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Social Networking Sites: Evaluating and Investigating Their Use in Academic Research

Fiona Redmond
Dublin Institute of Technology, fiona.redmond@dit.ie

SOCIAL NETWORKING SITES: EVALUATING AND INVESTIGATING THEIR USE IN ACADEMIC RESEARCH

Fiona Redmond[1], Dr. Deirdre Lillis[2]

[1]*School of Languages, Dublin Institute of Technology, Kevin Street, Dublin 8 (IRELAND)*
[2]*School of Computing, Dublin Institute of Technology, Kevin Street, Dublin 8 (IRELAND)*
fiona.redmond@dit.ie, deirdre.lillis@dit.ie

Abstract

Researchers must collect and analyse new data that will enhance the body of knowledge. It is for this reason that data is of major importance to researchers. All aspects of a research project involve data, from navigating existing data, to understanding how data is used in the world and why it is important to learn to collect data and make predictions. Researchers need to consider the types of data that are possible and examine and weight each option so they can determine what sources of data will answer the research questions or hypotheses.

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.

This paper proposes a new research method through the use of Social Networking Sites (SNS's). It aims to evaluate and investigate if SNS's are a feasible method for conducting research and collecting data. SNS's offer researchers the potential to reach millions of people worldwide quickly and at a low cost. Facebook currently ranked as the second most popular website worldwide has over 500 million active users. MySpace has over 130 million. The majority of the world's highest ranked SNS's today provide a developer platform for people to create their own applications.

Keywords: Academic research, research methods, methodologies, social networking sites (SNS's), data collection, facebook, surveys, developer platform, applications.

1   INTRODUCTION

The principal aim of this paper is to investigate and evaluate the use of SNS's in academic research. It will examine existing literature on research and the current research methods. This examination will identify what makes good research, along with weaknesses of current research methods. An analysis of SNS's will be performed to identify the services they provide. One particular SNS 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 to reach its millions of users. It 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.

2   ACADEMIC RESEARCH

Research has become such a prevailing phenomenon of our civilisation that all of us are impacted by it [1]. Increasingly, the conducting of research projects is becoming part of everyone's culture [2]. Research is the systematic process of collecting and analysing information (data) in order to increase our understanding of the phenomenon with which we are concerned or interested [3].

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. It requires that the students struggle with new knowledge and apply new format and structure in their reporting of the results, and to argue effectively [4].

2.1 Essential Elements of Good Research

When collecting data it is necessary to factor in what the author considers the most essential elements to attain credible, trustworthy, reliable research:

- ethics
- sampling
- reliability
- validity

The author recognises that these elements are by no means exhaustive. By conducting a deep and thorough research through various research and research methods literature it was found that these four elements were universal and omnipresent in all existing knowledge and studies concerned with conducting research.

2.2 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: access to a larger population to obtain a wider diverse response, response rate, cost and time, and manual data entry.

2.2.1 Access to Larger Population

One of the most common techniques for collecting primary data is survey research. For years, traditional "pencil-and-paper" surveys have been used to collect primary data in different fields. However, this traditional format has always had a disadvantage of a limited number of potential respondents, and a slower distribution and return time [5].

Access is a key issue and is an early factor that must be decided in research. Researchers will need to ensure that access is not only permitted but also, in fact, practicable. There are many reasons that might prevent access to a larger population, and researchers cannot neglect this potential source of difficulty in planning research. Not only might access be difficult but also its corollary – release of information – might be problematic. It is not always enough to be able to 'get to' the sample population, the problem might be to 'get the information out' to the wider public, particularly if it could be critical of powerful people [6].

2.2.2 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 [7]. 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.

2.2.3 Cost and Time

Two important factors when the planning phase of any research are time and cost constraints. Depending on the type of research, the *costs* can vary. Consider a researcher who wants to conduct a mailed survey with 300 participants. The researcher will need to pay for 600 envelopes, 300 copies of the survey materials, postage to mail 300 packets, and postage for 300 return envelopes, plus copying and postage for any follow-up mailings, needed to increase the return rate. This would prove quite costly for the researcher. Other costs associated with research include: Book and journal purchases, photocopies and loan 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 [8]. As a result researchers should carefully examine what research methods are feasible for the length of time available to them.

2.2.4   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. This also eliminates potential errors in rekeying data. Automatic data entry is typically an advantage only for online methods. For e-mail surveys, data still need to be manually transferred to a database. 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.

