



## Social Media as tool for Conducting Academic Research

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**Abstract**— *Social media, derived from the social software movement, are a collection of Internet websites, services, and practices that support collaboration, community building, participation, and sharing. Data is of major importance to researchers they must collect and analyse new data that will enhance the body of knowledge. Researchers, who require a large amount of participants to contribute to their data collection and assist in their research, are limited in the choice of current research methods including questionnaires, postal surveys and online surveys and also limited in the number of respondents they can obtain to participate in their research. The advent of internet and its use in education and training has revamped the academic research scenario. The advancements in its capabilities and innovative styles of using it have generated new opportunities and spaces for students to share their learning experiences, ideas, and research findings. This paper proposes a new research method through the use of Social media. It aims to evaluate and investigate if social media are a feasible method for conducting research and collecting data. Social media offers researchers the potential to reach millions of people worldwide quickly and at a low cost.*

**Keywords**— *social networking sites (SNS's), academic research, data collection, applications, developer platform*

### I. Introduction

The Internet has had a profound effect on research offering an increased number and range of opportunities for accessing information, gaining and exchanging knowledge and realizing personal learning goals. Social media is an Internet based technology which promotes opportunities for social interaction; among its users. It is enhanced through new communication tools and sites that are called; social networking sites (SNS's) this internet based tools and technologies have audio and visual capabilities along-with capturing, storing, connecting and retrieving features that include:

- Blogs that make authors to publish/post their work and invite comments on it.
- Social bookmarking used to enable users for collating, tagging, and sharing websites of their interests.
- Social networking sites (SNS's) (face book, LinkedIn, etc.) have capabilities of promoting virtual communities to interact and communicate synchronously or asynchronously [1].
- Collaborative editing tools extend documents' sharing and editing facility to multiple users
- Wikis which have capability to promote and facilitate 'common creation' through joint academic ventures.
- Media sharing spaces provide spaces and opportunities to the user community of posting and sharing pictures, podcasts and videos.
- Micro-blogging sites such as twitter provide spaces for publishing very short messages.

In this paper we seek to evaluate the use of (SNS's) in academic research examining existing literature on research and the current research methods. An analysis of (SNS's) will be performed, one particular (SNS's) will be chosen to focus on; this will be examined in detail to determine the features and services it has that can be used by researchers. We will evaluate the feasibility of using (SNS's) in academic research and present a list of potential strengths and weaknesses this new research method may have to offer.

### II. Academic research

Progress in almost every field of science depends on the contributions made by systematic research; thus research is often viewed as the cornerstone of scientific progress. Broadly defined, the purpose of research is to answer questions and acquire new knowledge. Academic research includes the aspect of pursuing a research topic, a hypothesis or an idea in a systematic rigorous fashion, and applying critical thinking in order to answer questions or to produce new and original knowledge, as well as describing the activity and communicating the new knowledge. Research is the primary tool used in virtually all areas of science to expand the frontiers. Research has become such a prevailing phenomenon of our civilization. Increasingly; the conducting of research projects is becoming part of everyone's culture [2] researchers attempt to reduce the complexity of problems, discover the relationship between seemingly unrelated events, and ultimately improve the way we live.

### III. Attributes of a good research

When collecting data it is necessary to factor in the most essential elements to attain credible, trustworthy and reliable research these elements are

- reliability
- validity

- ethics and
- sampling

The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose, we may think of research objectives as falling into a number of following broad groupings:

- To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as exploratory or formulative research studies).
- To portray accurately the characteristics of a particular individual, situation or a group (studies with this object in view are known as descriptive research studies).
- To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies).
- To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis-testing research studies).

#### **IV. Weaknesses of traditional research methods**

An important determinant of the quality of research data is the choice of research method. A researcher should be aware of the weaknesses of traditional methods which may impose problems on the quality of the data. These weaknesses include: manual data entry, cost and time, and the response rate.

##### **a) Manual data entry**

In traditional paper-and-pencil surveys, data entry can be extremely expensive and time consuming. Data obtained from many traditional research methods such as surveys, interviews and observations are not in electronic form unlike an online survey which can be configured to send data to a database or spreadsheet, eliminating the need for manual data entry and potential errors in rekeying data. Automatic data entry is typically an advantage only for online methods. Data will be used to obtain the results and conclusions of your research, so it is important to ensure its accuracy. Your data may also become an important dataset that is used by many others, so errors have the potential to hinder many research efforts.

