# SOCIAL MEDIA AS BUSINESS ECOSYSTEM: MODELING USERS' ADOPTION OF SOCIAL NETWORKING SITES

by

**Milad Fathi**

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**Abstract**

Social Networking Sites (SNSs) have become of fundamental importance in shaping the dynamics of the way people communicate. A primary objective of social media practitioners is to formulate strategies that can lead to higher number of adoption rates among users. The aim of this research is to study adoption of SNSs and to shed light on the factors that influence user preferences. To that end, first, by borrowing theories from business ecosystem, platform business, the technology acceptance model (TAM), and hedonic and utilitarian benefits an initial set of potential measures is reached. Next, the measures are used to create a quantitative survey which is completed by a sample of 100 university students. An exploratory factor analysis performed on the collected data yields four dimensions: 1) platform, measured by control over privacy and ease of use 2) user benefits 3) network, measured by number of friends and members and 4) contributor benefits. Consequently, the results of a conjoint analysis based on uncovered components highlight the considerable importance of control over privacy and ease of use from a user perspective. Moreover, findings show that for users, an optimal SNS where other users share mostly entertaining content, contributors share mostly useful content, applications are mostly fun, control over privacy of posts exists, a good number of friends are registered and accessible, and is easy to use. Results also show that content shared by external contributors is almost as important as content shared by users in shaping preferences. These findings are expected to be of value to both scholars and social media and communications practitioners.

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## 7. Dedication

I would like to express my sincere gratitude to my supervisors Dr. Sungchul Choi and Dr. Waqar Haque for the continuous support of my master's study and related research, for their patience, motivation, and immense knowledge. Their guidance helped me in all the time of research and writing of this thesis. I could not have imagined having better advisors and mentors.

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# Chapter One: Introduction

Social media is defined by Kaplan and Haenlein (2010) as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content". There are various forms of social media, including news portals, e-commerce websites, Wikis, blogs, messaging applications, and social networking sites.

In particular, Social Networking Sites (SNSs) allow users to create public or partially public profiles within a defined system, have lists of connections or friends who they interact with, and browse their own connections and those of other users (Boyd & Ellison, 2012). Through these platforms, users communicate and share content in the form of texts, photos, videos or audio. Examples of such platforms are global SNSs (e.g. Facebook, Twitter, Instagram, Google+ and YouTube) as well as locally known ones (e.g. Sina Weibo in China, VKontakte in Russia and Cloob in Iran). Regardless of their type and location, SNSs have fundamentally changed the way people and businesses connect and communicate. They act as platforms with active ecosystems of users and contributors around them (Zhu & Iansiti, 2007) that facilitate creation and global diffusion of content and often consumption of applications (Jones, Ramanau, Cross, & Healing, 2010; Subrahmanyam & Greenfield, 2008).

While many large SNSs are created by developers, start-ups and large enterprises on a continuous basis, a relatively small number of them are currently popular and have gained users' mass adoption. Thus, a question that arises, and one that is the main subject of this research, is: What characteristics must a SNS possess to enhance users' adoption? In other

words, how do the characteristics of the components that form a SNS impact a user's preference for that SNS?

Previous research has found various success factors for social media, including design and user-friendliness (Agarwal & Venkatesh, 2002; Benbunan-Fich, 2001; Lavie & Tractinsky, 2004; Palmer, 2002), user satisfaction (Horan, Abhichandani, & Rayalu, 2006; McKinney & Yoon, 2002; Sugianto & Tojib, 2006; Szymanski & Hise, 2000), quality (Barnes, 2005; Bilsel, Büyüközkan, & Ruan, 2006; Cao, Zhang, & Seydel, 2005; S. Kim & Stoel, 2004; Lin, 2007; Park, Gretzel, & Sirakaya-Turk, 2007) and content (Baloglu & Pekcan, 2006; Cheung & Huang, 2002). Various studies have also focused on SNSs in particular. For instance, Ross et al. (2009) investigate Facebook usage from a user perspective using the Five-Factor Model of personality (McCrae & John, 1992). Dwyer, Hiltz, and Passerini (2007)'s study is mainly focused on perceived trust and privacy among Facebook and MySpace users. In a study on adoption of social media, Curtis et al. (2010) applied the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003) using non-profit organizations as the sample. However, despite the emergence of SNSs as a noteworthy stream of theory, what is surprisingly overlooked in studies on SNS adoption is a system view, which would not only take into account technology level factors and user characteristics, but would also explain network effects, importance of user engagement and the role of third party contributors and their offerings. The impact of network effects as a competitive advantage has been studied extensively by various scholars including Katz and Shapiro (1994). Also considerable literature exists on the role of third party contributors, and their interactions with users in defining the fate of technology platforms (Boudreau & Hagiu, 2009; David S Evans, 2003; Gabszewicz &

Wauthy, 2004; Iansiti & Levien, 2002; Moore, 1996; Peltoniemi, 2006; Weyl, 2010). Hence, it is only natural to expect these actors and their perceived attributes to have an impact on the way users view SNSs and ultimately adopt or not adopt them.

Business ecosystem is a novel stream of theory under the rubric of strategic management which has been extensively used for studying and modeling Information Technology businesses, due mainly to its dynamic system view. As defined by James F Moore (1993) and Anggraeni, Hartigh, and Zegveld (2007) business ecosystem (herewith BE) is a network of businesses and individuals that co-evolve by interacting through technology platforms. Whereas BE as a theory has similarities with platform business (Gawer & Cusumano, 2002; Zhu & Iansiti, 2007) and multi-sided networks (Boudreau & Hagiu, 2009; David S Evans, 2003; Weyl, 2010), it is particularly useful for studying social media due mainly to its emphasis on not only the technology platform itself, but also the role of users, third party developers and external contributors. As Li (2009) in a study on Cisco's technological BE highlights, symbiosis, co-evolution and platform are defining characteristics of business ecosystem, all of which are arguably the defining characteristics of a typical SNS. Hence, what this research primarily postulates is that perceived characteristics of components that form the business ecosystem of a SNS can, to a good extent, explain users' preference for that SNS.

Several steps are taken to study this posit. First, based on the literature, a conceptual model dubbed Social Networking Ecosystem (SNE) is introduced. The model identifies three categories of measures for social networking sites, namely, platform-related measures, user-related measures, and contributor-related measures. Subsequently, items that are expected to form each category are extracted from the literature of business ecosystem,

platform business, the technology acceptance model (TAM), hedonic and utilitarian benefits, etc. The measures are then empirically tested in a two-stage study. In study 1, a sample of 100 university students was asked to rate the proposed measures in terms of importance in choosing and using a social networking site. The results of an Exploratory Factor Analysis on the collected data revealed four components, namely, platform characteristics (control over privacy and ease of use), user benefits (fun and utility), network (number of friends and members), and contributor benefits (fun and utility). In study 2, based on the 4 components extracted in study 1, a conjoint analysis with 6 attributes (each with 2 levels) and 8 profiles was performed utilizing a sample of 110 university students. The results highlight the considerable importance of control over privacy of posts as well as ease of use from a user perspective. Taking into account the considerable amount of literature on hedonic and utilitarian benefits in the technology adoption domain, an interesting finding of the conjoint analysis is where the sources of these benefits are. Based on the findings, users' favourite source of hedonic benefits are other users' posts as well as contributors' applications, while contributors' content is the favored source of utility. Overall, according to respondents, an optimum social networking site is one in which users share mostly entertaining content, contributors share mostly useful content, developers develop mostly entertaining applications, users have control over privacy of their posts, the SNS is easy to use, and lastly, a good number of friends are registered on it.

This study makes significant contributions. It addresses a clear need for a holistic model that would explain how SNS characteristics can impact users' preferences towards social networking sites. Given the multidisciplinary nature of this study, it contributes to two

novel and understudied streams of theory, namely, business ecosystem (strategy) and social media (Information Systems). Business ecosystem in particular has gained ground in studies concerning the IT industry ever since its introduction by Moore (1993). However, despite previous use of the term 'Social Media Ecosystem' by R. Hanna, A. Rohm, and V.L. Crittenden (2011), this work is the first to extend the notion of business ecosystem to the domain of social media both conceptually and empirically, as the authors of the mentioned study do not rely on the literature of business ecosystem for their conceptual work.

Whereas the conceptual model and its application can pave the way for future related research, the outcome of the exploratory factor analysis uncovers the internal dynamics and makings of a typical social networking site. The results of the conjoint analysis, on the other hand, provide a clear comparison between the importance of those components that form SNSs from a user perspective, for the first time. Ultimately, the findings of the conjoint analysis uncover what the characteristics of the optimum social networking site is for the users and where the sources of various benefits are in a SNS. While countless SNSs are developed each year by enterprises, start-ups and developers, very few succeed in reaching mass adoption by users. The results of factor analysis presented in this paper can be readily used for social media strategists as a strategic framework for social networking site analysis. Moreover, social media practitioners can find the findings of the conjoint analysis valuable as they clarify which attributes of SNSs are more important from a user perspective, and can therefore be used as a guideline for directing their focus and resources to the right aspects. Findings aside, researchers in this domain may find the novel methodology developed for this research to be of value as well. The combination of

measure development through conceptual and empirical modelling and then utilization of those measures for a conjoint analysis is seemingly unprecedented in the social networking site research domain, which also proved to be robust, and fruitful. Finally, this thesis extends topics such as multi-sided business, hedonic and utilitarian benefits, network effects and TAM in the context of social networking site. In particular, measurement of hedonic and utilitarian benefits separately for users and contributors was another novelty of this research.

In this chapter, a broad review of the literature of both business ecosystem and SNSs is provided.

### 2.1.1 Business ecosystem

The concept of business ecosystems (BE) was first introduced by J.F. Moore (1993) and has since received considerable attention from both academics and businesses (Adner, 2006). Despite a lack of consensus over the term "business ecosystem" (Zhang & Liang, 2011), it can be defined as a network of companies and individuals which work on the same technology platforms, co-evolve together and ultimately share the same fate (Kilamo, Hammouda, Mikkonen, & Aaltonen, 2011; J.F. Moore, 1993; Peltoniemi, 2006; Zhang & Liang, 2011). BE as a theory overlaps with various other research domains (Kinnunen, Malvalehto, & Haapasalo, 2011). In particular, it has many similarities with multi-sided networks (D.S. Evans, Hagiu, & Schmalensee, 2006), platform businesses (Gawer & Cusumano, 2002; Katz & Shapiro, 1994; Zhu & Iansiti, 2007) and value chains (Porter, 1998), as they all emphasize the role of partnership among numerous organizations in innovation and bringing solutions to the end user. Inspired by biological ecosystems, what differentiates BE is that it offers a dynamic, nonlinear, system view (Moore, 2006) which not only includes value chains, but also takes into account entities with rather indirect roles, such as businesses producing complementary solutions, outsourcing companies, regulatory agencies, financial institutes, research institutes, media, universities and even competitors (Anggraeni et al., 2007; Bosch J., 2009; M. Iansiti & R. Levien, 2004; J.F. Moore, 1993; Moore, 1996; Yu, Li, & Zhao, 2011). Given the emphasis of BE on technology platforms (Iansiti & Levien, 2002), it also highlights the importance of

synergies between users and third party contributors in co-evolution of complex business networks.