3   SOCIAL NETWORKING SITES

Social networking sites (SNS's) have become some of the most popular online destinations in recent years [9]. 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 [10][11] although most also provide opportunities for communication, the forming of groups, hosting of content and applications. Beyond profiles, uploading photos, friends, comments, and private messaging, SNS's vary greatly in their features and user base. Some have video-sharing capabilities; others have built-in blogging and instant messaging technology. There are mobile-specific SNSs (e.g., Foursquare, itsmy and Mobikade), but some SNS's also support mobile interactions (e.g., Facebook, MySpace, and Twitter). Many SNS's target people from specific geographical regions or linguistic groups.

3.1   Popularity and Size

The size of SNS's varies greatly. Statistics on the popularity and size of SNS's were obtained from Alexa.com [12] which is a powerful tool used to rank website traffic. The worlds top SNS's according to Alexa.com at time of writing this paper has over 75 million members each, with Facebook, the worlds most popular SNS recently reaching over 500 million users worldwide, as shown in Table 1.

Website	URL	Number of Users	Ranking in Global Top Sites
Facebook	http://www.facebook.com/	500,000,000	#2
Twitter	http://twitter.com/	145,000,000	#9
Linkedin	http://www.linkedin.com/	75,000,000	#25
MySpace	http://www.myspace.com/	122,000,000	#35
Vkontakte	http://vk.com/	90,336,000	#36

Table 1: Top six global social networking sites

A search was carried out to see the top 40 global sites on the web; details of the five SNS's found among that list can be seen in Table 1. The table shows the top five SNS's used worldwide at present

in order of their one month Alexa traffic ranking. The one month rank is calculated using a combination of average daily visitors and page views over the month. The site with the highest combination of visitors and page views is ranked number one for example.

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 worlds most popular and top ranked SNS as discussed and seen in Table 1. 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.

3.2 Facebook

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. 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 utilised to reach its millions of active users very easily. Some of these methods available for researchers to consider include:

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

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 the author sees a huge potential for using SNS's such as Facebook to overcome these difficulties (e.g., through using the methods and the option to develop custom built applications which have just been highlighted and will now be discussed further).

3.3 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 [13].

The following are an example of developer platform related statistics at time of writing this paper:

- 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.

4 INVESTIGATING SOCIAL NETWORKING SITES 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 [14].

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 maths: 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 [15]. The more people who add it, the more responses a researcher will obtain for their research.

4.1 Virality

A popular buzzword among SNS's since their proliferation is *virality*. Virality is a term which refers to the spread of information through SNS's and the applications integrated into them in the same way that viruses causing disease spread. Because of the links among friends in Facebook, information can spread in this way. Speaking about virality, The adoption of new Facebook applications can be phenomenally fast in this environment, in part, because as one person adds an application, that news can be passed along to friends automatically and they choose to add the application themselves [16].

If an applications viral nature encroaches on their recipients too much, they will be perceived as a nuisance or spam and their negative utility to the recipient will outweigh their positive utility to the application and (potentially) the sender. Viral messages should be embedded in the appropriate places and presented as information that a user has the option of consuming, rather than as an action or request that the user feels an obligation to address. Therefore a kind of passive virality is better for recipients than active virality: they get the information if they want it, but if it is undesired, the cost is insignificant [17]. For example, Facebook applications that require users to invite *n* friends before experiencing the application utilise active virality for both the sender (inviting friends) and the recipient (responding to invitations). There are two things that matter to making a research tool a success: getting users to return frequently and getting users to invite their friends (virality).

4.2   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. These will be listed in two separate tables.

Figure 1 concisely lists the strengths of an SNS research tool.

Strengths of an SNS Research Tool

- **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.

- **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.

- **Cost benefits**. It reduces costs (e.g. of postage, paper, printing, interviewer costs, keying in data, processing data).

- Because of volunteer participation (i.e. an absence of coercion), greater **authenticity** of responses may be obtained.

- **Data Collection** and **Data Analyses** automatically done by SNS's.

- Respondents can complete it at a **time** to suit themselves.

- **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 randomisation of answer choices.

- SNS's are also **dynamic**, which means they can provide statistical results on an immediate basis.