##### **b) Cost and Time**

Some important factors to consider in any research are time and cost constraints. Depending on the type of research, the costs can vary costs associated with research include: Book and journal purchases, photocopies costs, travel costs to and from research sites, telephone fees, postage, purchase or rental of equipment, purchase of data collection instruments, and software.

The time required to complete a research project is an important consideration, especially for a researcher with submission deadlines for a degree for example. It is reasonable to expect that the data collection and analysis phase of a research project may take several weeks or months depending on the type of research being conducted. This is in addition to the time it takes to develop the research question, write the literature review, locate or develop test instruments and obtain human subjects approval. The data collection and analyses phases usually take the greatest amount of time [3]. As a result researchers should carefully examine what research methods are feasible for the length of time available to them.

##### **c) Response rate**

One of the persistent problems with questionnaires and surveys is the possibility of a high rate of non-response. Non-response is used to refer to the failure of an entire survey to be returned. The validity of survey research involving surveys depends on the response rate and the quality of response. Response rate is the percentage of respondents returning the survey, and the quality of response depends on the completeness of data. The problem with non-response is that it introduces the possibility of bias, because the respondents might not be representative of the group intended to be surveyed [4]. Postal surveys typically suffer from a poor response rate, and, because one does not have any information about the non-respondents, one does not know whether the sample is representative of the wider population.

#### **V. Social media**

Social networking sites (SNS's) have become some of the most popular online destinations in recent years [5]. SNS's typically provide users with a profile space, facilities for uploading content (e.g. photos, music), messaging in various forms and the ability to make connections to other people. These connections (or „friends“) are the core functionality of a social network site [6].

##### **a) Academic use of social media**

Social media seems to have a greater impact on education; particularly, higher education by creating and promoting virtual learning environments for augmenting distributed learning. Learners thus formulate their virtual communities and interact freely with each other. They can exchange their learning experiences, research findings and academic opportunities. There are various reasons and styles which seem justifying the use of social media including web 2.0 for academic purpose. The comprehensive report 2008, [7] revealed that social media was exploited by learners in different ways for augmenting and supporting their learning process, promoting opportunities of reflecting & collaborating, sharing and communicating among distributed learners but depending upon the quality and availability of technical infrastructure for having an access to use it. Keeping in view the ever increasing use of social media by academicians and learners, it seems appropriate to realize the prediction of Armstrong & Franklin (p.27) that “Universities will lose their privileged role as a primary producer of knowledge, and gatekeeper to it, as knowledge becomes more widely accessible through other sources and is produced by more people in more ways” [7] in its true sense.

The use and benefits of social media particularly for academic gains appears to be an area of interest for many researchers in education and social sciences. Different researchers have addressed different areas of using social media at various academic and social levels. The available literature on social networking sites (SNS's) put forward useful ideas for implementing in higher education [8]. It mostly emphasized on creating contents with focusing a little on the way of sharing, interacting and collaborating and socializing through social media sites.

Social media is used for various reasons and purposes in higher education justifiably and it was confirmed by upholding the stance that it is exploited for enhancing the study experiences of learners by providing them with students support services, including e-mentoring, e-feedback and other e-facilities [8]. Social media is being used to enhance communication among and between learners and their communities. Academicians can use it in different styles.

**b) Facebook.**

Facebook is a social utility network that allows you to connect with people in your life; Facebook has grown so viral because it helps people to connect with friends in their lives. People mostly come to facebook to share, chat, comments, post updates and much more with their friends or relations. Facebook has really attracted so much fans, people and organizations providing an ideal population for research data collection. A 2012 Pew Internet and American Life study identified that between 20%–30% of Facebook users are "power users" who frequently link, poke, post and tag themselves and others. [14]

The majority of SNS's, Facebook included, have extended their services beyond creating profiles and connecting with friends, and have created a platform to allow third party developers to build their own applications and services to be linked to a user's profile. Statistics on the popularity and size of SNS's obtained from Alexa.com [10] which is a powerful tool used to rank website traffic show that about 8,219,030 sites link to Facebook .The table below is an extract from Alexa.com on top global sites linking to Facebook.

TABLE 1  
TOP GLOBAL SITES LINKING TO FACEBOOK.

