that individuals create to represent themselves through the profile information that they post online. The extent to which they guard the privacy is also a part of impression management studies as it is a clue to their identities.

ii. Friendship Management studies: These studies are partially linked to Impression Management studies for they investigate how users utilize the profile information of other users in order to determine who to include in their lists of friends.

iii. Network Structure studies: These studies focus on the activity levels of the users in question. They determine the level of passivity or activeness of the user which can vary from restricted users to highly active users to users who undertake to involve the whole community in the social networking website in some activity or the other.

iv. Studies of the bridging of offline and online networking: These studies focus on the extent to which online activities become a part of the users' real life.

A review of a few studies related to social networking sites indeed proved Boyd and Ellison true for the above stated classifications are the primary areas of interest for
studying in the use of social networking sites. For example, Raacke & Raccke (2008) investigated the reasons why users are attracted to social networking sites. They made use of the "Uses and Gratification theory to analyze how each individual uses the media (in the case the social networking sites), with emphasis on the individual." The study was however conducted only on college students with an average age of 19.7 years. Another study examined the psychosocial variables that influenced the use of social networking sites. This study was also performed on a group of 17-24 years old college students and analyzed with the aid of the Theory of Planned Behavior (Pelling & White, 2009). An interesting observation that can be drawn from the review of these studies is that all of them, without exception have been conducted only on college students and care was taken to ensure that all of them were below the age of 25 years. Social networking sites serve many users well over the age of 25 years and hence all these studies are lacking in this area by leaving out a section of the user population. The present research is an attempt in this direction, aiming to bridge the gap in age by studying two groups namely Young (25 years and below) and Adult (35 years and above).

A certain study conducted in the year 2008 contradicted another study conducted in the same year. Coyle & Vaughn (2008) performed a study on why people use social networking websites and they concluded that it was for the primary purpose of keeping in touch with existing friends and socializing with them but not for making new ones.
Harrison & Thomas (2008) investigated the same question only to conclude that online social networking is used to explore new relations and not to merely maintain existing ones. The difference could lay in the fact that Harrison & Thomas exclusively studied Livemocha.com, which is an online foreign language learning social networking site while Coyle and Vaughn studies social networking sites in general. Also the former conducted their study in New Jersey while the latter conducted theirs in Japan. Both studies used college students. The aspect of culture could possibly have had a major influence on the results of the study. The current research shall also be examining culture as a major factor which influences the use of social networking sites.

A very useful study although not directly related to the current research is the analysis carried out by Vergeer & Hermans (2008) on online political discussions in online discussion forums and social communities dedicated to politics. They make use of content analysis and network analysis on downloaded Usenet messages to determine density of discussions. They are of the opinion that while performing a network analysis, the relation between the individuals is the unit of analysis and not the individual. This is of great importance to the current research. In fact it is relevant to all studies performed on networks. A normal study performed on a group of individuals can be analyzed by treating the data as separate entities. In network analysis the analysis of the relation between individuals serves as a stumbling block for traditional statistical analyses, as it
treats the data as independent pieces and does not provide for a relational analysis.

Thus this area is yet to be researched more thoroughly.

Kim & Han (2009) proposed a method of identifying the influencer within a group on a social networking website and tested the method through an experiment. This is perhaps the most relevant example to the current research. A two pronged approach is used in the study; the first of which is a structural analysis that uses a degree centrality computation to identify active groups within the social networking site. The second step is an activity index which is used to identify the most active members within the group by assigning weights to each of the activities that the users engage in. However, the study, like all its predecessors is performed on subjects in their twenties and restricted to people of Korean ancestry.

The current research moves on from this step to incorporate two cultures and also an older age group, both of which are aspects that have so far not been dealt with in the realm of social networking websites.
3. Hypotheses

3.1 Research Questions

The questions dealt with by the research are described in the table given below.