Today doing business is no longer a solitary road, as competition takes place between BEs, with the 'healthier' ecosystem having the competitive edge (Hearn & Pace, 2006). Interestingly, as Gueguen and Isckia (2011) highlight, in these BE wars the level of member exclusivity is generally low, meaning that companies often take part in various BEs, and therefore, it is difficult to identify where the borders of a BE are to be defined. Hence, businesses governing BEs compete to attract not only more customers, but also third party contributors that can add complementary capabilities to their offerings (Adomavicius, Bockstedt, Gupta, & Kauffman, 2006; de Reuver & Bouwman, 2012; Peltoniemi, 2006). According to Marco Iansiti and Roy Levien (2004b), in order to be successful a BE needs to stay robust, innovative and productive, which can only be achieved through strong business network ties. All in all, in comparison to playing a lone hand, being part of a healthy BE opens doors to new opportunities for creating value (Bosch J., 2009).

### 2.1.2 Business Ecosystem as a Perspective for Studying Social Networking Sites

Due mainly to its dynamic view, BE has been applied in numerous, mostly technology related, contexts. In fact the majority of more recent studies on business ecosystem are dedicated to expansion of the theory to other areas of applicability. In their well-known book, Marco Iansiti and Roy Levien (2004a) apply concepts from BE to a range of businesses from software, biotechnology to internet industries. Quaadgras (2005) uses BE to study the complexities of the RFID (radio frequency ID) industry while Vuori (2005) finds BE the most appropriate tool to model knowledge intensive service (KIS)

organizations. In an attempt to model business ecosystem health den Hartigh, Tol, and Visscher (2006) introduce their BE framework and measure the health of the Dutch IT industry. Rong, Hu, Lin, Shi, and Guo (2015) reason that BE is more suitable for modeling the emerging concept of Internet-of-Things compared to the classic supply chain view. BE and especially its platform related capacities have also been found ideal for studying diverse notions, such as open innovation (Harland, Wust, & Dedehayir, 2014; Xiaoren, Ling, & Xiangdong, 2014), entrepreneurship education (Brush, 2014), electric mobility (Giesecke, 2014; C. Lu, Rong, You, & Shi, 2014), and big data (Yoo, Choi, & Lee, 2014). Throughout the above mentioned studies, as well as numerous other examples, certain components and characteristics of businesses ecosystem have been emphasized that make the concept an ideal theoretical backbone for modelling social networking sites. Below some of these attributes have been discussed.

In a business ecosystem, one or more organizations take the lead and enforce the direction of the entire network through controlling key resources and establishing regulations (James F Moore, 1993). According to Marco Iansiti and Roy Levien (2004a) the right strategy for BE leaders is to find ways to share value with other actors within the business network in order to reach sustainable growth. A BE leader facilitates innovation by simplifying the connections between businesses within a network as well as businesses and end users through technology platforms (de Reuver & Bouwman, 2012; Nikou, Bouwman, & de Reuver, 2014; Peltoniemi, 2006). Quality, improvements and openness to third party agents are a number of platform characteristics that are controlled by the ecosystem leader (Bosch J., 2009).

One of the most important characteristics of platforms, and perhaps the main reason for their popularity as a business model, is their two-sided nature, in that, not only a platform facilitates creation of complementary products and services, it is also used as chokehold, a customer gateway (Moore, 2006) through which customers interact with each other as well as the BE leader and contributors (Boudreau & Hagiu, 2009; David S Evans, 2003; Gabszewicz & Wauthy, 2004; Weyl, 2010). Mobile application stores are perhaps the most prominent examples of two-sided networks, but car manufacturing industries and shopping centers are other instances where platforms have proven critical (David S Evans, 2003).

The two-sided (or multi-sided) nature of platform as a central building block of business ecosystem automatically makes both users and third party developers especially important. As Katz and Shapiro (1994) address, users' effect on business networks can be both direct and indirect. Users often make assumptions about popularity of BEs and tend to choose the one perceived to have the highest number of consumers, because they assume that a more popular network will give them access to more applications. Apart from direct revenue, more customers can also result in more applications for the respective platform due to higher demand (Eisenmann, Parker, & Van Alstyne, 2006).

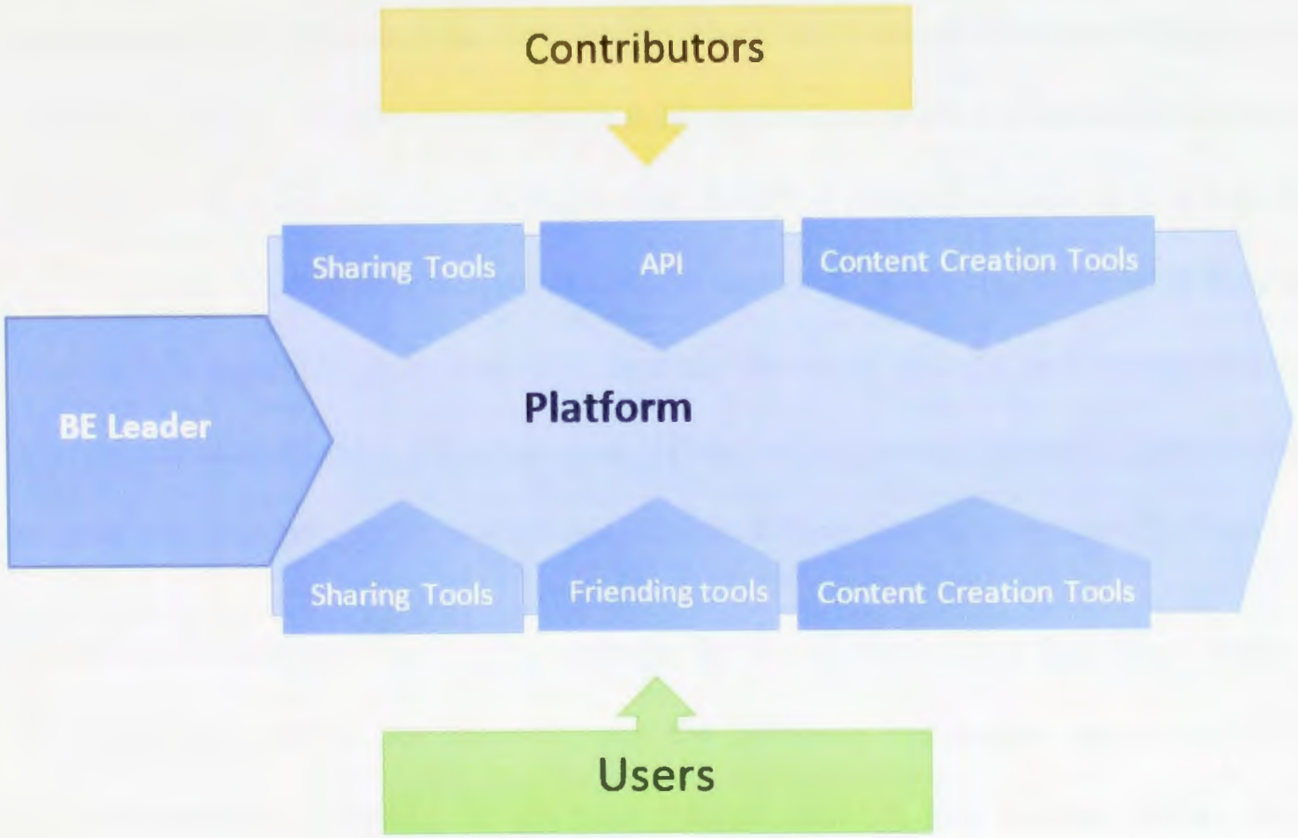
While users form one side of the platform, third party contributors complete the other side. Importance of developers has been extensively studied in the context of software and mobile industry in particular (see for example, D.S. Evans et al. (2006); Gonçalves and Ballon (2011); de Reuver and Bouwman (2012); Nikou et al. (2014); Bergvall-Kåreborn and Howcroft (2011); Tee and Gawer (2009)). Through interactions with users and using technologies provided to them by the leader via the platform, developers offer complementary products or services that not only bring in revenue, but also extend the

capabilities of the ecosystem (Zhu & Iansiti, 2007). As an example in an SNS context, Facebook provides a platform that users use for sharing content. Additionally, through its API (Application Programming Interface), Facebook enables developers to create applications for its platform or make existing ones accessible. Applications and content are both consumed and shared by users, who in turn have a hand in creation of content which is shared publicly or with their peer network. In a nutshell, each actor reaches its goal, in that, Facebook gets an ecosystem that is constantly extended by developers and users, developers create applications using the platform and reach a higher number of users benefiting the customer chokehold (Moore, 1996) that Facebook is, and users get to create and share content, and consume the applications provided to them through the platform. As a fruit of this symbiosis between various actors and a healthy co-evolution, Facebook's Social Networking Ecosystem has been adopted by over 1.19 billion active users as of June 2015 (TheNextWeb, 2015).

## 2.2 The Social Networking Ecosystem Conceptual Model

The aim of the Social Networking Ecosystem conceptual model (herewith, SNE model) is to envisage and visualize the structure of a typical network formed around a social medium from a business ecosystem perspective.

**Figure 2.1: Social Networking Ecosystem Model**




As figure 2.1 above illustrates, the SNE leader provides the critical online platform. The platform provides contributors and users with the necessary tools, the primary functionality of which is enabling and simplifying the processes of creating, connecting and sharing. The synergies that occur as a result ultimately lead to more adoptions and co-evolution of the network. Below, various components of the model have been discussed in more detail.

### 2.2.1 The Leader and the Platform

Moore (1996) is of the view that governing the interactions in business ecosystems is mostly performed through quasi-democratic mechanisms and community governance systems. In his studies on the issues related to governance, Moore compared ecosystem governance with markets and hierarchies. Moore (2006) believes that what happens in the ecosystem is internalization of the business systems and the markets based on which they are connected under the influence of the leaders of the community. As mentioned above,

Marco Iansiti and Roy Levien (2004a) also stated that common fate governs business ecosystems. Vos (2006) is of the view that governance of business ecosystems supplies the members with a roadmap based on which they cooperate to achieve a common goal, and a freedom to reach the objectives of the system based on personal initiatives in a way that no interference hinders their motivations. At the same time, enhancing the level of business ecosystem's capability in dealing with external forces of changes and maintaining the internal rate of innovation, the governance utilizes mechanisms of controlling the members to make sure that their performance is not in contradiction with the common objective.

Similar to conventional business ecosystems, the Social Networking Ecosystem leader is the entity that governs the network, sets the necessary regulations and controls key network resources, including the platform (Marco Iansiti & Roy Levien, 2004a). Some social media platforms are initiated by individual developers, some by start-ups (e.g. Instagram) and some by large enterprises (e.g. Google+). But regardless of the size and origin of SNSs, the strategies and standards that the SNE leader incorporates and enforces are critical in reaching optimum adoption rate. Apart from design characteristics, openness to third party developers (Kilamo et al., 2011), security, privacy and data protection policies (Dwyer et al., 2007; Iachello, Smith, Consolvo, Chen, & Abowd, 2005), as well as users' control over level of disclosure (Feijóo, Pascu, Misuraca, & Lusoli, 2009) are all governance related decisions that are made by the ecosystem leader and can impact the fate of an SNE.

