

**Understanding Individuals' Attachment to
Social Networking Sites:
An Empirical Investigation of Three Theories**

by

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Abstract

Social Networking Sites (SNSs) are a pervasive phenomenon in today's society. With greater connectivity and interactivity enabled via web technologies, SNSs provide communication platforms for individuals to bridge geographical and temporal differences when making friends, sharing experiences, socializing with others and much more. This thesis therefore endeavors to shed light on this problem by decomposing members' motives for participating within SNSs into identity-based, bond-based and comparison-based attachments. Each of these forms of attachment in turn affects members' cooperative and competitive mentality towards participation within SNSs. In addition, it is further posited in this thesis that members' identity-based, bond-based and comparison-based attachment within SNSs can be induced through the presence of deindividuation, personalization and tournament technologies respectively. From this premise, a theoretical model of members' attachment within SNSs is constructed with testable hypotheses. The model is then empirically validated in two stages. In the first stage, content analysis was performed on contemporary SNSs to elicit technological features that can be readily categorized as deindividuation, personalization and tournament technologies. In the second stage, an online questionnaire was administered on a sample of 787 active members of SNSs to solicit their responses on the extent to which these elicited technological features drive members' communal attachments within and mentality towards SNSs. Theoretical contributions and pragmatic implications to be gleaned from the empirical findings are discussed.

Keywords: communal attachment; social bond; social identity; social comparison; deindividuation technology; personalization technology; tournament technology

*This thesis is dedicated to
my beautiful and loving Grandmother and
my patient and gentle Grandfather
who passed away while I was in the doctoral program.*

I only wished I had communicated with you more.

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Chapter 1. Introduction

The tendency of people to congregate and form communities is inherent in the fabric of society; and the ways in which such communities take shape and evolve over time is a recurring theme that drives research in social sciences (Coleman, 1990). The advent of the Internet has bolstered the interconnectivity among members of society and in turn, contributes to a rapid growth of online communities. Online social interaction flourishes as Social Networking Sites (SNSs) become increasingly prevalent. Almost overnight, social interactivity sites such as Friendster [<http://www.friendster.com>], MySpace [<http://www.myspace.com>], Facebook [<http://www.facebook.com>] and LiveJournal [<http://www.livejournal.com>] as well as media-sharing sites such as Flickr [<http://www.flickr.com>] and YouTube [<http://www.youtube.com>] have sprung up to cater to the myriad of networking intents and usage patterns among members.

While boundaries are often blurred, the majority of SNSs share commonalities in that an individual creates a virtual 'profile'—an online representation of himself or herself—for others to peruse, with the intention of contacting or being contacted by like-minded peers (e.g., Academia [<http://www.academia.edu>] and Tribe [<http://www.tribe.com>]), of meeting new friends or reuniting with old acquaintances (e.g., Friendster [<http://www.friendster.com>] and Facebook [<http://www.facebook.com>]), of finding dates (e.g., BeautifulPeople [<http://www.beautifulpeople.com>] and Fubar [<http://fubar.com>]), of securing employment (e.g., LinkedIn [<http://www.linkedin.com>]), of offering and receiving product recommendations (Kaboodle [<http://www.kaboodle.com>]), and much more. Liu and Maes (2005) estimated that well over a million self-descriptive personal profiles are available across different web-based social networks in the United States. Social network stats published by Nielsenwire (2010) painted a similar picture: “The popularity of social media is undeniable – three of the world’s most popular brands online are social-media related (Facebook, YouTube and Wikipedia) and the world now spends over 110 billion minutes [annually] on social networks and blog sites. This equates to 22 percent of all time online or one in every four and half minutes. For the

first time ever, social network or blog sites are visited by three quarters of global consumers who go online, after the numbers of people visiting these sites increased by 24% over last year. The average visitor spends 66% more time on these sites than a year ago, almost 6 hours in April 2010 versus 3 hours, 31 minutes last year” (Nielsenwire, 2010). A national survey of American teenagers conducted by the Pew Internet & American Life Project in 2007 also revealed that 55% of youths aged 12-17 participate in SNSs. This is also verified in a recent study by comScore (2011) whereby it was documented that there were 1.2 billion SNS members worldwide in October 2011, accounting for 82% of total Internet users.