*Table 1* Overview of research questions

<table>
<thead>
<tr>
<th>Research Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>How does age and culture influence or impact the use of social networking websites?</em></td>
</tr>
<tr>
<td>Specific Questions:</td>
</tr>
<tr>
<td>1. Is there an influencer within the groups of users on social networking websites? Does culture influence the presence or absence of an influencer?</td>
</tr>
<tr>
<td>2. Are the younger users more active than the adult users of social networking websites?</td>
</tr>
<tr>
<td>3. Are the activity levels (on social networking sites) of users influenced by their age and the culture they belong to?</td>
</tr>
<tr>
<td>4. Are the users preference for certain topics of conversation influenced by their age and the culture they belong to?</td>
</tr>
</tbody>
</table>
3.2 Hypothesis One

Alternate Hypothesis: An influencer has a higher significance in collectivist cultures than in individualistic cultures.

Null Hypothesis: An influencer has a lower significance in collectivist cultures than in individualistic cultures.

According to Hofstede (as cited in Gaspay, Legoretta & Dardan, 2009), "the relationship between the individual and the collectivity in human society is not only a matter of ways of living together; it is intimately linked with societal norms". Therefore it affects the mental makeup of people and consequently influences their behavior as well. Cultural identity is ingrained into the personality of every individual and will impact his interaction with his environment. Uniqueness and individuality have positive connotations in individualistic cultures while it is the opposite in collectivist cultures. Conformity has positive connotations in collectivist cultures where the norm is more to follow a leader than everyone choosing a separate path. Given this direct link between ethnicity and behavior of an individual within a group we frame Hypothesis 1 to test whether there is an influencer with the online network group or not in the two cultures under observation for the current study. The results will be impacted based on which culture the subjects belong to.

The word significance in the statements refers to the level of activity that the influencer is producing. His or her activity level is higher than the average of the activity level of
the remaining members of the group. The higher the difference, the greater the significance of the influencer.

### 3.3 Hypothesis Two

Alternate Hypothesis: The young group in both cultures is more active than the adult group on social networking sites.

Null Hypothesis: The young group in both cultures is not more active than the adult group on social networking sites.

Research in social networking sites is still making progress and has barely scratched the surface of its potential. Hence there are still many aspects of social networking sites and many different angles of these sites that are yet to be researched. One of these aspects is the influence of age in the usage of these sites. Given the fact that it is difficult to obtain users of an age over 30 for an experiment or observation, most studies performed on social networking websites have made use of college students, a readily available section of the population. As a result all age groups are not equally represented. The present analysis is an attempt to bridge such a gap in the literature. Based on the observation of the behavior of the users of social networking websites, the above given hypothesis was formulated to test, whether young users of social networks are more active than elder ones.
3.4 Hypothesis Three

Alternate Hypothesis: There is an interaction effect between age and culture with respect to activity levels on social networking sites.

Null Hypothesis: There is no interaction effect between age and culture with respect to activity levels on social networking sites.

The first two hypotheses discussed above test the individual effects of culture and age, while the third hypothesis tests the interaction effect between age and culture with respect to the activity levels of the users on social networking sites.

3.5 Hypothesis Four

Alternative hypothesis: Users from different cultures have different preferences in conversation topics on social networking sites.

Null Hypothesis: Users from different cultures do not have different preferences in conversation topics on social networking sites.

As seen in Chapter 2 under the subsection 2.4 'Influence of Culture', Hofstede suggests 5 dimensions in which individuals of different cultures may differ from each other. Hence it is reasonable to hypothesize that users from different cultures have different preferences in conversation topics on social networking sites. The topics have been
divided and the reasons for division in such a manner will be explained in the following chapter - 'Design of Experiment'.

"Collectivistic cultures stress the importance of group harmony and fitting in with others (Boucher, 2009)." This characteristic of collectivist cultures suggests that a person from a collectivist culture would most likely engage in an activity that would not draw much attention from everyone. Socializing can be an activity which can be put under such a heading where the interaction is just a normal exchange of conversation between two or more people.

Several studies suggest that 'seeking attention' for no specific purpose other than to seek the attention or raise one's image is a more socially appropriate action in individualistic cultures than collectivist cultures. Boucher (2009) suggests that "Individuation in the U.S. is likely part of a cultural imperative to find and assert one's unique identity." Hence we may expect to see a preference for topics that emphasize the individual's uniqueness, among the subjects who are a part of individualistic culture.

3.6 Hypothesis Five

Alternative hypothesis: Users of different ages have different preferences in conversation topics on social networking sites.