As highlighted earlier, the online platform is the main building block of a social networking business ecosystem. In an IT context, Eisenmann et al. (2006) define platform as a set of tools or components that provide the necessary building blocks for application

providers. Following a business ecosystem analogy, the platform attracts and serves both users and third party contributors (Zhu & Iansiti, 2007). Users are provided with the necessary tools to have friend lists (Boyd & Ellison, 2012), and create and share content in numerous formats, including text, image, Emoji, videos and audio (Richard Hanna, Andrew Rohm, & Victoria L Crittenden, 2011). An application in turn is defined as a software product that offers a solution to an end user (Iansiti & Richards, 2006). Contributors are also provided with content creation and sharing tools. However, more sophisticated SNEs such as Facebook also allow for creation of applications through their API (Application Programming Interface) (Gjoka, Sirivianos, Markopoulou, & Yang, 2008). Bosch J. (2009) highlights a number success factors for online platforms, including ease of application development, constant improvement of the platform features, and installed base.

The extensively studied Technology Acceptance Model (TAM) has been used in the context of technology platforms by numerous scholars (M.-C. Lee (2009); H.-P. Lu and Yu-Jen Su (2009); Y. Lu, Zhou, and Wang (2009); Moon and Kim (2001); Yen, Wu, Cheng, and Huang (2010)). The two main constructs of TAM, usefulness and ease of use, are present in majority of studies on adoption, quite often accompanied by constructs from additional theories. One can therefore expect usefulness and ease of use to be important attributes of SNE platforms from a user perspective. Moreover, hedonic benefits, referred to gains pertaining to pleasure, and utilitarian benefits, gains which have regards to usefulness (Babin, Darden, & Griffin, 1994) have also been applied in studies concerning adoption of Information Technologies (H.-W. Kim, Chan, and Gupta (2007); Van der Heijden (2004)).

### 2.2.2 Users

While emphasis on the role of users in the process of co-evolution is one of the defining characteristics of business ecosystem as a theory (Marco Iansiti & Roy Levien, 2004a; Quaadgras, 2005; Zhang & Liang, 2011), this role is perhaps most prominent in the context of social networking sites. Kaplan and Haenlein (2010) refer to users and user generated content as main building blocks of social media in their definition. Ellison (2007) as well as Boyd and Ellison (2012) also give users similar level of attention in their description of social networking sites. The importance of users has also been investigated from a marketing perspective in recent studies on viral marketing and word-of-mouth (Brown, Broderick, & Lee, 2007; Chu & Kim, 2011; Mangold & Faulds, 2009; Thackeray, Neiger, Hanson, & McKenzie, 2008). Users create content and/or share them over SNSs either with their direct friend list or publicly. On a study concerning news sharing on social media platforms, C. S. Lee and Ma (2012) and Pai and Arnott (2013) found that users driven by gratifications of information seeking, socializing, and status seeking were more likely to share news in social media platforms. Prior experience with social media was also found to be a significant determinant of news sharing intention. As Von Hippel (2005) discusses, the major advantage of this user-centered innovation (or in other words democratization of innovation) is that the outcome is far better tailored to users' taste.

Whereas creation and sharing of content is considered the users' direct effect, a group of scholars have found users to also impact business networks indirectly (Katz & Shapiro, 1994). Installed base is referred to as the number of units of a system in use (Eisenmann et al., 2006). According to Zhu and Iansiti (2007) a larger installed base leads to a larger supply of applications and thereby impacts the capabilities of a business ecosystem

platform. Moreover, consumer expectation is another area where the role of users becomes important. Users make rational assumptions about the installed base of a platform and tend to choose the platform which they believe has the highest number of users and thereby more applications (Zhu & Iansiti, 2007).

The private/public structure of SNSs makes it important to distinguish between two types of users (Papacharissi, 2009). The first group represents an individual's existing social ties, which a person knows in real life before befriending them on SNSs (Ellison, Steinfield, & Lampe, 2007). These users are referred to as "*friends*". The second group is users that are registered on an SNS but the individual does not necessarily know personally. These are herewith referred to as "*members*". As the literature emphasizes, it is important to distinguish between these two groups of users, and more importantly, how their perceived characteristics can impact the adoption decision of individuals.

### 2.2.3 Contributors

For a business ecosystem to be successful, it requires diverse contributors that constantly provide applications which are of high quality and variety (Bosch J., 2009; D.S. Evans et al., 2006; Zhu & Iansiti, 2007). In a two-sided business ecosystem platform, users account for one side and contributors (also referred to as developers) form the other (D.S. Evans et al., 2006; Nikou et al., 2014; Quaadgras, 2005).

In an SNS setting, the roles of contributors are diverse. These include external entities, such as news agencies and content providers that use the SNS to get their messages across to users. Software application developers are another type of contributors. They use Application User Interfaces (APIs) provided by sophisticated SNSs such as Facebook and

Twitter to develop software applications. In fact, as highlighted by Gjoka et al. (2008), much of Facebook's success is said to come from the fact that it opened the doors of its online platform to application and game developers whose contributions have made online social networking richer and more enjoyable to users (Xu, Ryan, Prybutok, & Wen, 2012). Interestingly, this relationship is two-way, in that, developers such as Zynga and King have transformed themselves from small start-ups to publicly listed enterprises mainly through the success of games developed for online social networks (MacMillan, Burrows, & Ante, 2009). Other examples include companies that provide social networking analysis (SNA) solutions which are used for social media listening and analysis of SNS performance, network structure and content reach for both individuals and businesses. Examples of such software applications are iGraph, Pajek and Gephi (Combe, Largeron, Egyed-Zsigmond, & Géry, 2010; Diakopoulos, Naaman, & Kivran-Swaine, 2010).

In the previous chapter, the conceptual model of a Social Networking Ecosystem was presented. The model identified three categories of SNS measures namely, platform-related, user-related and contributor-related. The impact of the proposed SNS measures on users' adoption was empirically tested through two consequent studies. In study 1, measures were used to create a quantitative survey, which was completed by a sample of university students. Next, a factor analysis was performed on the collected data to extract any unobserved components. Lastly, in order to evaluate and compare the importance of extracted components in shaping users' preference of SNSs a conjoint analysis was conducted.

## 3.1 Measurement of Constructs and Hypotheses

In this section, potential measures for each of the three categories are presented together with the major studies from which they were adopted. Table 3.1 below shows the items that are expected to measure the impact of platform, users and contributors on SNS preferences.

**Table 3.1: Measures for platform, users and contributors**

| Category | Item | Literature |
|---|---|---|
| Platform-related | Ease of use | (M.-C. Lee, 2009; Moon & Kim, 2001; Yen et al., 2010) |
| | Privacy | (Dwyer et al., 2007; Iachello et al., 2005) |
| | Connecting Capabilities | (Subrahmanyam & Greenfield, 2008; Subrahmanyam, Reich, Waechter, & Espinoza, 2008) |
| | Platform Improvements | (Bosch J., 2009) |
| User-related | Number of SNS Friends | (Papacharissi, 2009; Zhu & Iansiti, 2007) |
| | Number of SNS Members | (Papacharissi, 2009; Zhu & Iansiti, 2007) |
| | Fun obtained from user generated content | (Moon & Kim, 2001; Xu et al., 2012) |
| | Utility obtained from user generated content | (Moon & Kim, 2001; Xu et al., 2012) |
| | User Engagement | (Hwang & Thorn, 1999) |
| Contributor-related | Fun obtained from contributor generated content | (Xu et al., 2012) |
| | Utility obtained from contributor generated content | (Moon & Kim, 2001; Xu et al., 2012) |
| | Fun obtained from contributor generated applications | (Xu et al., 2012) |
| | Utility obtained from contributor generated applications | (Moon & Kim, 2001; Xu et al., 2012) |
| | Variety of contributors generated content | (Bosch J., 2009; Bosch & Bosch-Sijtsema, 2010; D.S. Evans et al., 2006; David S Evans, 2003) |
| | Variety of applications developed by contributors | (Bosch J., 2009; Bosch & Bosch-Sijtsema, 2010; D.S. Evans et al., 2006) |

### 3.1.1 Platform-related Measures

One of the most extensively studied topics in technology adoption is the technology acceptance model (TAM) (M.-C. Lee, 2009; Moon & Kim, 2001; Yen et al., 2010). Throughout these studies, ease of use has been regarded as a main construct of adoption, and is therefore expected to impact consumers' SNS adoption as well. The second

platform-related item is privacy. According to Dwyer et al. (2007), privacy concerns highly impact users' social media behaviour. Given that the extent of control over privacy of content is one of the basic regulations enforced by the social networking ecosystem leader, the item is expected to influence user preferences for SNSs. Subrahmanyam & Greenfield (2008) address that ultimately, connecting and reconnecting with other users is the primary motivation for social media usage. Hence, perceived connecting capabilities of a social networking platform may impact an individual's evaluation of an SNS. Lastly, Bosch (2009) is of the view that rate and quality of improvements to a software platform can considerably impact its performance. The extent to which this impact is felt by the users and whether it is associated with their adoption decision are questions that this study addresses. Overall, it is postulated that perceived platform characteristics, as measured by the above-mentioned items, impact users' choice of social networking sites.

### 3.1.2 Users-related Measures

Five items were expected to measure the impact of users on SNS preference. The literature of business ecosystem and platform business both emphasize the role of installed base, and perceived popularity of a platform among users. When it comes to social networking sites, as highlighted by Papacharissi (2009), it is critical to distinguish between perceived number of *members* (SNS users that the individual does not necessarily know in real life), and *friends* (real life friends who are also registered on an SNS). Hence, the two form separate user-related items. Next come the fun and utility that a user expects to obtain from an SNS. Given the extensive use of hedonic and utilitarian benefits described in the literature as two main constructs of technology adoption, both fun and utility are expected

to be relevant for content shared by users. The last user-related item is user engagement, which is an integral ingredient for success of IT systems (Hwang & Thorn, 1999).

### 3.2.3 Contributors-related Measures

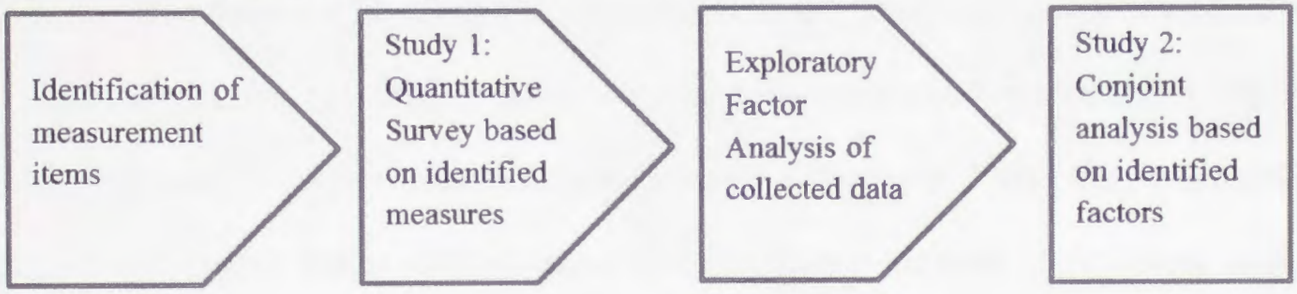
Apart from users, contributors also have a hand in creation of social media content. Hence, naturally, one can expect the benefits obtained from contributors to impact individuals' preferences for SNSs. As highlighted in chapter two, apart from content creators, developers are another group of contributors that provide users with fun and utility by creating applications. As a result, in order to measure the impact of contributor offerings, two items measure the benefits obtained from contributors' content, and two items measure the benefits obtained from contributor's applications. This approach is different from previous research, where hedonic and utilitarian benefits are treated as a separate variable for the entire product or service. Additionally, while openness to contributors' content and applications is important, the variety of these offerings has been found to be of significance (Bosch J., 2009; Bosch & Bosch-Sijtsema, 2010; D.S. Evans et al., 2006; David S Evans, 2003). Thus, the variety of contributors' content, and the variety of applications are measured by two separate items. Overall, it is postulated that perceived characteristics of contributors, measured by the above mentioned attributes are associated with individuals' choice of SNSs.