1.1. Motivation and Problem Definition

Because SNSs represent web-enabled communities whose members share a common purpose, interest, or need (Preece, 2000), most, if not all, of the information, companionship, and entertainment accessible from these SNSs are dependent on the voluntary contributions of participants (Arakji et al., 2009; de Valck et al., 2009; Ren et al., 2007). Unlike formalized relationships, SNSs exercise little authority and control over the behaviour of participating members (Clemons, 2009). For SNSs to prosper, members must therefore be proactive in generating new content, maintaining community cohesion and providing emotional support to others (Cheung and Lee, 2010). Yet, as observed by Kumar et al. (2006), although the exponential growth of SNSs has been fueled by individuals’ response to mass invitations from friends and/or acquaintances, most of them tend to be docile in their involvement. In extreme cases, Sparrowe et al. (2001) noted that social networks may be plagued by hostile behaviors among members such as interference, rejection, sabotages and threats. This view is also borne out in Yang and Tang’s (2004) work on information system development teams where it was discovered that adversarial relationships do permeate social networks. For this reason, Ren et al. (2007) have appealed for better design in SNSs to foster active participation among members if these online communities hope to continue to thrive. Likewise, Wasko et al. (2009) observed that electronic networks of practice are sustained through generalized exchange among a critical mass of active members. To this end, this thesis endeavours to answer the following research question:

“In what ways can the design of social networking sites foster active participation among members?”

To address the aforementioned research question, this thesis draws on the theories of **Social Identity**, **Social Bond** and **Social Comparison** to postulate that members' motives for participating within SNSs stem from three distinct forms of attachment to online communities, namely identity-based attachment, bond-based attachment and comparison-based attachment. To a large extent, this study expands on past studies of online communities where communal attachments have been discovered to be indicative of members' participation within such communities (e.g., Bagozzi and Dholakia, 2006; Blanchard and Markus, 2004; Bruque et al., 2008; Cheung and Lee, 2010; Ganley and Lampe, 2009; Peddibhotla and Subramani, 2007; Ren et al., 2007; Wasko and Faraj, 2005; Wasko et al., 2009; Wiertz and de Ruyter, 2007). From this premise, the thesis further distinguishes among deindividuation, personalization and tournament technologies as prominent categories for eliciting and characterizing social networking technologies that are readily accessible from contemporary SNSs. The delineation of social networking technologies into those catering to deindividuation, personalization and tournament objectives constitutes a core innovation of this thesis. Particularly, the thesis posits that the presence of deindividuation, personalization and tournament technologies on SNSs induces identity-based, bond-based and comparison-based attachment among members respectively. By systematically classifying social networking technologies into meaningful categories that are linked to distinct forms of communal attachment exhibited by members, this thesis yields insights into appropriate technological levers for fostering specific forms of attachment, which may aid the continuing evolution and growth of online communities within SNSs. Next, a theoretical model illustrating antecedents leading to and consequences resulting from members' attachment within SNSs is advanced together with testable hypotheses. Finally, this thesis outlines the design and execution of a two-stage empirical study for testing the hypotheses in the theoretical model. In the first stage, content analysis was performed on contemporary SNSs to elicit technological features that can be readily categorized as deindividuation, personalization and tournament technologies. This constitutes an important step in the derivation of a typology of generic social networking technologies that can inform the design of SNSs in a purposeful fashion. In the second stage, an online questionnaire was administered on a sample of 787 active members of SNSs to

solicit their responses on the extent to which these elicited technological features drive members' communal attachments within and mentality towards SNSs.

Although research into SNSs is gaining momentum in the Management Information Systems (MIS) discipline (e.g., Cheung and Lee, 2010; Huang and Yen, 2003; Lu and Hsiao, 2007; Ridings and Gefen, 2004), there is a paucity of studies that prescribes actionable guidelines to be harnessed by practitioners in designing SNSs for connectivity and networking purposes. A review of extant literature on social networks indicates that while substantial advances have been achieved in comprehending network effects associated with SNSs (e.g., Bampo et al., 2008; Kane and Alavi, 2008; Li et al., 2010; Trier, 2008; Valck et al., 2009), there is comparatively less progress being made in the prescription of actionable design principles for moulding online communities to foster active participation among members.