Null Hypothesis: Users of different ages do not have different preferences in conversation topics on social networking sites.
Age is an aspect that has not yet been examined thoroughly with respect to the use of social networking websites. The younger age group of about 18 - 25 is the most studied for the simple reason that they are readily and easily accessible. Hence the present study tests to see whether age has an impact on the choice of topic of conversation through the current hypothesis. Since the study makes use of two disparate age group young and adult, it has a wider scope than studies which have utilized only a young group.
4. Experimental Design

The experiment is a 2 x 2 between subject quasi experimental design with limited control over the participants or the subjects involved in the study. This is due to the fact that the activity on an online social networking website is being observed and no questions are asked, nor any instructions or guidance is given to the subjects. Their normal behavior in their routine environment is observed for two weeks. Thus user generated content is simply being gathered for an analysis without modifying it artificially by means of any inputs from the investigator. The social networking website used for this experiment is Facebook.

4.1 Participants

All the participants in the study have university level educational qualifications, in different fields. Participants were chosen on the basis of their levels of activity in Facebook; the higher the level of a person's activity is, the more preferred he/she is. The standard for active users was set at a minimum login (into Facebook) of at least once a day. Care was taken to ensure that participants recruited from each culture were
representative of pure samples of that culture and not tainted by another culture. For example an Indian who has resided in the United States of America for a number of years is not a good subject to pick for the collectivist culture because there is an influence of both individualistic and collectivist cultures on the subject.

The participants were contacted directly or by email depending on their physical location and requested to participate in the study. If their approval was received then they were added to the friend’s list of an evaluation account opened on Facebook.

The criteria used for selecting and handling the research participants were as follows.

1. Any individual above the age of 18 and an active member of Facebook was allowed to participate in the research.

2. He/she was accepted only as a part of a group as the research is essentially the study of interactions within an online group.

3. Care was taken to ensure that the participants accepted into the group fell into one of the categories described above. Any overlapping was not ignored and if it did occur, that participant/group was removed and replaced by a fresh participant/group. This is because the inclusion of a particular group of individuals/individual may violate the control of the experiment.
The unit of analysis for the current research is the relation between the subjects within a group, not the subjects themselves specifically. Hence participants were only recruited as part of a group. Each group has a set number of 4 participants and the data collected in relation to this group was treated as one unit for the purpose of analysis, which shall be explained in chapter five. The number of participants recruited and the categories that they fall into are described in subsection 4.2.

### 4.2 Layout of the Experiment

*Table 2 Layout of the Experiment*

<table>
<thead>
<tr>
<th>Division of Participants</th>
<th>Culture(Nationality)</th>
<th>(C_1)</th>
<th>(C_2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Collectivism</strong>(\text{(Indian)})</td>
<td>(G_{111})</td>
<td>(G_{112})</td>
</tr>
<tr>
<td></td>
<td><strong>Individualism</strong>(\text{(American)})</td>
<td>(G_{113})</td>
<td>(G_{114})</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>Young - A1</td>
<td>(G_{211})</td>
<td>(G_{212})</td>
</tr>
<tr>
<td></td>
<td>(25 years &amp; below)</td>
<td>(G_{213})</td>
<td>(G_{214})</td>
</tr>
</tbody>
</table>
The layout of the experiment for the research is given above in Table 1. Hence a total of 16 groups were involved in the experiment, but they were never brought to one physical location. There were 4 treatment conditions in the study:

1. Young users from a collectivist culture
2. Young users from an individualistic culture
3. Adult users from a collectivist culture
4. Adult users from an individualistic culture

Boucher (2009) gave clear demarcations between the behavior of people belonging to individualistic cultures and those belonging to collectivist cultures. It was also pointed out that Asians are examples of collectivist cultures and Euro-Americans are examples of individualistic cultures. Hence, for the purpose of this study, India was chosen to represent the collectivist culture while America was chosen to represent the individualistic culture.

### 4.3 Data Collection

The observations for the evaluation were made online. Each participant's interactions with members of his/her group were observed for a period of 2 weeks. After 2 weeks the participants were automatically removed from the friend’s list of the principal investigator’s evaluation account. The participant was not required to perform any special task for the study other than consenting to take part in the study.
4.4 Independent Variables

4.4.1 Hypotheses One, Two and Three:

The two independent variables for hypotheses one, two and three are age and culture.