## 3.2 Research Design

A total of 15 items (see table 3.1) were listed as potential measures for the three proposed measure types (platform-related, user-related and contributor-related). The envisaged measures were used as the basis for a quantitative survey in which individuals were asked to rate the items in terms of importance in respondents' choice of social networking sites

on a scale of 1 to 7 (1 not important at all, and 7 very important). The results of the survey were then used for an *Exploratory Factor Analysis* (Thompson, 2004). Finally, in order to measure the relative importance of each of the uncovered components, a conjoint analysis was performed. Figure 3.1 below illustrates the steps that define the methodology of this research.

**Figure 3.1: Research design diagram**




### 3.2.1 Exploratory Factor Analysis

Exploratory Factor analysis (EFA) is a popular statistical method used for uncovering the underlying structure of a relatively large set of variables, finding unobserved latent variables, and reducing the number of factors to an optimum number (Thompson, 2004). As highlighted by Bryant and Yarnold (1995), EFA enables researchers to find the linear factors which best fit the data.

Factor analyses differ based on the type of factoring and rotation method and the criteria for determining the number of factors varies from one researcher to another. The most common type of factoring, and the one utilized in this study, is Principal Component Analysis (PCA). In this method, factoring is continued until the minimum number of factors with maximum variance is reached (Jolliffe, 2014). Given the exploratory nature of this study, one major advantage of PCA is that it incorporates fewer assumptions about the

underlying structure of the model. Another advantage of PCA is said to be the robustness of the least squares approach to approximating the covariance or correlation matrix (Jolliffe, 2002).

The next step is to *rotate* the resulting factor model. Rotation is a method of maximizing high loadings and minimizing low loadings in order to reach the simplest possible structure. Rotations can be categorized to either *oblique*, where factors can correlate, or *orthogonal*. In this research, a direct oblimin rotation method was used, which is categorized under oblique rotation methods (Jennrich & Sampson, 1966). This was mainly due to the fact that factors were expected to be partially correlated. Nonetheless, as the results in the next chapter will show, minimal difference was observed in the results obtained from alternative methods.

Once the results of the factor analysis are obtained, an important question is to determine which factors to retain. The following rules of thumb have been suggested by Field (2013):

1. Only factors with eigenvalue larger than 1 should be retained.
2. Retained factors should account for at least 70% of the variance.
3. In reference to the scree plot of all factors, only factors before the breaking point are to be retained. The scree plot graphs the eigenvalue of each factor against the factor number, and is a typical output for factor analysis (see figure 5 for an example).

Traditionally, once the factor structure and pattern coefficients are determined, factors are named for the purpose of clarification.

### 3.2.2 Conjoint Analysis

In order to evaluate and compare the relative importance of extracted components a conjoint study was performed. Conjoint analysis refers to a market research technique that is used to determine how individuals' preferences for a product is developed, and to measure the trade-offs that a consumer makes when adopting a product or service, in this case a social networking site (Green, Krieger, & Wind, 2001; Nikou et al., 2014). A fundamental assumption of conjoint analysis is that the overall utility of a product for a user is a combination of all the utilities associated with each attribute of that product. Hence, the primary purpose of conjoint analysis is to decompose the utilities of each product attribute, and respective levels. Thus, in marketing research, where conjoint analysis is most widely utilized, product attributes are the independent variables and overall product evaluations represent the dependent variable of the statistical model. Overall, in comparison with soliciting subjects' evaluation of single product attributes, conjoint analysis does a better job at simulating the real-life product adoption decisions by accounting for trade-offs between all product attributes at the same time.

Two approaches to conjoint analysis previously applied by scholars are the direct choice approach (stated) and indirect discrete choice (revealed). In the indirect approach, respondent's actual behaviour and/or usage is observed and recorded for the purpose of data analysis, while in the direct approach respondents are asked express their evaluation of product attributes. While the indirect approach has its own usages, its main drawback is said to be lack of statistical precision. Moreover, the indirect method is said to be only suitable for well-defined (as opposed to hypothetical) and distinctively known product attributes (Bradley & Kroes, 1992).

Approaches to conjoint analysis also vary depending on the number of product profiles and the method of data recording. Full-profile is the traditional form of conjoint analysis, in which all combinations of attributes and levels are used for creation of product bundles and respondents are asked to evaluate all bundles. The main problem associated with the full-profile approach is that, as the number of attributes and their respective levels grow past a certain point, the number of resulting profiles may become too many for respondents to consider and evaluate. As a remedy, a *fractional factorial design* (Gunst & Mason, 2009) is typically utilized which uses adequate number of all combinations that would appropriately represent all possible combinations with negligible errors. As highlighted in more detail in the next section, in this study, given the number of attributes and levels, a fractional factorial design with a total of 8 profiles is used.

Moreover, conjoint analysis methods vary in terms of methods of data collection. Two methods in particular are more popular: rank, or rate (Gustafsson, Herrmann, & Huber, 2013). In the rank method, respondents are asked to provide a ranking for bundles which ranges from 1 to the total number of bundles present. In the score approach, subjects are asked to assign a Likert scale (Brooke, 1996) value to the bundle that would appropriately represent their preference. In this research, the rate method was utilized, and respondents were asked to rate the bundles on a scale of 1 (not favourable at all) to 10 (very favourable).

### 3.2.3 Justification of Approach

Previous research has explored various methodologies to study the constructs that impact adoption in different contexts. A group of studies (such as Varma Citrin, Sprott, Silverman, and Stem Jr (2000) and Eastin (2002)) make use of least squares regression analysis to

determine econometric models for acceptance of products. Another widely utilized approach is Structural Equation Modelling (SEM) (see for example, Chau (1996) and Wu, Wang, and Lin (2007)). Through a series of steps, including exploratory and confirmatory factor analyses, SEM enables researchers to uncover the factors that define a theoretical model. It also determines the relationships between dependent variables, as well as between dependent and independent variables at the same time.

The approach utilized in this research is somewhat different, as it makes use of exploratory factor analysis and conjoint analysis over two separate studies to determine the attributes that shape consumer preferences. There are several justifications for the selected approach. Firstly, given that the literature of SNSs is still at its infancy, the number of studies on SNS adoption is quite small and there is seemingly no consensus over the right direction for investigation of the topic. Hence, in order reach a comprehensive model for SNS adoption it is necessary to not only account for various constructs previously studied in this domain, but also rely on theoretical works in other streams of theory with explanatory capacity. Since this can automatically result in a high number of measures, exploratory factor analysis (study 1) becomes particularly useful, as it enables reduction of measures to an optimum number. EFA can also help find the underlying structure within all items and reach a set of components that can account for most of the variation in the collected data. Moreover, a primary objective of this research is to investigate the relative importance of various constructs which the exploratory factor analysis yields. Conjoint analysis can accommodate this need better than other methods, as it provides clear analytics about the relative importance of each attribute in addition to optimum product bundles from a user perspective. Specifically, the conjoint instrument has several advantages. Firstly, it allows

for a comparatively more realistic decision model, as it forces respondents to express their preference towards an SNS profile that consists of several attributes. As such, by determining decision models for each respondent, conjoint analysis provides a decision model that aggregates the evaluations obtained from all respondents (Louviere, 1988). Secondly, as Hair (1984) highlights, the conjoint instrument makes no assumptions in regards with the nature of the relationship between dependent and independent variables (such as linearity), which makes it ideal for studies that are of exploratory nature. Thirdly, conjoint analysis can accommodate both metric and non-metric variables with nominal or ordinal scale. Lastly, not only conjoint analysis measures consumer preference for attribute level variables, it can also determine the impact of levels of each attribute on preference (Bajaj, 1998).

Overall, whereas the output of the factor analysis on data collected from study 1 is noteworthy from theoretical viewpoint, these findings are complemented by the conjoint analysis which offers practical insights that can be readily used by practitioners, while also contributing to the body of knowledge.

### 3.3 Operationalization

In order to operationalize the research design, in study 1, a research questionnaire (Appendix 1) was used to collect quantitative data from subjects. The questionnaire consisted of 4 sections. Section 1 included four demographics items, namely, age, gender, nationality and education level. In Sections 2 to 4 respondents were asked to rate platform, users and contributor related items in terms of relative importance in their decision to adopt a social networking site. The results of the survey were then used for an exploratory factor analysis, results of which would form the basis for the conjoint analysis in study 2.

The design and operationalization of conjoint analysis was performed in reference with the procedure proposed by Green and Srinivasan (1978). As shown in Table 4.5, based on the results of the factor analysis (Table 4.4), a total of 6 attributes, each with two levels, were considered to create the fractional factorial design. There were a number of motivations for using binary choice levels for each attribute. First, it would allow for an accurate, clear-cut comparison between users' choices (for instance, between fun-oriented and usefulness-oriented user content). Secondly, given that six attributes can be a rather large number for a conjoint analysis, and considering the intangible nature of the product (i.e. SNS), binary attributes would allow for keeping the number of conjoint profiles at 8 and thereby preventing respondent fatigue.

Also, whereas in study 1 contributors' content and applications formed a single component, the two were intentionally treated as two separate attributes. The reasoning behind this decision was to allow for a better comparison between the importance of applications, and content created by SNE contributors. This seemed necessary, especially considering the fundamental differences between applications and content as contributor offerings, and also the organizations that create them. Moreover, having a separate attribute for applications would shed light on the importance of openness to third party contributors for SNSs from a user perspective.

By making use of text and figures, each profile was presented on a separate card (see Appendix 2). As Carlsson, Frykblom, and Lagerkvist (2005) highlight, an introductory script about the process of conjoint analysis and the necessity of providing realistic responses may not only facilitate data collection, but can also result in more accurate responses. As such, respondents were asked to study instructions about the experiment

before completing the survey. After an introduction about the attributes and how they would change from one bundle to another, 110 university students were asked to rate each card on a scale of 1 to 10 in terms of preference (1 meaning not favourable at all and 10 meaning very favourable ).

### 3.3.1 Pilot Study

For both studies, pilot data collection was conducted. For study 1, research questionnaires were distributed among a sample of 10 participants, who were asked about their understanding and interpretation of questions. Based on participant feedback, wording of one of the survey questions was modified.

The same procedure was followed for study 2, the conjoint analysis. A total of 10 respondents were asked to evaluate 8 cards each representing an SNS profile. Based on respondent feedback, cards were modified and pictorial illustrations were also added in order to reduce the cognitive challenge for respondents (Appendix 2).

## 3.4 Sampling

In line with numerous studies in this domain, Xu et al. (2012) are of the view that university students are proper subjects for research on social networking sites, because of their high usage of such websites. Following the same view, undergraduate and graduate students at the University of Northern British Columbia were chosen as the sample for this study. A table display was set up and students passing by were asked for their participation. Printed research questionnaires were distributed among the sample by the author. For the first stage of the study a sample of 100 students was reached. For the study 2 (conjoint analysis) a total of 80 students participated. Sampling for the second stage of

the study was performed in similar manner. In that, the campus community were asked to participate in the survey.