- Greater **generalisability** may be obtained as social network site users come from a wide and diverse population.
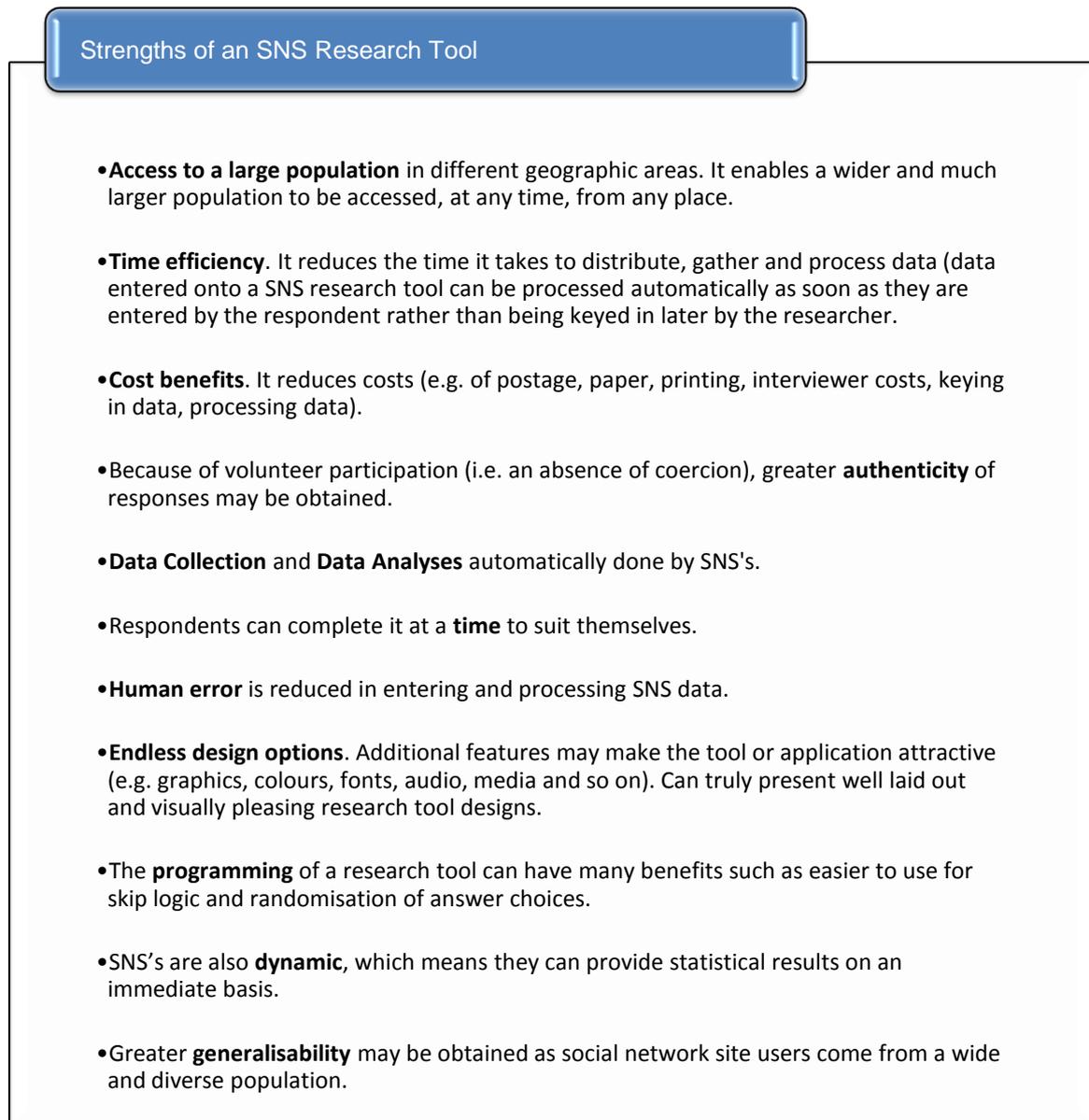
Figure 1: Strengths of a SNS Research Tool

As Figure 1 illustrates, quite a number of potential strengths have been identified in utilising SNS's for conducting research. Within the list of strengths are: access to a larger population, endless design options, and the cost and time benefits. 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. These four highlighted strengths highlight just a few of the benefits this method has over the weaknesses of current research methods.