Age - Two age groups were considered in the experiment: young groups consisting of users who were no more than 25 years of age and adult group who were at least 35 years old.

Culture - Two levels of culture were tested in the study: collectivist culture and individualistic culture. Participants of Indian origin were used to represent the collectivist culture while participants of American origin were used to represent the individualistic culture.

4.4.2 Hypotheses Four and Five:

There are 3 independent variables for hypotheses four and five. In addition to age and culture, the two independent variables of hypotheses one through three discussed above, the third independent variable is the topic of discussion.

Topic of Discussion - The topic of discussion is considered an important factor to be evaluated in order to identify the most popular topic that draws the maximum attention from users and results in the highest level of User generated content. Park, Kee & Valenzuela, (2009) proposed a classification of topics that has been adapted for the
current experiment. The topics are divided into four major types: status seeking, entertainment, information and socializing.

- **Status Seeking**

  The conversations that have been grouped under this topic relate to any updates or posts that point towards the user's effort to involve in gaining a desirable image in the eyes of other member of the user's group. Any attempt at trying to create a unique and covetable portrait of oneself in order to increase their popularity is also viewed as status seeking.

- **Entertainment**

  Entertainment indicates all forms of games, individual and group games provided by Facebook (including quizzes). The amount of content generated while users are employed in playing games falls under Entertainment.

- **Information**

  Conversations in which users communicate issues of common interest to each other that are of some moment like sharing of information on classes among students, posting a message of official but not confidential nature to a colleague among the adults.

- **Socializing**

  General comments to each other and all manner of friendly and casual interaction fall under this topic.
4.5 Dependent Variables

4.5.1 Hypothesis One:

Kim & Han (2009) have proposed a method of identifying an influence within a group of users with the help of an activity index. They identified a set of 6 activities, each with an associated weight and calculated an index which represented the activity level of each user in order to determine the influencer in each group. The measure of activity index is also adopted in our experiment. (Six activities are considered important in using Facebook, which are groups (A1), pages (A2), applications (A3), updates/posts (A4), friends (A5) and photos/videos (A6). The weights assigned to the six activities are 0.1, 0.1, 0.1, 0.3, 0.2 and 0.2 respectively.)

The first of these six activities i.e. 'Groups' refers to the number of online groups that the user is a part of. Facebook has the ability to allow users to form a group for any purpose. The purposes may vary from a group consisting of alumnae to a group of people who may like rain. The second activity 'Pages' indicates the number of pages and links to pages that the user has listed under his profile for everyone to see. The third activity 'Applications' refers to the total number of Facebook applications used by the user. The fourth activity 'Updates/posts' is the average number of posts made by the user in one day. The average is taken across the two week observation period. The fifth activity 'Friends' refers to the number of friends in the friends list of the user and the last activity 'Photos/videos' is the total number of photos and videos uploaded by the
user on Facebook. Of all these activities, 'Friends' and 'Updates/posts' are considered the most important for they are a measure of the user's interaction with other users. Hence they help us identify how far the influence of the user reaches. The other activities are considered to be secondary to these two activities. So, the highest weights were assigned to 'Friends'(0.3) and 'Updates/posts'(0.2) while all the other activities received a weight of 0.1.

\[
\text{Activity Index} = \sum_1^6 w_i \times \frac{|A_i|}{\text{Max } |A_i|} \text{ (Equation 1)}
\]

where,

\(|A_i|\) = The number of actions in Activity \(A_i\)

\(w_i\) = The weights assigned to \(A_i\)

\(\text{Max } |A_i|\) = The maximum number of actions of \(A_i\) among members in a social group.

Once the activity index for each individual is calculated, the highest value in the group is picked out. The average of the remaining values is taken and this average is subtracted from the highest value in the group. This resulting value is the influencer value for the respective group.

4.5.2 Hypotheses Two and Three:

The dependent variable used for Hypotheses two and three is also calculated using Equation 1. However in this case, no further calculations are performed on the activity index values of all the participating individuals. In hypothesis one, only one value is
obtained from each group. In the hypotheses two and three however, there are totally 64 values, one for each of the 64 participating individuals.