## 3.5 Data Analysis

### 3.5.1 Factor Analysis

Normally the first step before factor analysis is the Kaiser-Meyer-Olkin and Bartlett's tests (Thompson, 2004). Kaiser-Meyer-Olkin (KMO) is a measure of sample of adequacy. As a rule of thumb, the result of the test is expected to be above 0.5 in order to proceed to the factor analysis (Dziuban & Shirkey, 1974). Also, Bartlett's test of sphericity examines the overall significance of all the correlations within the correlation matrix, and its results require to be statistically significant before moving on to the factor analysis (Jackson, 1993). Both tests were performed as part of the factor analysis in IBM SPSS.

In regards with the outcome of factor analysis, the first step is to investigate the correlation matrix, which presents the intercorrelations between all measures. According to Field (2013), the procedure for reducing the dimensionality of the correlation matrix is to look for items that correlate highly with a group of items but correlate poorly with the rest. Those measures that do correlate highly represent a 'factor', which creates a new dimension "that can be visualized as classification axes along which measurement variables can be plotted" (Field, 2013). Two scores that merit special attention are factor scores, which are "the scores of a subject on a [...] factor" (Rietveld & Van Hout, 1993), and factor loadings, which shows the correlation of original variables with a factor. Factor loadings are particularly helpful for determining the "substantive importance of a particular variable to a factor" (Field, 2013) by squaring the factor loading and thereby determining the amount of variance explained by a factor.

### 3.5.2 CONJOINT ANALYSIS

The conjoint analysis cards used for this study (Appendix 2) were prepared based on the orthogonal design generated by IBM SPSS. As mentioned earlier, orthogonal design creates a fractional factorial design which contains a set of conjoint profiles that would statistically represent all possible combinations of attributes (Green & Srinivasan, 1990). Given the number of attributes and levels, the design resulted in 8 profiles which were used for data collection.

The script used for creation of the design in SPSS was the following:

```
CONJOINT PLAN=[...]
/SCORE=X1 TO X8
/SUBJECT=ID
/FACTORS=users (DISCRETE)
contributors (DISCRETE)
applications(DISCRETE)
privacy(DISCRETE)
ease-of-use(DISCRETE)
network(DISCRETE).
```

After data collection, analysis of respondents' ratings of the 8 conjoint profiles was performed in IBM SPSS version 22. Also two usual goodness of fit tests, Pearson's R (Bollen & Barb, 1981) and Kendall's tau (Romesburg, 2004) statistic, were used to evaluate the extent to which the model can account for the variance in respondents' preference ratings.

In this chapter findings from the exploratory factor analysis (Study 1) and the conjoint analysis (Study 2) are presented.

## 4.1 Study 1: Exploratory Factor Analysis

In this study, 100 university students were asked to rate 15 items relative to the three proposed groups of SNS measures (platform, users and contributors) in terms of importance in choosing to adopt a social networking site. The following sections present the results from this study.

### 4.1.1 Sample Demographics

The demographics of participants in this study are shown in Table 4.1. 45 percent of respondents were Canadian nationals, and 55 percent were international students. The average age of respondents was 27.3 years old. The majority of respondents (62%) were between 21 to 30 years old. Also, 58% of respondents were male and the rest were female.

**Table 4.1: Summary of respondent demographics**

| | Count | Percentage |
|---|---|---|
| Nationality | | |
| *Canadian* | *45* | *45* |
| *Indian* | *13* | *13* |
| *Iranian* | *13* | *13* |
| *Chinese* | *7* | *7* |
| *Other* | *22* | *22* |
| Age | | |
| *15 to 20* | *14* | *14* |
| *21 to 30* | *62* | *62* |
| *31 to 40* | *17* | *17* |
| *Above 40* | *7* | *7* |
| Gender | | |
| *Male* | *58* | *58* |
| *Female* | *42* | *42* |

### 4.1.2 Descriptive Statistics

Table 4.2 highlights the mean and standard deviation values for the 15 items envisaged to measure the three proposed SNS components: platform, users and contributors.

**Table 4.2: Descriptive statistics for study 1**

| Item | Mean | Standard Deviation |
|---|---|---|
| Ease of Use | 6.091 | 1.016 |
| Privacy | 5.918 | 1.476 |
| Connecting Capabilities | 5.673 | 1.199 |
| Platform Improvements | 4.765 | 1.353 |
| Fun derived from users' content | 5.357 | 1.333 |
| Utility derived from users' content | 5.102 | 1.247 |
| Number of registered friends | 5.234 | 1.571 |
| Number of registered members | 4.418 | 1.804 |
| Fun derived from contributor content | 4.602 | 1.768 |
| Utility derived from contributor content | 4.857 | 1.705 |
| Fun derived from contributor applications | 4.408 | 1.728 |
| Utility derived from contributor applications | 4.510 | 1.783 |

As the table highlights, ease of use has the highest mean value (mean = 6.091) followed by privacy (mean = 5.918). The item with lowest mean value is fun derived from contributor applications (mean = 4.408)

### 4.1.3 Sample Adequacy

Given the large number of items measured in study 1 it is important to ensure that the sample size is large enough to allow for the factor analysis. Table 4.3 shows the results for the KMO and Barlett's tests.

**Table 4.3: KMO and Barlett's test results**

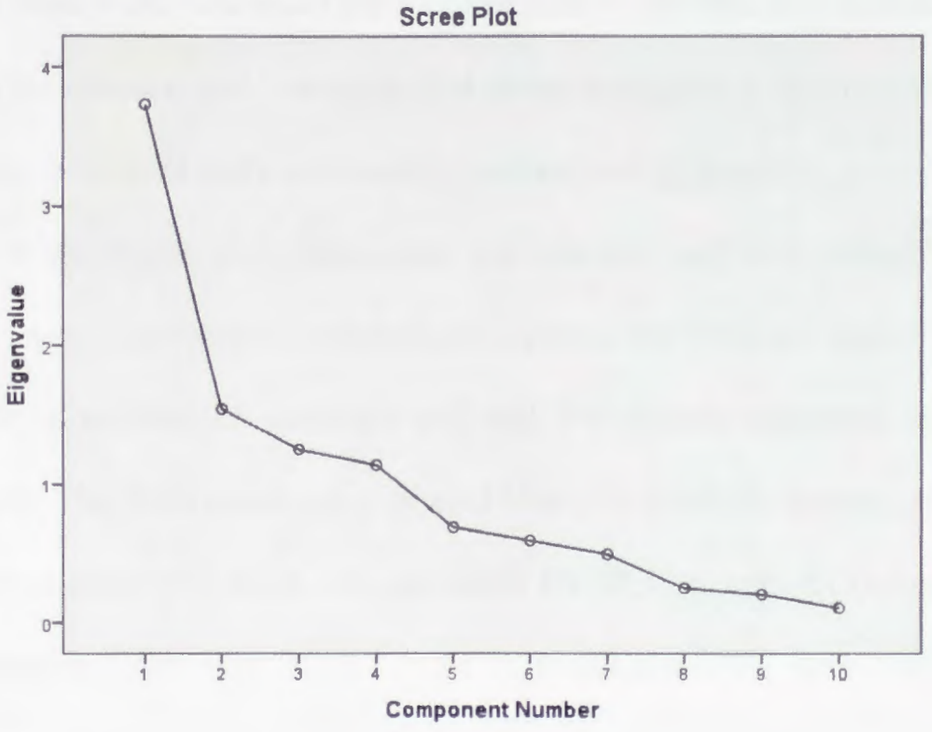
| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | 0.699 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 438.410 |
| | Sigma | 0.000 |

As the results show, Bartlett's test of sphericity, which tests the overall significance of all the correlations within the correlation matrix, was significant, indicating that it was appropriate to use the factor analytic model on this set of data. The Kaiser-Meyer-Olkin measure of sampling adequacy indicated that the strength of the relationships among variables was high (KMO = .69), thus it was acceptable to proceed with the analysis.

### 4.1.4 Factor Analysis Findings

A factor analysis of the current results was performed using the Principal Component Analysis. Of the 15 proposed items presented in Table 1, 10 items with eigenvalues greater than 1 were retained. A series of factor analyses were conducted which indicated that four factors gave the most interpretable solution, and would explain an acceptable level of variance. An Oblimin rotation, converged in 18 iterations, was performed since factors were expected to be correlated. As the scree plot in figure 4.1 shows, the first four components have eigenvalues above 1 and represent a significant portion of the variance.

**Figure 4.1: Scree plot**




The obtained pattern matrix is displayed in table 4.4. Only items with factor loadings above .50 are shown.

**Table 4.4: Pattern Matrix**

| Scale Items | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Contributors – Content usefulness | .93 | | | |
| Contributors – Applications usefulness | .89 | | | |
| Contributors – Applications fun | .88 | | | |
| Contributors – Content Fun | .86 | | | |
| Network – Number of registered members | | .80 | | |
| Network – Number of registered friends | | .77 | | |
| Users – Users' content usefulness | | | .91 | |
| Users – Users' content fun | | | .84 | |
| Platform – Privacy | | | | .85 |
| Platform – Ease of use | | | | .65 |
| Percentage of Variance | 37.32 | 15.42 | 12.52 | 11.39 |
| Eigenvalue | 3.732 | 1.543 | 1.252 | 1.139 |

The cumulative variation explained by the four extracted components was found to be 76.66 percent. Factor one accounted for 37.32 percent of the variation in data. This factor was labeled Contributors, and consisted of 4 items dedicated to hedonic and utilitarian benefits derived from third party contributors' content and applications.

The previously envisaged users dimension was divided into two components labeled Network and Users. The Network component accounted for 15.42 percent of the variation and consisted of number of members and real life friends registered on the social networking site. The third component, labeled Users, consists of hedonic and utilitarian benefits obtained from SNS users and accounted for 12.52 percent of the variation. The fourth and component, platform, accounted for 11.39 percent of the variation and consisted of two items, ease of use and privacy.

## 4.2 Study 2: Conjoint Analysis

The factor analysis performed in study 1 uncovered four social networking site components, platform, users, network and contributors. But the extent to which perceived characteristics of these components are valued by users in their decision to adopt a social networking site remains a question. Conjoint analysis is a widely used statistical technique that is utilized to determine the relative importance of attributes that individuals associate with a product or service, and the levels that make up those attributes. Apart from importance, conjoint analysis can also reveal the optimum product profile based on the captured opinions of users.

### 4.2.1 Attributes and Levels

For the conjoint design, the four previously extracted components were used as a basis to define six products attributes each with two levels (see Table 4.5).

**Table 4.5: Attributes and levels for conjoint analysis**

| Component | Attributes | Levels | |
|---|---|---|---|
| Users | User-generated content | Fun | Useful |
| Contributors | Contributor-generated content | Fun | Useful |
| | Applications | Fun | Useful |
| Platform | Privacy | With control over privacy | All public (no control) |
| | Ease of use | Easy to use | Sophisticated |
| Network | Network | Lots of friends | Lots of members |

The 'users' component was represented in the conjoint analysis by 'user-generated content' and two levels: fun and useful. The 'contributors' component was represented by two attributes, namely, 'contributor-generated content' and 'applications', each with two levels: fun and useful. Due to their distinctive nature, the two 'platform' related items, 'privacy' and 'ease of use', were each used as separate attributes. The envisaged levels for privacy were "with control over privacy" and "all public" (no control over privacy), while the two levels for the 'ease of use' attribute were simply 'easy to use' and 'sophisticated' (see Appendix 2).