Site	Global rank	Page
1. amazon.com	#9	amazon.com
2. twitter.com	#12	blog.twitter.com
3. vk.com	#26	cs7777777777.....
5. google.fr	#31	Google.fr

These third party applications enhance the functionality and experience of SNS's by allowing third party developers free access to their Application Programming Interfaces ( API) and Software Development Kits (SDK) to add content to a user's profile or provide new social activities. Popular applications allow users to share photos, play games, and share music interests and movies watched with friends and acquaintances. In order to provide meaningful and engaging experiences, these applications consume user profile data, e.g., name, birth date, interests, and more. On current platforms, applications can also consume the profile data of the user's friends. The result of this is that a large amount of user data is now available to third parties. There are numerous ways in which Facebook can be utilized to reach its millions of active users very easily. Some of these methods available for researchers to consider include:

- Develop a custom built research application (e.g. online survey or interactive quiz) with the Facebook Developer Platform
- Building a network or fan page
- Applications on Facebook
- Integrating Facebook into an existing application or webpage
- Mobile Applications
- Facebook Ads

One of the major difficulties in research is collecting data and accessing a large enough population to participate in whatever measuring instrument is being used. It is for this reason, that we see a huge potential for using SNS's to overcome these difficulties (e.g. through using the methods and the option to develop custom built applications which have just been highlighted.

**c) Popularity and Size**

According to facebook reports first quarter 2013 results, daily active users (DAUs) were 665 million on average for March 2013, an increase of 26% year-over-year. Monthly active users (MAUs) were 1.11 billion as of March 31, 2013, an increase of 23% year-over-year and mobile MAUs were 751 million as of March 31, 2013, an increase of 54% year-over-year. The size of SNS's varies greatly as shown in Table 2.

TABLE 2: TOP THREE GLOBAL SOCIAL NETWORKING SITES

Website	URL	Number of users	Ranking in Global top site.
Facebook	http://www.facebook.com/	665,000,000.	#2
Twitter	http://twitter.com/	145,000,000.	#12
Linkedin	http://www.linkedin.com/	75,000,000.	#15

Unfortunately it is not possible to research all SNS's, with such a wide variety of these sites available, therefore one SNS has been chosen to focus on in greater detail to demonstrate and assist in the evaluation.

Facebook, which will be discussed in the following section, has been chosen for a number of reasons, the first that it is currently the world's most popular and top ranked SNS as discussed and seen in Table 2. Other elements which assisted in choosing Facebook include its huge volume of users, its original purpose being built for academics and the services it provides which may accommodate the creation of research tools to which this paper will examine.

**d) Facebook Developer Platform.**

The Facebook Developer Platform which was added in May 2007 provides a framework for third party developers to create applications that will interact with core Facebook features. The platform consists of five components: a markup language derived from HTML (Facebook Markup Language), a REST API for handling communication between Facebook and your application, a SQL-style language for interacting with Facebook data (Facebook Query Language), a scripting language (Facebook JavaScript), and a set of client libraries for different programming languages. The Platform provides many tools to access information, but it is the responsibility of the developer to provide their own business logic through some other language [11] the following are an example of developer platform related statistics:

- More than 70% of its users engage with Platform applications each month.
- More than 550,000 active applications currently on Facebook Platform.
- More than 1 million websites have integrated with Facebook.
- More than 150 million Facebook users engage with Facebook on external websites every month.

The above statistics highlight the widespread proliferation of Facebook and its third party application services.

**e) Social media as a research tool.**

This research shifts the emphasis from research *about* SNS's to research *through* SNS's. Now that SNS's are settled into the market and public, they can be expanded on and developed further. They offer new ways for researchers to run surveys quickly, cheaply, and single-handedly. Facebook is currently an ideal SNS for survey research, thanks to size (currently exceeding 500 million users worldwide), intensive use, and continuing growth. Each Facebook user is directly linked to his or her personal "friends," while also having access to membership in one or more of the 900 million Facebook groups and pages that links millions of other users throughout the world. Facebook groups are virtual communities linking people with some shared interest, attribute, or cause. Researchers can readily sample populations of interest by working through existing groups or creating new ones [12].

A researcher can be as imaginative and creative as they like when developing their own research tool for SNS's, this is something which current research methods do not provide. The researcher's main focus however should be to develop their research tool whatever form is best for obtaining the data they require. SNS's ultimately gives researchers the freedom to be creative when designing their research tool through the use of audio, colours, logos and images. Researchers have the opportunity to have fun with the design process and create surveys for example that are visually pleasing and stimulating in content. The choices are endless. The research tool could be made as fun or informative as they wish even offering incentives to its users to make it more attractive to obtain additional users and assist in future participation by respondents. Where standard online surveys provide options for creating the questions such as single and multiple textboxes, matrix of choices questions and likert scales, SNS's would support many more features such as interactive ratings scales and photo tagging. Creating effective SNS applications does not have to be an intimidating task. Researchers can design research tools to gather specific data as accurately as possible.