4.5.3 Hypotheses Four and Five

The dependent variable of hypothesis four is the proportion of the number of words generated under each topic, calculated as the total number of words for each topic within each group divided by the total number of words for all topics in the group. Because there are 16 groups, each with four topics of discussion, there are totally 64 observations of the independent variable.
5. Data Analysis

ANOVA was utilized to analyze the experiment results.

5.1 Hypothesis One

Hypothesis One: An influencer has a higher significance in collectivist cultures than in individualistic cultures.

One way ANOVA was used to analyze the data. The results show culture is highly significant ($p = 0.0001$). In particular, the significance of the influencer (mean = 0.44, s.t.d. = 0.01) is higher in collectivist cultures than in individualistic cultures (mean = 0.13, s.t.d. = 0.01). Thus the test supports the hypothesis that an influencer has a higher significance in collectivist cultures than in individualistic cultures.

5.2 Hypotheses Two and Three

Hypothesis Two: The young group in both cultures is more active than the adult group on social networking sites.
Hypothesis Three: There is an interaction effect between age and culture with respect to activity levels on social networking sites.

A Two way ANOVA was used to analyze the data. The results suggest that age (p = 0.0001), and the interaction effect between age and culture (p = 0.0038) both significantly affected the level of activity. In particular, the young groups (mean = 0.74, s.t.d = 0.04) were more active than the adult group (mean = 0.62, s.t.d. = 0.04) in using Facebook. Figure 1 illustrates the interaction effect between age and culture on activity index. It suggests that the difference between the young and adult groups in their activity levels is larger in the individualistic cultures than in the collectivist culture.

![Figure 1. Illustration of the Interaction Effect between Age and Culture on Activity Index](image-url)
5.3 Hypotheses Four and Five

Hypothesis Four: Users from different cultures have different preferences in conversation topics on social networking sites.

Hypothesis Five: Users of different ages have different preferences in conversation topics on social networking sites.

A Three Way ANOVA was used to analyze the data for testing this hypothesis. The results suggest that topic (p = 0.0001), the interaction between age and topic (p = 0.0001), the interaction of culture and topic (p = 0.0001) and the three way interaction of age, culture and topic (p = 0.0002) are significant effects. Table 2.3 summarizes means and standard deviations of the proportion of the number of words generated under each topic for each combination of culture and age groups.

<table>
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<tr>
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<th>Entertainment</th>
<th>Information</th>
<th>Socializing</th>
<th>Status Seeking</th>
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<td>45.73(2.10)</td>
<td>28.05(2.10)</td>
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<tr>
<td>Young</td>
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<td>5.40(2.10)</td>
<td>23.80(2.10)</td>
<td>47.03(2.10)</td>
</tr>
<tr>
<td>CC</td>
<td>Adult</td>
<td>Young</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>--------</td>
<td>--------</td>
<td></td>
<td></td>
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<td></td>
<td>26.13(2.10)</td>
<td>36.73(2.10)</td>
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<td></td>
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<td></td>
<td>12.45(2.10)</td>
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<td>57.38(2.10)</td>
<td>47.75(2.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.03(2.10)</td>
<td>9.25(2.10)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thus the test supports hypothesis four since the interaction between topic and culture is indeed found to be significant. The Tukey's test was performed to study the interactions, and interesting observations were made based on the results. It showed that the individualistic cultures preferred the topic status seeking (mean = 37.54) more when compare to collectivist cultures (mean = 6.64). Collectivist cultures on the other hand preferred the topic socializing (mean = 52.57) more when compared to individualistic cultures (mean = 34.77). Figure 2 indicates the preference of subjects from collectivist culture for socializing while Figure 3 illustrates the preference of subjects from individualistic culture for the topic status seeking. These figures suggest that the difference between participants of collectivist and individualistic cultures is larger for the young group than for the adult group. Since the interaction effect of age and topic is also significant hypothesis five is also supported by the analysis.
Figure 2 Illustration of the Interaction Effect between Age and Culture for the Topic Socializing

Figure 3 Illustration of the Interaction Effect between Age and Culture for the Topic Status Seeking
6. Conclusion and Discussions

6.1 Research Findings

The significance of an influencer within a group is higher in collectivist cultures than in individualistic cultures. This is in keeping with the literature that was reviewed on culture which suggested that individualistic cultures tend towards individuation while collectivist cultures prefer to follow someone rather than lead unless if it is for a purpose. Hence there is a significant leader in the group in collectivist cultures while in individualistic cultures, the natural tendency to maintain a uniqueness from others creates a more equal group. There is an influencer in the individualistic culture groups too. However his/her significance or difference from the rest of the group is less marked than it is in collectivist cultures.