In this sense, this thesis makes a novel contribution to extant literature in four ways. First, by unraveling the motivational forces governing members' participation within SNSs (i.e., bond-based attachment, identity-based attachment and comparison-based attachment), this thesis synthesizes past studies of offline social networks to argue for the establishment of *social bond*, *social identity* and *social comparison* among members as viable means of encouraging active involvement in online communities. Second, the articulation of a broad spectrum of social networking technologies, which aid in strengthening social relationships among members of SNSs, translates to actionable design principles that can be harnessed by practitioners to craft self-sustaining online communities (Benbasat and Zmud, 2003). With the exception of a few notable studies (see Appendix A), prior work on SNSs tends to emphasize how interactional dynamics within such online communities shape members' participative behaviors without paying sufficient attention to the design of social networking technologies that could bring about desirable modes of interaction. To this end, this thesis postulates that members' identity-based, bond-based and comparison-based attachment within SNSs can be induced through the presence of deindividuation, personalization and tournament technologies respectively. Third, this thesis synthesizes extant literature to construct a theoretical model that explains and predicts how active participation could be fostered among members through effective leveraging of technological levers in the design of SNSs. Last but not least, hypothesized relationships

in this theoretical model are validated via a two-stage empirical study. In the first stage, content analysis was performed on contemporary SNSs to conduct a much-needed inventory of social networking technologies, which exist on these SNSs, in order to extract technological features from practice and examine their impact on members' participation within such online communities. In the second stage, an online questionnaire was administered on a sample of 787 active members of SNSs to solicit their responses on the extent to which these elicited technological features drive members' communal attachments within and mentality towards SNSs. In doing so, this thesis advances a typology of social networking technologies that could be adapted by other scholars in future studies of SNSs. Findings from this thesis can be helpful as a starting point from which to generate further debate and investigation into the phenomenon.

1.2. Outline of Thesis Proposal

This thesis comprises a total of 4 chapters, inclusive of the introduction. Chapter 2 presents a conceptual overview of the current status of research into SNSs, pointing out knowledge gaps within extant literature and justifying my rationale for investigating the phenomenon from the perspective of communal attachment. The chapter elaborates on the theories of social identity, social bond and social comparison to clarify: (1) the delineation of members' motives for participating within SNSs into three distinctive forms of attachment (i.e., identity-based attachment, bond-based attachment and comparison-based attachment), and; (2) the classification of social networking technologies into categories of deindividuation technologies, personalization technologies and tournament technologies. A theoretical model of members' attachment within SNSs is constructed in Chapter 2 together with testable hypotheses. Chapter 3 describes the design and execution of a two-stage empirical study that is undertaken to validate the model. It outlines the sequence of methodological procedures, which have been adhered to in the empirical study, in order to ensure that data was gathered in an unbiased fashion and that analysis was conducted in a rigorous manner. The last chapter, Chapter 4, concludes the thesis by: (1) discussing implications for theory and practice to be gleaned from empirical findings; (2) stating potential limitations of my study, and; (3) suggesting avenues for further inquiries.

Chapter 2. Theory

Social Networking Sites (SNSs) differ from traditional face-to-face social networks in that members can assume unique identities for online interactions and end these interactions more abruptly than in real life (Clemons, 2009). Consequently, the continuing evolution and growth of SNSs is dependent on the active participation of members (Arakji et al., 2009; Bagozzi and Dholakia, 2006; Cheung and Lee, 2010; de Valck et al., 2009; Ganley and Lampe, 2009; Peddibhotla and Subramani, 2007; Ren et al., 2007; Sykes et al., 2009; Wasko and Faraj, 2005; Wasko et al., 2009; Wiertz and de Ruyter, 2007). Yet, despite general consensus on the importance of encouraging members' active participation within SNSs, few studies have touched on how such participation can be induced through technological initiatives.