### 4.2.2 Respondents' Demographics

The demographics of participants in this study is shown in Table 4.6. The average age of respondents was 26.2 years old, with 54.55 percent of respondents being male and the remaining 45.45 percent were females. As for education level, 59.1 percent of respondents were undergraduate students, 31.8 percent were masters students and the remaining 9.1 percent were PhD students. Moreover, 57 percent of subjects were Canadian and the remaining 43 percent were international students.

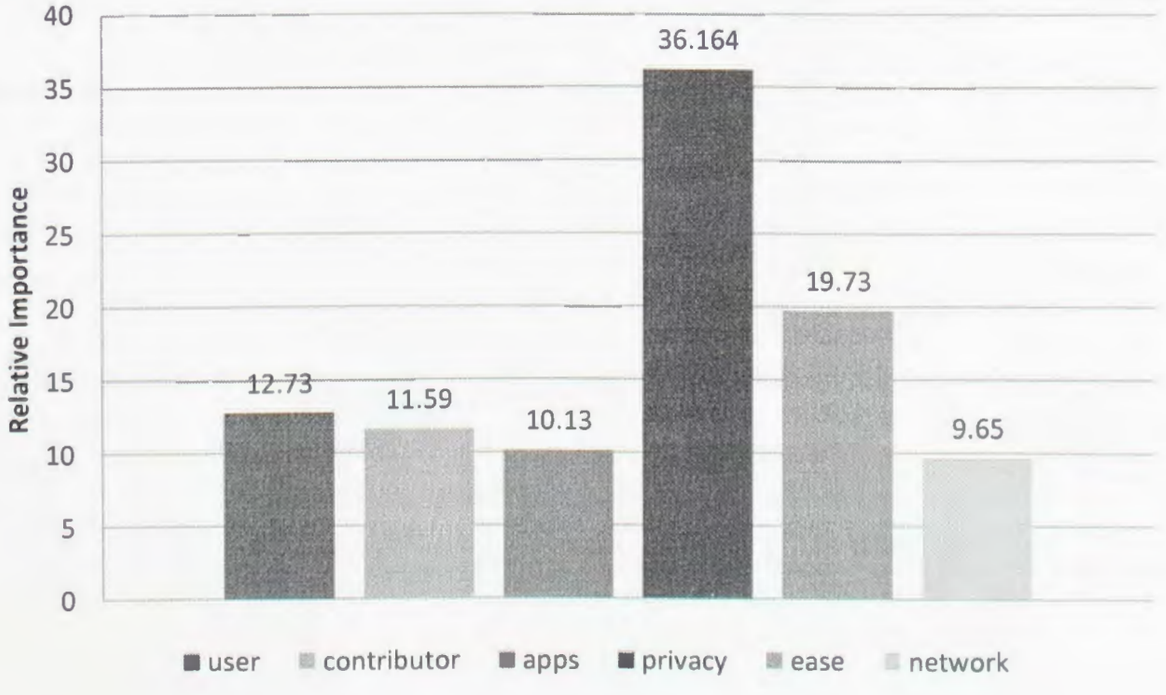
**Table 4.6: Respondent demographics**

| | Count | Percentage |
|---|---|---|
| Nationality | | |
| *Canadian* | *63* | *57.27* |
| *Indian* | *10* | *9.1* |
| *Iranian* | *12* | *10.9* |
| *Other* | *25* | *22.73* |
| Age | | |
| *15 to 20* | *9* | *11* |
| *21 to 30* | *53* | *66* |
| *30 to 40* | *12* | *15* |
| *Above 40* | *6* | *8* |
| Gender | | |
| *Male* | *60* | *54.55* |
| *Female* | *50* | *45.45* |
| Education | | |
| *Undergraduate* | *65* | *59.1* |
| *Masters* | *35* | *31.8* |
| *PhD* | *10* | *9.1* |

### 4.2.4 Conjoint Analysis Findings

The relative importance values of the six tested attributes measured by the conjoint instrument are shown in figure 8 below.

**Figure 4.2: Relative importance of Social Networking Site attributes**



As the graph highlights, with a score of 36.16, privacy was found to have the highest relative importance. It was followed by ease of use, which had a relative importance of 19.72. User and contributor benefits had relative importance score of 12.73 and 11.59 respectively, while applications scored at 10.133. The attribute with the smallest importance score was network (9.652). Results for the conjoint analysis are summarized in table 4.7 below.

**Table 4.7: Conjoint analysis results**

| Attributes | Levels | Utility Estimates | Relative Importance |
|---|---|---|---|
| User-generated content | Fun | .14 | 12.73 |
| | Useful | -.14 | |
| Contributor-generated content | Fun | -.15 | 11.59 |
| | Useful | .15 | |
| Applications | Fun | .02 | 10.13 |
| | Useful | -.02 | |
| Privacy | With privacy control | 1.30 | 36.16 |
| | All public (no control) | -1.30 | |
| Ease of use | Easy to use | .60 | 19.73 |
| | Sophisticated | -.60 | |
| Network | Lots of registered friends | .07 | 9.65 |
| | Lots of registered members | -.07 | |

As highlighted in the previous chapter, a defining assumption of the conjoint instrument is that the overall utility of a product is the sum of utilities obtained from each attribute of the product. Table 4.7 also highlights utility values for each level of each attribute.

In order to test the goodness of fit Pearson's R and Kendall's tau statistics were used. According to the results, the model had a good fit and there was a strong association between the observed and estimated utility values. Pearson's R was found to be 0.975 and Kendall's tau was found to be 0.961.

Lastly, respondents' choices were analyzed to uncover the optimum social networking site profile. Based on the results, the optimum bundle is one where users share mostly fun-oriented posts, contributors' posts are mainly usefulness-oriented, applications are fun-oriented, users are given control over privacy of shared posts, the platform is easy to use, and a good number of real life friends are using the website. Table 4.8 below highlights the three optimal SNS profiles based on the collected data:

**Table 4.8: Top 3 optimum SNS profiles**

| Attributes / Optimal Product Profiles | Optimal SNS 1 | Optimal SNS 2 | Optimal SNS 3 |
|---|---|---|---|
| User-generated content | fun | fun | fun |
| Contributor-generated content | useful | useful | useful |
| Applications | fun | fun | useful |
| Privacy | with control over privacy | with control over privacy | with control over privacy |
| Ease of use | easy to use | easy to use | easy to use |
| Network | lots of friends | lots of members | lots of friends |

# Chapter Five: Discussion, Conclusion, Contributions and Limitations

## 5.1 Discussion

In this research, business ecosystem as well as the technology acceptance model (TAM), hedonic and utilitarian benefits and a number of other theories were utilized to model social networking sites. Based on a conceptual model, three types of measures were identified for SNSs, namely, platform-related, user-related and contributor-related. To measure the impact of these three envisaged types, a total of 15 items were identified (see table 3.1) and were empirically tested using a sample of university students.

The factor analysis performed on the collected data highlighted some new findings. Hedonic and utilitarian benefits have been extensively used throughout the literature as explanatory factors for technology adoption. Normally, the two types of benefits are measured for the entire product or service. However, as discussed in chapter 3, in order to reach a better understanding of the origin of these benefits, hedonic (fun) and utilitarian (useful) benefits obtained from users' and contributors' content and applications were separately measured. Based on the results, respondents seem to have been able to distinguish the effect of users from contributors clearly and the two were extracted as separate components.

For the conjoint analysis, the impact of user and contributor benefits on individuals' preference was tested using three attributes each with two levels: 1) user-generated content (fun/useful) 2) contributor-generated content (fun/useful) 3) contributor created applications (fun/useful). Whereas numerous studies in the literature of both business

ecosystem emphasize the importance of contributors in the success of technology platforms, this role has rarely been studied in the domain of SNS adoption.

According to the conjoint analysis results, control over privacy received a considerably higher relative importance score compared to other attributes (36.164). This finding falls in line with that of a study by Dwyer et al. (2007) in which authors also find privacy concerns to influence individual's social networking behaviour considerably.

Various previous studies which applied the technology acceptance model (TAM) to internet technologies have found ease of use to be a decisive factor in shaping users' preference (See for example, M.-C. Lee (2009); H.-P. Lu and Yu-Jen Su (2009); Y. Lu et al. (2009); Moon and Kim (2001); Yen et al. (2010)). Results of the conjoint analysis in this study also highlight the importance of ease of use, as the attribute received the second highest relative importance value (19.732) among the six tested attributes.

As highlighted in figure 7, the relative importance value obtained for user-generated content (12.73) is higher than that of contributor-generated content (11.59). However, the relative importance value found for applications (10.133) is lower than both user and contributor generated content. Given the fact that only a small number of SNSs are truly open to third party application developers, this somewhat lower importance value does not come as a surprise.

Initially, user benefits together with number of friends/members were expected to form a single component. However, the factor analysis extracted the number of real life friends registered on the SNS and the overall number of registered members together as a separate component. A study by Papacharissi (2009) in the domain of SNSs has emphasized the importance of distinguishing between a person's friends (real life friends also registered on

the SNS) and members (registered SNS members who the user does not necessarily know). Results of study 1 (table 4.2) show that participants find the number of friends to be more important (mean = 5.234) than the number of members (mean = 4.418) in their decision to adopt an SNS. Nonetheless, the number of members did also receive an above average rating from participants. This finding can be associated with previous works on indirect network effects. Zhu and Iansiti (2007) posit that individuals' perceptions of the number of adopters of a technology can impact their decision to adopt. The reason is said to be individuals' expectation of receiving a better variety of offerings from external entities as the number of platform adopters grows.

Study 1 and 2 both ask respondents to evaluate product SNS attributes. The main difference between the two approaches is that in study 1, each attribute is rated separately, whereas in study 2 (conjoint), respondents rate entire bundles created by all attributes. As discussed in chapter 3, compared to soliciting evaluations of single product attributes, a major advantage of conjoint analysis is that it forces respondents to evaluate each attribute relative to all other attributed at the same time, and thereby captures more realistic evaluations. Hence, as expected, there are differences between the results of the two studies. Firstly, whereas, in study 1 ease-of-use has received the highest mean value in terms of importance (mean = 6.091) followed by privacy (mean = 5.918), in study 2, it is privacy that has the highest relative importance and ease-of-use comes in the second place. Much in the same manner, network related attributes (number of members and friends) switch places with contributor offerings (apps and content) in study 2 and have the lowest relative importance score.

Lastly, the results of the conjoint analysis allowed for identification of the optimum social networking site from the perspective of users. As expected, having control over privacy of shared posts, ability to connect with real life friends and being easy to use are among the characteristics preferred by users. Perhaps more importantly however, the outcome uncovers the preferred source of utility and hedonic benefits on social networking sites. According to the results, the top SNS of choice is one where other individuals share mostly fun content, while external contributors are preferred to share content that is mostly useful. Considering the popularity of game applications on SNSs such as Facebook, and QQ in China, it does not come as a surprise that participants favoured fun social networking site applications more than useful ones. The results from robustness tests for both studies 1 and 2 showed ideal robustness and goodness of fit.