The second hypothesis suggests that the Young group in both cultures are more active than the Adult group in both cultures. This is a natural assumption that can be used in most cases and has been statistically justified in the case of the usage of social networking sites through the current research.
The third hypothesis tests to check whether there is interaction between Age and Culture with respect to Activity levels. The analysis of the data collected revealed that the Age and Culture do affect the activity levels of the users of social networking websites.

The fourth hypothesis that was tested revealed that individuals from different cultures have different preferences in topics of conversations in online social networking sites. Their mindset is influenced by their cultural characteristics which prevents them from indulging in conversation on topics that are not considered socially appropriate in their cultural environment. It turned out that each culture preferred topics of conversation that emphasized their cultural identity. For example, subjects from collectivist culture preferred a topic which would allow them to be a part of a group and interact in harmony while individualistic culture preferred topics that set them apart from everyone else and underlined their uniqueness. The test showed that individuals from collectivist cultures would prefer involving themselves in a conversation that allowed them to interact with other on equal level. This allows them to identify themselves as part of the group rather than as separate and detached from it. It also indicated that when compared to people from collectivist cultures, people from individualistic cultures prefer topics of conversation such as status seeking. This is because the topic enables
them to create an image for themselves and increase their status in the eyes of their list of online friends.

The fifth and final hypothesis suggested that people of different ages on social networking sites have different preferences in topics of conversation. This hypothesis was also supported as the interaction effect between age and topic was found to be significant.

6.2 Contributions

The current research has made several contributions to the field of research in social networking sites. They are discussed below in detail.

The study examines the impact of culture on the usage of a social networking site, which has not been done before. It focuses on the most popular Hofstede's cultural dimension, Collectivism vs. Individualism and examines its influence on the users and their preferences. Usually a study performed on such sites recruits subjects from the country of the author itself and does not test for the influence of culture. Hence the use of culture as a significant influential factor in the study of the use of social networking websites is a prominent contribution of this study.
The review of literature will show that studies carried out in this field primarily employ college students as subjects. This may be because they are easy to access and retain throughout the duration of the study. However other age groups are left out, making the sample rather biased. The current study however makes use of two separate and disparate age groups Young and Adult. The Young group consists of subjects 25 years and below while the Adult group consists of subjects 35 years and above. The 10 year gap between the two groups was purposefully created in order to avoid overlapping in preferences and behavior of the subjects. This is likely to happen if the differentiation were to resemble 25-30 years, 31-35 years and so on.

All studies that were carried out prior to the current research have used some form or the other of questioning the subjects, whether in questionnaire form or interview form or any other. The current research makes use of an observation method to 'listen' to the content generated by the user rather than 'ask' questions. This is an important contribution in the present research for it is keeping with the latest trend of Web 2.0 technology which is an observation of user generated content and user control rather than control in the hands of the creator of the technology.
The main contribution of the study lies in the fact that the conclusions drawn from the hypothesis testing can be made use of for marketing purposed. Although they may not be a straightforward direction toward profit, they can lead to an understanding of how users use the social networking sites. This knowledge can be very powerful in terms of creating new ways of generating income. The study points out the various ways in which the content is generated by users and the triggers behind the generation such as the topic and the influencer. These can provide a base from which marketing firms can evolve strategies for income generation and profit increase.

6.3 Limitations

The current study also has several limitations which shall be discussed now.

Culture is a multi-dimensional entity. In the current study however, all the dimensions could not be dealt with. Only the influence of cultural identity on the preferences of individuals was a part of the study.

The United States of America was taken as a broad example of an individualistic culture while India was taken as a broad example of a collectivist culture. It is possible that other countries which are also representative of the above mentioned two cultures might differ in specific ways from their counterparts that have been chosen for this
study. For example Korea or China which are also examples of collectivist cultures may show different results that the Indian data samples collected for this study. However due to a time constraint, only one example for each culture could be taken.