SNSs embody socio-technical elements that affect how members interact with others within the structural boundaries of the community. Whereas the social elements of SNSs deal with policies that impact the way members choose to behave in online communities, technical elements refer to technological features, which support the enactment and enforcement of these policies (Preece, 2000). Ren et al. (2007) alleged that the 'community design' of SNSs—the blend of socio-technical features available from these sites—play an instrumental role in shaping members' participation within online communities (Messinger et al., 2009).

2.1. An Overview of Extant Literature on Social Networks: Gaps and Challenges

A review of extant literature on social networks points to the scarcity of past studies that scrutinizes the communal design of SNSs. Appendix A summarizes previous research on social networks (both online and offline) in terms of their context, theoretical frame of reference, investigated constructs of interest, core findings and whether each

study relates to the demand and/or supply side of such networks. Whereas *demand-side* studies explore members' participative behaviors within social networks, *supply-side* studies accentuate actions that could be taken by practitioners to deliver suitable platforms, which facilitate such behaviors. Three predominant trends can be discerned with regards to previous investigations of social networks, within which lies the motivation for this thesis.

First, while there is an abundance of demand-side studies examining how structural characteristics, membership compositions and interactional patterns dictate members' participative behaviors within social networks (see Appendix A), there are comparatively fewer supply-side studies—with the exception of Bonhard and Sasse (2006), Ren et al. (2007) as well as Zhu et al. (2009)—that prescribe actionable design principles for improving the performance of such networks. Combining the benefits of social networking with the matching capabilities of recommender systems, Bonhard and Sasse (2006) demonstrated that the inclusion of mechanisms that reveal the degree of familiarity, profile similarity and rating overlap between advice-seekers and recommenders affect the appropriateness and trustworthiness of product recommendations in an online context where the identity of recommenders may not be known to advice-seekers. Ren et al. (2007), on the other hand, argued that members' active participation within online communities is shaped through communal design elements catering to social categorization and interaction activities. In an experimental study on collaborative online shopping, Zhu et al. (2009) discovered 'collaborative online shopping support tools' like shared navigation and synchronous communication to be invaluable in enhancing collaboration among shoppers. Yet, in spite of the contributions put forth by the aforementioned three supply-side studies with regards to the design of online communities, their recommendations may not be entirely applicable to SNSs in general. Whereas the work of Bonhard and Sasse (2006) as well as Zhu et al. (2009) is directed at specific contexts of recommender systems and collaborative online shopping, Ren et al.'s (2007) prescriptions of communal design elements have not been subjected to empirical validation. For these reasons, the explication of a *generic* set of actionable design principles that are theoretically grounded and have undergone empirical validation would prove to be invaluable in steering the design of SNSs in an informative and purposeful fashion.

Second, past adoption studies of SNSs tend to lean towards individual-based technology acceptance models in investigating the phenomenon (e.g., Dholakia et al. 2004; Huang and Yen, 2003; Lu and Hsiao, 2007; Ridings and Gefen, 2004). Individual-based technology acceptance models assume that the utilization of information systems is motivated by personal reasons and that effective system design is reliant on an in-depth appreciation of these individualistic motivations to drive developmental efforts (Davis 1989; Davis et al. 1992; Venkatesh et al. 2003). Without paying heed to the communal context surrounding SNSs, individual-based technology acceptance models are insufficient in advancing a blueprint for social networking technologies that should be made available within online communities for promoting active participation among members.

Third, even for those studies that have acknowledged communal processes as key determinants of members' participation within social networks (e.g., Arakji et al., 2009; Bagozzi and Dholakia, 2004; Blanchard and Markus, 2004; Ganley and Lampe, 2009; Peddibhotla and Subramani, 2007; Sykes et al., 2009; Wasko and Faraj, 2005; Wiertz and de Ruyter, 2007), none has come up with concrete proposals on how such processes can be realized within online communities. Particularly, scholars have alluded to interconnectivity, interactional intensity and exchange reciprocity as salient antecedents leading to members' participation within social networks (e.g., Arakji et al., 2009; Bagozzi and Dholakia, 2004; Blanchard and Markus, 2004; Ganley and Lampe, 2009; Peddibhotla and Subramani, 2007; Sykes et al., 2009; Wasko and Faraj, 2005; Wiertz and de Ruyter, 2007) without presenting complimentary actions that can be taken by practitioners to foster these communal activities.