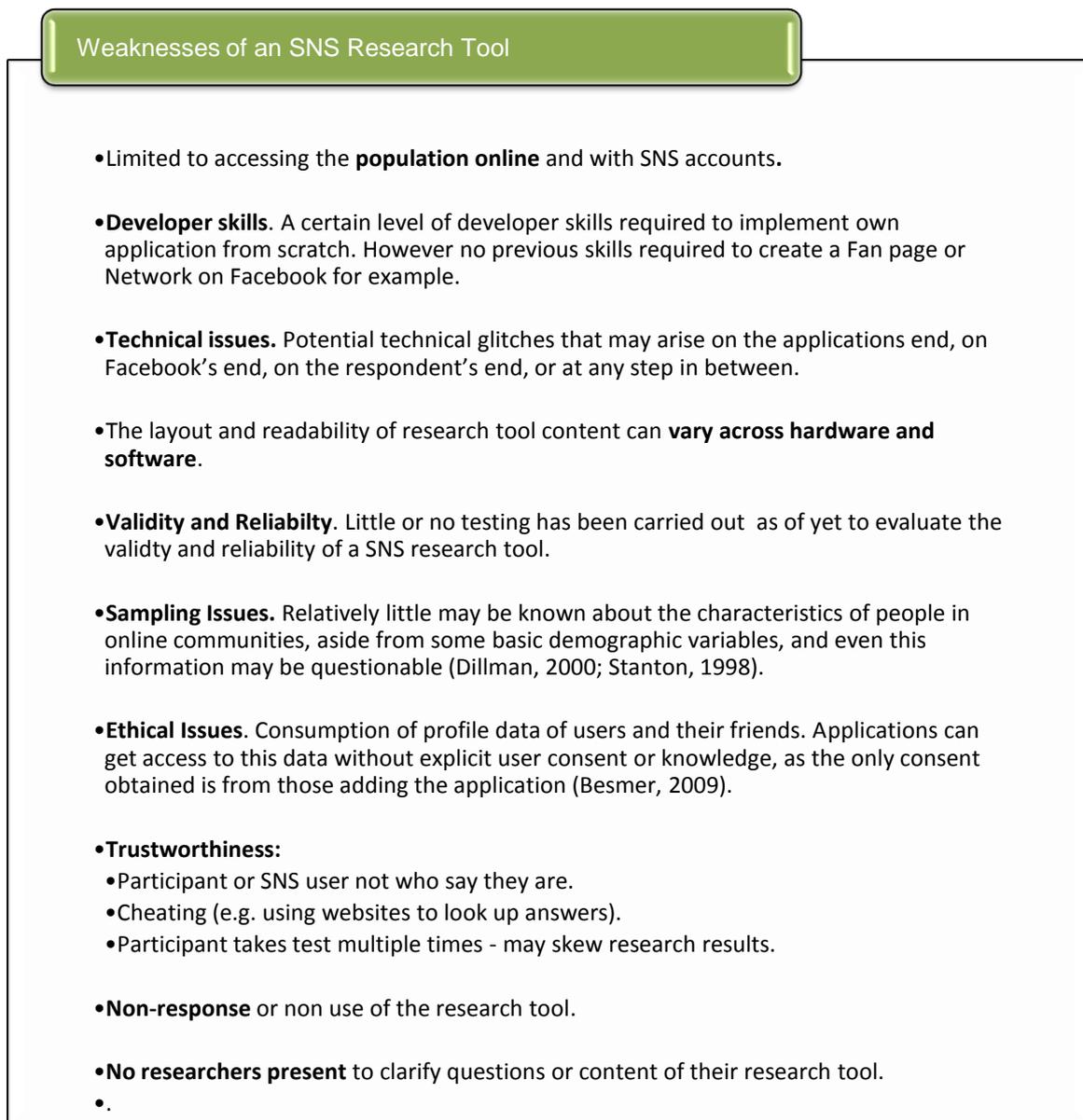Figure 2 concisely lists the weaknesses of an SNS research tool.

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 Reliabilty**. Little or no testing has been carried out as of yet to evaluate the validty 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 (Dillman, 2000; 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 (Besmer, 2009).

- **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.
- .

Figure 2: Weaknesses of a SNS Research Tool

Figure 2 illustrates the weaknesses that SNS's may poise if utilised 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. The creation of a fan page or a network is examples of this.

Validity, reliability, sampling and ethics are also listed as weaknesses of this research method. These were identified in Section 2.1 as the four most essential elements to be considered to attain credible, trustworthy and authentic research. At this early stage of investigating the feasibility of using SNS's as a tool for academic research, and with the timeframe limitations of this paper, these elements are listed as weaknesses. Further investigation on these would be highly recommended.

Another weakness worth highlighting is that access to the researchers target audience is limited in two ways. This research method has limited access to: (i) the population with internet access and (ii) among that population, those that are active users of SNS's.

5   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 SNS's 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.

While SNS's offer many potential advantages in terms of time and cost, researchers should also be aware of the weaknesses and limitations of carrying out research through SNS's, especially with regards to representativeness of the sample, access to the population online only and those with a SNS account. The principles of good research have not changed even though the technology available may have advanced.

The author recognises that there is plenty of scope for further research in this area. The immediate area would be the development of a SNS application for research data collection to evaluate its success. Identifying the features and services of other SNS would allow greater insight into how SNS's could be utilised 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 users to assist in their data collection. The current study could be expanded to include other SNS's available apart from just Facebook. Other SNS's were identified as having released Developer Platforms also allowing third parties to implement applications for those individual SNS.

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