The age groups of the individuals that were taken into account were also not comprehensive. Just two sets of ages were involved so the study was limited in a sense.

The study was also conducted on the basis of data which was gathered over a period of two weeks which was set by the author of this study. The consequences of a longer observation period are unknown unless it is tested. Hence we could say that the data is restricted by a time constraint.

The purpose of the study is to obtain data from the online social networking site profile over a period of two weeks. The idea was to take the data generated as is and then analyze it. No questions were asked, nor any instructions given to the subject. However, once the subjects agreed to participate in the study, they are aware of the time period during which they are being observed. Hence there is a possibility that this awareness might bring in an element of consciousness of being observed on their part. This could lead to an alteration of their behavior from the normal course that it usually takes. It
was not possible to avoid this particular aspect because data could not be collected without the prior consent of the subject.

6.4 Challenges of the study

Unlike other experiments where individuals participating in the experiment are treated as separate and independent units, this experiment required a group to be treated as one unit. This was due to the fact that the unit of analysis was the relation between individuals in a group was being tested as opposed to the individual itself. Hence it was very difficult to find participants for the study for if one individual was recruited, 4 of his/her friends should also be willing to participate. All four individuals must match the conditions set for their control group or else they could not be used for the study. There was a case in which 4 individuals who were all a part of one group and active users of Facebook agreed to participate in the study. However they were family members, the four being, the mother, father, daughter and her husband. This clashed with the age requirements for, as a group, they neither fit in with the Adult group nor the Young group. The mother and father were in their 50's while the daughter and her husband were in their early 20's.

While recruiting participants was hard enough, retaining them also proved a problem. In spite of going through the details of the study prior to consenting to participating,
several subjects withdrew abruptly stating privacy concerns as an issue. This was a common problem among subjects recruited from the American nation. The subjects from India did not have any issues or concerns with participating in the study and stuck with the study till the end of the two week experiment.

6.5 Future Work

Further research can be conducted on this very study by including age groups that have not been covered in the current research. More examples of the two cultures can be used to further justify the results. The influence of Age and Culture on the usage of social networking sites was examined in the present study. The study suggests that they indeed can have an effect on the said usage. Future research can be conducted to identify exactly how and in what ways they affect the usage. However, researchers can further study and learn how they can be utilized to increase the potential of social networking sites as a tool for marketing. Researchers can also examine whether they can be utilized for other purposes as well. The current research has examined the topic from a theoretical point of view and showed a theoretical method to identify the influencers within a group as well as popular topics of conversation that generate user content. Electronic methods of identifying similar results using computer software can be devised in the future for the purpose of structuring such unstructured data. The current research is only a step towards a progressive direction. Plenty of further
research can be carried out and huge profits gained by tapping into the potential of social networking sites. This is still a young field and awaits further research.
7.0 List of References


APPENDIX A

Consent Form

CONSENT FOR PARTICIPATION IN RESEARCH

PURPOSE AND BACKGROUND

Ramya Ponnavolu, Graduate Research Assistant, in the Department of Biomedical, Industrial, and Human factors Engineering, at Wright State University, is conducting a research study to evaluate interactions in online social networking websites. I am being asked to participate in this study because I am active user of Facebook or Orkut and am part of a group of friends who are also active.

PROCEDURES

Upon my agreeing to participate in above mentioned study I will be asked to 'befriend' the investigator's Facebook or Orkut evaluation account online. I will allow this account to remain on my online friend's list for a period of three weeks which corresponds to the period of study. I am not required to do anything specifically for the study except grant the investigator permission to observe my daily activity in Facebook or Orkut for the given period of time. My online interactions with other participants of the study will be observed in particular.

RISKS/DISCOMFORT

I will not undergo any physical or mental risk due to my participation in this experiment as I am not required to perform any task outside of my usual routine.

CONFIDENTIALITY

Participation in the research may result in a loss of privacy during the study period due to the investigator's observation. The investigator will not record any identifying information about me as part of her observations of interaction on the network. This being done to keep my personal identification anonymous once observation is completed. The researcher (Ms. Ramya Ponnavolu), her faculty advisor (Dr. S Narayanan), his research associates and the Wright State University Institutional Review Board may access study records for required review related to the study. My name will not appear in any published reports of the study.