Researchers should also bear in mind that the Facebook Developer Platform includes a number of "integration points", which can be used to tie an application into the everyday life of Facebook users. These integration points include: canvas, profile box, left navigation, requests, email, notifications and news feeds. Simple mathematics: the more points you hit, the more people will see your application. The more people who see the application, means the more who will add it [13]. The more people who add it, the more responses a researcher will obtain for their research. There are two things that matter to making an online research tool a success getting users to return frequently and getting users to invite their friends.

**f) Strengths and Weaknesses.**

The previous section explored the potential of using SNS's to conduct research, and all the extra features that they would have. This section focuses on evaluating their use in terms of both potential strengths and weaknesses.

**The strengths of an SNS research tool.**

- Respondents can complete it at a time to suit themselves.
- Greater generalisability may be obtained as social network site users come from a wide and diverse population.
- Cost benefits. It reduces costs (e.g. of postage, paper, printing, interviewer costs, keying in data, processing data).
- Time efficiency. It reduces the time it takes to distribute, gather and process data (data entered onto a SNS research tool can be processed automatically as soon as they are entered by the respondent rather than being keyed in later by the researcher).
- Access to a large population in different geographic areas. It enables a wider and much larger population to be accessed, at any time, from any place.
- Because of volunteer participation (i.e. an absence of coercion), greater authenticity of responses may be obtained.
- Human error is reduced in entering and processing SNS data.
- Endless design options. Additional features may make the tool or application attractive (e.g. graphics, colours, fonts, audio, media and so on). Can truly present well laid out and visually pleasing research tool designs.

- The programming of a research tool can have many benefits such as easier to use for skip logic and randomization of answer choices.
- Data Collection and Data Analyses automatically done by SNS's.
- SNS's are also dynamic, which means they can provide statistical results on an immediate basis.

Quite a number of potential strengths have been identified in utilizing SNS's for conducting research researchers will find these as major advantages over conventional research methods and potentially afford the creation of credible and trustworthy data to contribute to their overall research project.

#### **The weaknesses of an SNS research tool.**

- Limited to accessing the population online and with SNS accounts.
- Developer skills. A certain level of developer skills required to implement own application from scratch. However no previous skills required to create a Fan page or Network on Facebook for example.
- Technical issues. Potential technical glitches that may arise on the applications end, on Facebook's end, on the respondent's end, or at any step in between.
- The layout and readability of research tool content can vary across hardware and software.
- Validity and Reliability. Little or no testing has been carried out as of yet to evaluate the validity and reliability of a SNS research tool.
- Sampling Issues. Relatively little may be known about the characteristics of people in online communities, aside from some basic demographic variables, and even this information may be questionable as stated by Dillman, 2000; and Stanton, 1998.
- Ethical Issues. Consumption of profile data of users and their friends. Applications can get access to this data without explicit user consent or knowledge, as the only consent obtained is from those adding the application.
- Trustworthiness. Participant or SNS user not who say they are. Cheating (e.g. using websites to look up answers). Participant takes test multiple times - may skew research results.
- Non- response or non use of the research tool.
- No researchers present to clarify questions or content of their research tool.

Above are the weaknesses that SNS's may pose if utilized for academic research. These were identified during the progress of this paper research. Among the listed weaknesses are developer skills and technical issues. If a researcher wants to develop his or her own research tool with which to integrate with SNS service, a certain level of previous knowledge and experience with a programming language, database and web hosting fundamentals will be required. This is a drawback and will have an impact on the number of researchers, especially from a non-computing background for example that will choose to implement their own research tool. This does not restrict all opportunities to use SNS for academic research however, as SNS's have many more features and services to offer that require no development skills and are very straight forward to set up and configure.

#### **VI. Conclusion**

The recent proliferation of online social networking sites such as Facebook, Twitter and MySpace, has provided researchers with developer platforms and services to develop their own research tool for carrying out academic research. The number of users on these sites is growing and the range of users is expanding, which will continue to broaden the opportunities for using social media as a research tool. Whether or not Facebook continues along its current trajectory, social networking is certain to grow and so too are the opportunities it affords for faster, less expensive, and better research. The author recognizes that there is plenty of scope for further research in this area. The immediate area would be the development of a social media application for research data collection to evaluate its success. Identifying the features and services of other social networking sites(SNS's) would allow greater insight into how SNS's could be utilized for academic research and it would help to identify further areas where researchers may be capable of implementing reliable purpose built research tools to attract SNS's users to assist in their data collection. The current study could be expanded to include other SNS's available apart from just Facebook.

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