## 5.2 Conclusion

Given the emergence of SNSs as a popular method of communication and self-expression, it is critical for practitioners and scholars to learn about the entities that form these online platforms and the way perceived characteristics of these entities shape users' preferences and ultimately, adoption. In this study, the main building blocks of a typical SNS were successfully uncovered, and the relationship between identified components and users' preference was studied. The multi-stage study revealed some major and novel findings. Through theoretical conceptualization and an empirical study, initially, four components were found to form a typical social networking site from a user perspective. These components were platform, users, contributors and the network. Furthermore the conjoint study revealed that the two platform characteristics, privacy and ease of use, had the highest relative importance in shaping users' preferences. Results of the study also show that hedonic and utilitarian benefits from users' shared content as well as content and applications created and shared by external contributors are next in line in terms of relative importance for users. Moreover, although not as significantly as other attributes, the number of friends and members registered on an SNS also impact users' preference. Lastly, the study was able to uncover the preferred source of hedonic and utilitarian benefits for users. Based on the results, in an optimum social networking site, users receive hedonic benefits mainly from content shared by other users, whereas content generated by contributors is the preferred source of utilitarian benefits. In conclusion, this study was able to reach the objectives it set out at the beginning. Through a series of conceptual and empirical studies, SNSs were modelled, and the relative importance of social networking site components was uncovered, all from a user perspective.

## 5.3 Contributions

This study makes a number of major contributions. Firstly, it contributes to business ecosystem (BE) as a significant, yet understudied stream of theory in strategic management. Since its introduction, business ecosystem has been applied to numerous contexts. In particular, several studies have extended the notion of business ecosystem to Information Technology businesses. However, despite its exceptional potential, this research is the first to truly and directly extend business ecosystem to social media in general, and SNSs in particular. To be precise, here businesses ecosystem was utilized as a framework for identification of the entities that form a typical social networking site. Consequently, items for measurement of those entities were adapted either from BE itself or related theories, such as technology acceptance model (TAM), platform business and hedonic and utilitarian benefits. Through a number of analyses, the framework did provide a robust model for user preferences towards SNSs.

Secondly, this research makes various contributions to the literature of social media and Social Networking Sites. Numerous studies have investigated SNSs in terms of single factors, such as design, content, trust and security, and characteristics of users. Here, not only new dimensions of SNSs were conceptually and empirically modeled, but also the majority of previously identified SNS measures were also accounted for in the process of measure development. Hence, the resulting framework is both novel and holistic.

Using business ecosystem as a theoretical backbone, the factor analysis identified four components that form a typical social networking site, namely, platform (measured by privacy and ease of use), users (hedonic and utilitarian benefits obtained from other users), network (number registered members and friends) and contributors (hedonic and utilitarian

benefits obtained from contributors' applications and content). The results can pave the way for future research and further expansion of each of the resulting components. By clarifying the strategic roles of various entities that form the business ecosystem around a typical social networking site, the results of the exploratory factor analysis can also be used as a framework for social media analysts for analysis of SNSs. Moreover, the applied methodology, in which a combination of factor analysis and conjoint instrument was used, is a novelty that can be explored further in the domain technology adoption.

Results of the conjoint analysis found the two platform related characteristics, ease of use and privacy, to be the most important attributes for social networking site adopters. The takeaway, especially for developers, is that the two above mentioned characteristics merit special attention in order to reach the goal of maximizing adoption rates of social platforms. Furthermore, another finding of the conjoint analysis was that, for respondents, benefits obtained from external contributors are almost as important as benefits obtained from other users. At the same time, aggregated captured ratings show that, while respondents prefer SNSs where they can obtain hedonic benefits from other users, they prefer the content shared by external contributors to be mostly utilitarian, and their applications to be hedonic. What this finding means for social media strategists is that facilitating the engagement of contributors can be almost as important as users. For contributors sharing content on social networking sites, findings of the conjoint analysis mean that their content is preferred to be more utilitarian than hedonic, while the takeaway for app developers is that, overall, SNS applications are preferred to be more hedonic than useful. Results indicate that users, on the other hand, need to focus more on creation and sharing of mostly hedonic content in order to expand their social networking reach.

Furthermore, another novelty of the research design is in how it measures hedonic and utilitarian benefits. Numerous scholars have found hedonic and utilitarian benefits to be key players in any form of adoption. However, by and large, the two have almost always been treated as separate variables, measured for the entire product/system. In this study, however, a choice was made to measure hedonic and utilitarian benefits not for the entire system, but to consider them separately based on the type of offering and type of entities from which they originate.

Also importantly, another way in which the current research differentiates itself from prior research is in how it views SNS adoption. Whereas previous research studies factors that impact adoption or non-adoption of SNSs by businesses or individuals as a whole, this study aims at uncovering the motives behind individuals' adoption of certain SNSs over others. As a result, it clarifies the competitive advantages of SNSs from a user perspective, which can be of considerable value to practitioners in this domain.

## 5.4 Limitations and Future Studies

The author is of the view that the impact of nationality, language and socio-cultural characteristics of the local environment on choice of SNSs would have been captured better through sampling in more than one country (perhaps in Canada and China for instance). This was not within the scope of this study, but can be explored in the future. Moreover, data collection for both studies was performed at the University of Northern British Columbia only. Given the higher usage of SNSs by students, the sample may not represent the preferences of the entire population perfectly.

Another limitation of the study was the number of levels used for the conjoint analysis performed. In order to ensure the number conjoint instrument bundles would stay at a

manageable number for participants, it was decided to have dichotomous levels for each attribute. Using more levels in the design, possibly with middle-ground values, may lead to different conjoint analysis results, albeit, with a higher number of bundles.

A possible area of improvement for future studies in this domain can be exploring the impact of user characteristics on SNS preferences. For instance, age, education and gender are user related variables that may impact the adoption decision of individuals.

Lastly, accounting for individual objectives for SNS usage is a direction that can be explored in the future. Whereas platforms such as Facebook and Instagram are primarily used for hedonic purposes, websites such as LinkedIn are mostly utilized for professional purposes. Users of these SNSs are expected to have different objectives for usage, which may also impact their adoption decision.

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## Appendix 1 - Research Questionnaire

### Section I – Background

1. Age ☐

2. Please circle the **highest** year of school completed

1 2 3 4 5 6 *(Primary)* 7 8 9 10 11 12 *(High school)* 13 14 15 16 *(College/University)* 17 18 19 20 21 22 23+ *(Graduate School)*

3. Please circle your nationality. If other, please specify you nationality.

a. Canadian b. Chinese c. Indian d. Iranian e. Other *(Please specify)* .....

4. Gender: Male ☐ Female ☐ Other ☐

### Section II - Business Ecosystem Characteristics

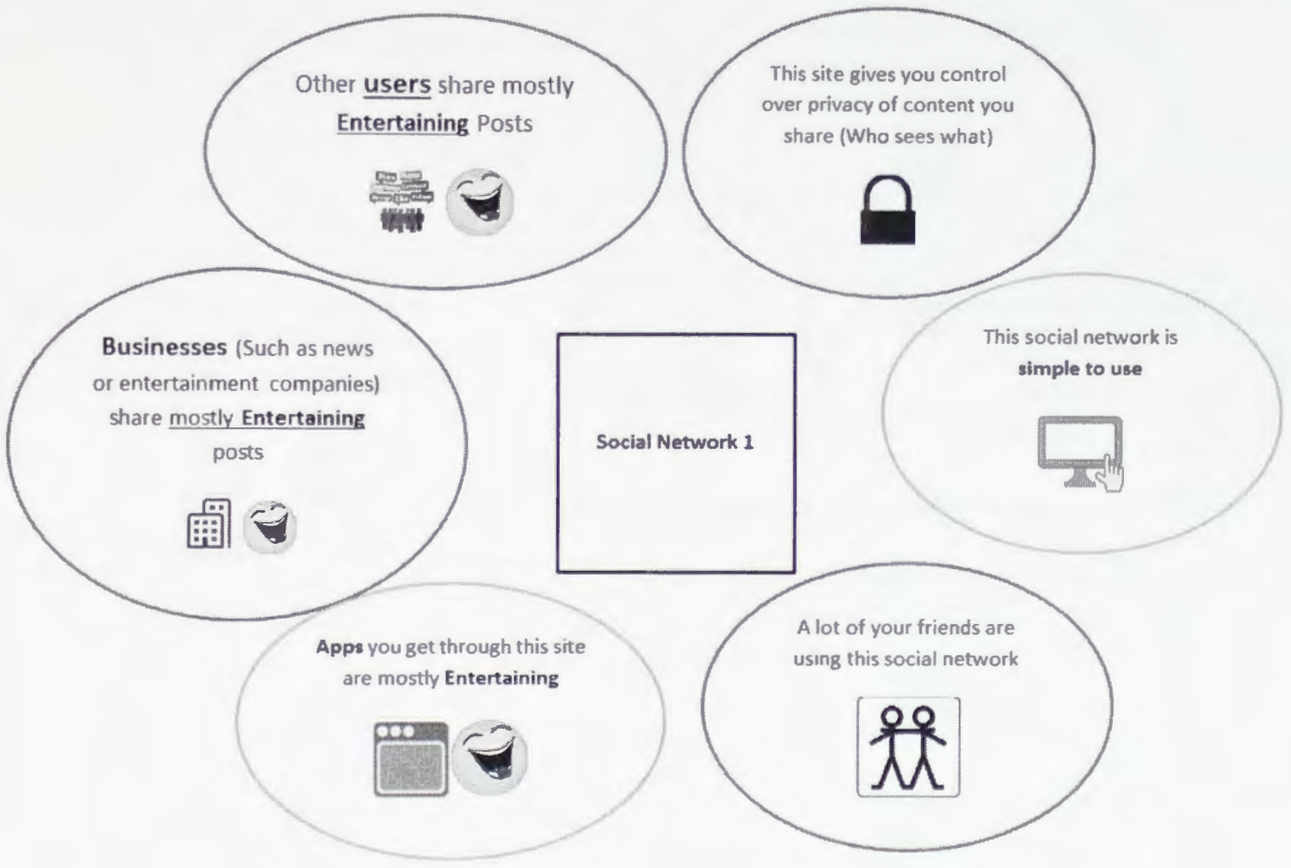
There are numerous characteristics that one can associate with social networking sites. Please rate the importance of the following attributes for you when choosing to join and use a social networking site. 1 represents very unimportant and 7 represents very important.
How important do you find the following characteristics when adopting (joining and using) a social networking site?