Keeping Study Records: Ramya Ponnavolu will retain her research records for one year after the study is completed, after which all records will be destroyed. However, no personal information about me will be included in these records.

BENEFITS
I will not benefit from my participation in this study.

COSTS

I will incur no cost for participating in this study.

PAYMENT

I will not be paid for participating in this evaluation.

QUESTIONS

If I have any questions about this research study, I may contact the researcher Ramya Ponnavolu at (408) 597-7641 or Dr. S. Narayanan at (937) 775-5044. If I have general questions about giving consent or my rights as a research participant in this research study, I may call the Wright State Institutional Review Board at (937) 775-4462. If I would like a copy of the group (not individual) results of this study, I may contact the researcher. It is estimated that these results will be available on or after January 31, 2010.

CONSENT

I will be given a copy of this consent form to keep.

VOLUNTARY PARTICIPATION

I am free to decline to be in this study. I have voluntarily chosen to participate in this evaluation and am under no compulsion to do so other than by my own will and personal choice. My decision as to whether or not to participate in this study will have no influence on my present or future status as a student at Wright State University. I am also aware that I have the freedom to withdraw from this study whenever I choose to do so and I will not be penalized in any way for doing so.

If I withdraw my authorization, the information already collected may continue to be used, to maintain the integrity of the study.

If I agree to participate I should sign below.

_________________________________  ______________________________
Date                                           Signature of Study Participant

_________________________________
Date                                           Signature of Person Obtaining Consent

Individual Obtaining Consent
### APPENDIX B

Data collected from American subjects 25 years and below for the analysis of activity index

#### Group 1

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<th>Groups</th>
<th>Pages</th>
<th>Applications</th>
<th>Updates</th>
<th>Friends</th>
<th>Photos/Videos</th>
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APPENDIX C

Data collected from American subjects 35 years and above for the analysis of activity index

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## APPENDIX D

Data collected from Indian subjects 25 years and below for the analysis of activity index

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APPENDIX E

Data collected from Indian subjects 35 years and below for the analysis of activity index

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| Subjects | Groups | Pages | Applications | Updates | Friends | Photos/| Activity |
|----------|--------|-------|--------------|---------|---------| Videos | Index    |
| A        | 12     | 35    | 9            | 2       | 157     | 6      | 0.6325   |
| B        | 6      | 25    | 12           | 5       | 122     | 32     | 0.87684 |
| C        | 2      | 9     | 8            | 3       | 65      | 21     | 0.5031   |
| D        | 1      | 5     | 7            | 1       | 62      | 3      | 0.238683 |

Group 2

| Subjects | Groups | Pages | Applications | Updates | Friends | Photos/| Activity |
|----------|--------|-------|--------------|---------|---------| Videos | Index    |
| A        | 1      | 4     | 7            | 2       | 34      | 10     | 0.489417 |
| B        | 3      | 4     | 7            | 3       | 25      | 4      | 0.398853 |
| C        | 1      | 2     | 7            | 2       | 32      | 18     | 0.519003 |
| D        | 92     | 4     | 8            | 19      | 43      | 9      | 0.9      |

Group 3

| Subjects | Groups | Pages | Applications | Updates | Friends | Photos/| Activity |
|----------|--------|-------|--------------|---------|---------| Videos | Index    |
| A        | 3      | 2     | 9            | 8       | 156     | 22     | 0.815362 |
| B        | 2      | 23    | 10           | 2       | 88      | 12     | 0.508023 |
| C        | 18     | 2     | 8            | 4       | 91      | 8      | 0.52809  |
| D        | 0      | 1     | 10           | 3       | 69      | 7      | 0.368946 |

Group 4

| Subjects | Groups | Pages | Applications | Updates | Friends | Photos/| Activity |
|----------|--------|-------|--------------|---------|---------| Videos | Index    |
| A        | 4      | 4     | 20           | 5       | 216     | 50     | 0.620848 |
| B        | 0      | 0     | 9            | 2       | 193     | 4      | 0.216074 |
| C        | 6      | 3     | 7            | 2       | 275     | 1      | 0.297801 |
| D        | 20     | 9     | 8            | 10      | 406     | 11     | 0.784    |
APPENDIX F

Data collected for the analysis of popularity of topic. (Tables show total number of words under each topic)

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