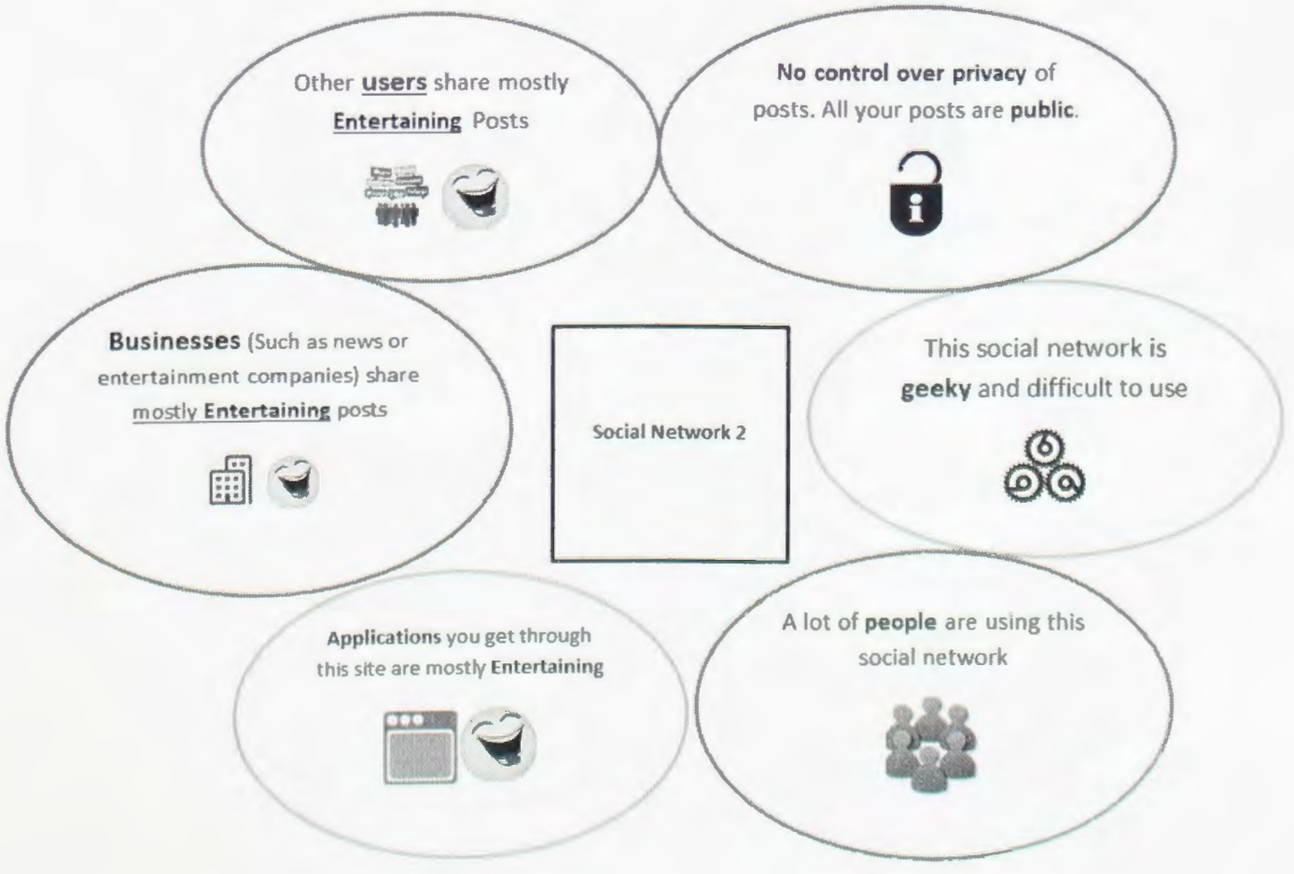
| Criteria | Very unimportant | | | neutral | | | Very important |
|---|---|---|---|---|---|---|---|
| 1. Ease of Use | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Privacy | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Connecting capabilities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Improvements to the website | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Users | | | | | | | |
| 4. User engagement | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. How fun (enjoyable) user generated content on the social networking site is. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. How useful user generated content on the social networking site is | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. The number of people I know in real life (offline) who are on the social networking site | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Number of members who are on the social networking site | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**Appendix 1 continued**

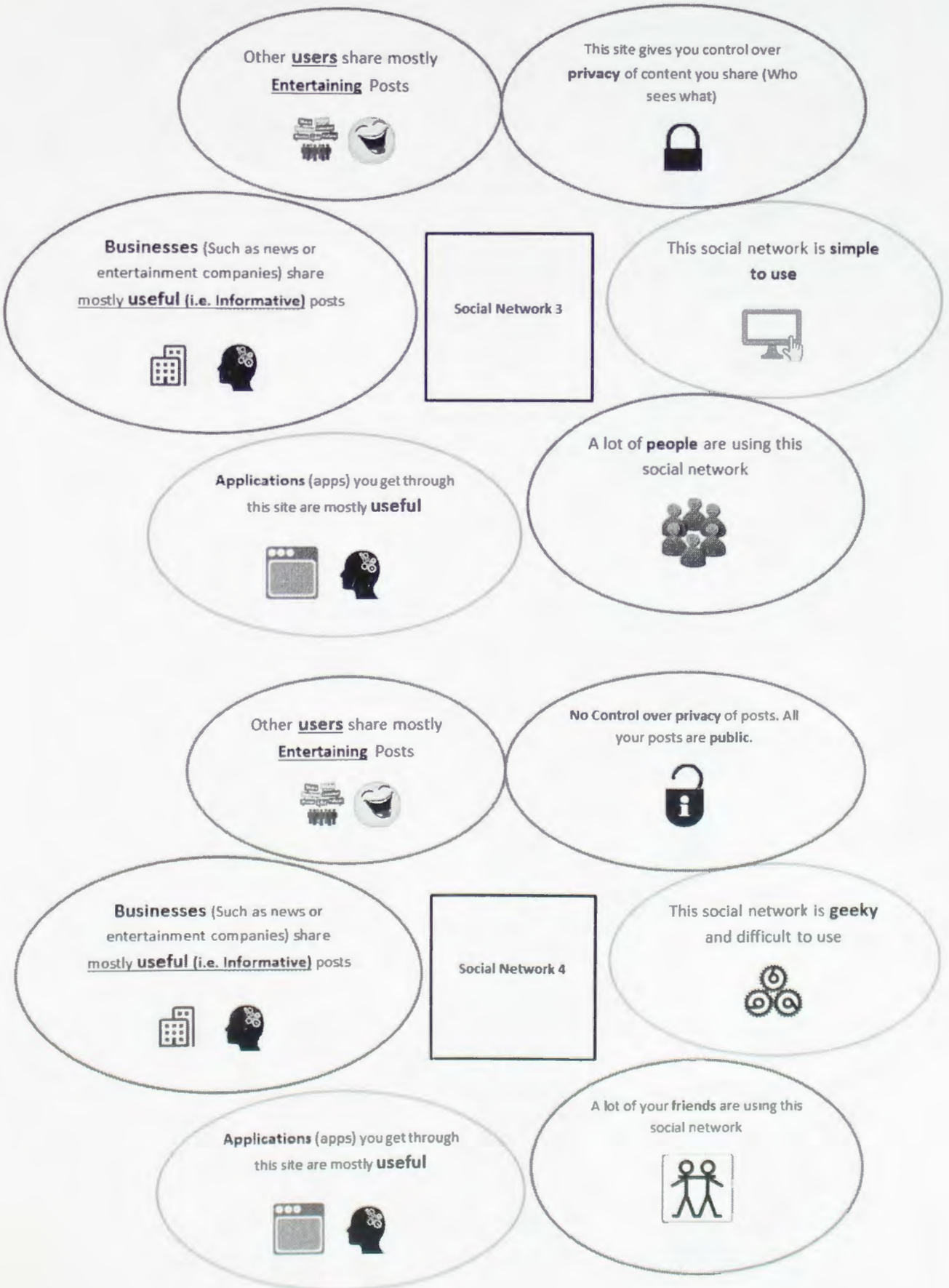
| Contributors | | | | | | | |
|---|---|---|---|---|---|---|---|
| Contributors are external organizations or individuals who create and share either content (news, photos, videos, etc) or applications and games on social networking sites. Please use the criteria below to rate the following attributes relative to contributors in terms of importance. | | | | | | | |
| 9. Variety of content (news, photos, videos, etc.) provided by third party contributors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Variety of applications provided by third party contributors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. Enjoyment (fun) derived from content provided by third party contributors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. Utility (usefulness) derived from content provided by third party contributors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Enjoyment (fun) derived from Applications provided by third party contributors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Utility (usefulness) derived from Applications provided by third party contributors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Appendix 2 – Conjoint instrument cards

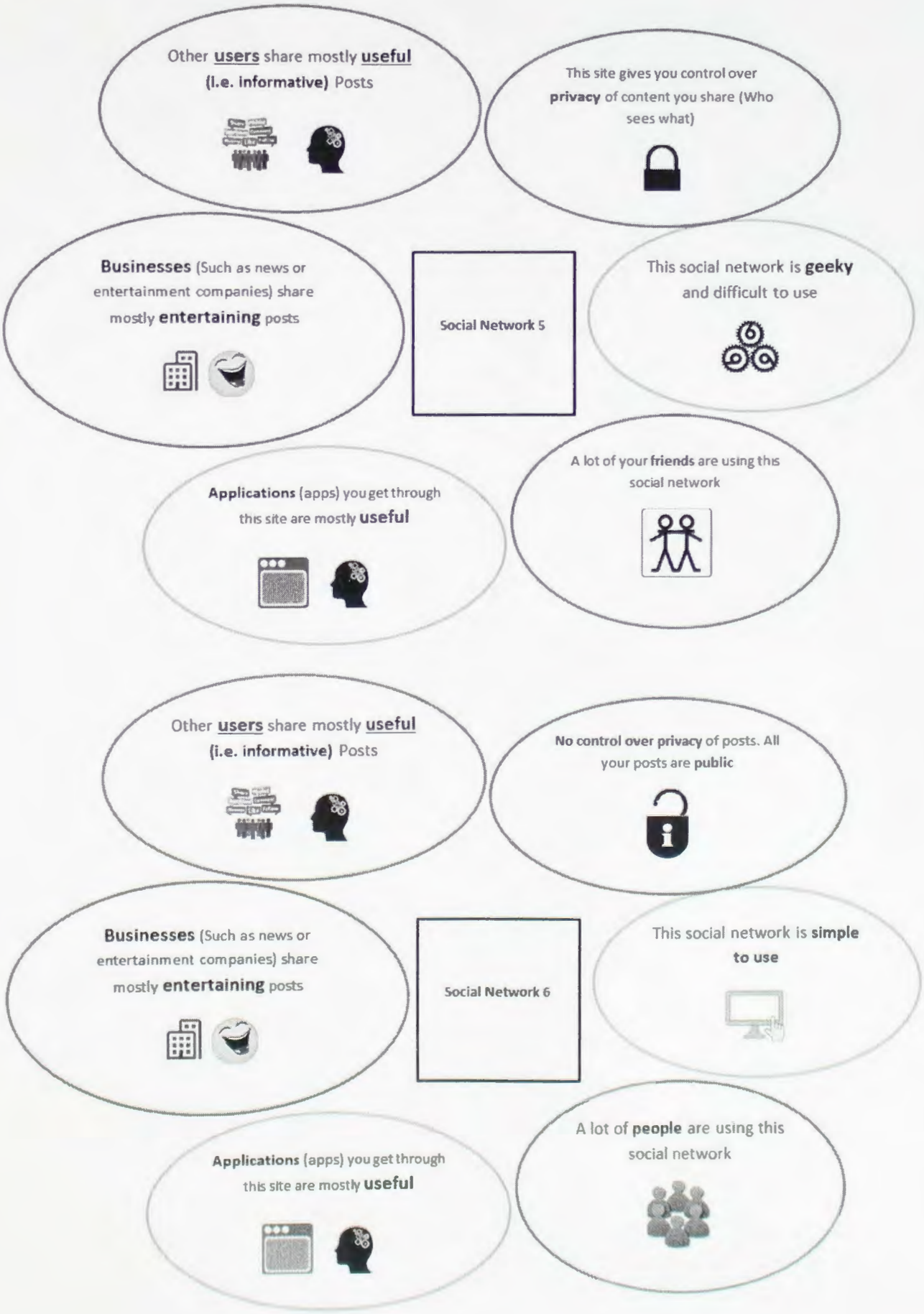


## Appendix 2 continued



## Appendix 2 continued



## Appendix 2 continued