Given the limitations inherent within extant literature, this thesis advances a *communal-based* technology acceptance model for SNSs that seeks to explain and predict how social networking technologies shape members' participation within online communities (see Figure 1). Indeed, prior empirical evidence has hinted at the conceptual relevance of a communal-based technology acceptance model for SNSs. As uncovered by Cheung and Lee (2010) in a survey of 389 Facebook members, participation within SNSs is founded on *collective* social actions and the impetus for such actions is in turn, rooted in three social influence processes (i.e., subjective norm, group norm, and social identity). The same observation was documented by several other

scholars who attested to the pertinence of the social environment in shaping members' participation within online communities (e.g., Arakji et al., 2009; Bagozzi and Dholakia, 2006; Dholakia et al., 2004; Lu and Hsiao, 2007; Peddibhotla and Subramani, 2007; Sykes et al. 2009; Wasko and Faraj, 2005; Wasko et al., 2009; Wiertz and de Ruyter, 2007; Zhang et al., 2009). Nonetheless, despite the acknowledgement of SNSs as a platform for collective social actions, past studies stop short of putting forward communal-based actionable design principles that could be leveraged by practitioners to nurture online communities. The advancement of a communal-based technology acceptance model is hence imperative in providing clarity on how social networking technologies can be incorporated into the communal design of SNSs. As aptly surmised by Cheung and Lee (2010), members' decision to "use online social networking technologies represents a social phenomenon that largely depends on the interactions among users and the use of social technologies can make sense only when a group of individuals are willing to use and continue to use the technology together" (p. 24).

Two challenges emerge when undertaking any investigation of SNSs from a design viewpoint. First, unlike e-business or e-commerce transactions in which consumers generally adhere to a standard sequence of transactional activities (see Cenfetelli et al., 2008), members of SNSs do not conform to predefined usage patterns. This precludes the applicability of existing frameworks, which have been validated for other online service contexts, to the domain of SNSs (e.g., Cenfetelli et al., 2008; Lightner, 2004; Piccoli et al., 2001, 2004). Second, as admitted by Ren et al. (2007), members harbor diverse motives for participating within online communities and as such, may not be exposed to social networking technologies in a homogenous fashion. This is also exemplified through the work of de Valck et al. (2009) whereby they divided members of online communities into six clusters with varying degrees of participation: (1) core members who make frequent and extended visits to the community to supply and retrieve information; (2) conversationalists who make frequent but visits to the community to raise and discuss matters of interest; (3) informationalists who make frequent but visits to the community to supply and retrieve information; (4) hobbyists who make frequent and extended visits to the community to maintain their personal profile without getting too involved with others; (5) functionalists who make frequent but short visits to the community for the sole purpose of retrieving information, and; (6)

opportunists who make irregular and short visits to the community for the sole purpose of retrieving information. Any attempts at designing SNSs without taking into account the social motives of members would hence be ill-conceived and face a greater likelihood of failure.

To bridge the aforementioned knowledge gaps and overcome existing challenges in the communal design of SNSs, this thesis subscribes to the *Social Identity Theory* (SIT), the *Social Bond Theory* (SBT) and the *Social Comparison Theory* (SCT) as the conceptual foundation for investigating SNSs from the perspective of communal attachments.

2.2. Social Identity Theory, Social Bond Theory and Social Comparison Theory: An Overview

According to Ren et al. (2007), the design of SNSs for usability and sociability often involves sophisticated trade-offs that ultimately dictate the manner through which members are motivated to participate. These complications arise from difficulties in designing SNSs to satisfy members with divergent social motives (Ren et al. 2007). In line with the *Social Identity Theory* (SIT), the *Social Bond Theory* (SBT) and the *Social Comparison Theory* (SCT), this thesis argues that discrepancies among these social motives are largely driven by distinct forms of attachment exhibited by members participating in such online communities, namely ***identity-based attachment***, ***bond-based attachment*** and ***comparison-based attachment***. Distinctions among identity-based attachment, bond-based attachment and comparison-based attachment originate from individual member's reasons for participating within a community. Yet, such differences in motivational forces cannot be ignored as they could translate to diverse implications for the growth and evolution of online communities within SNSs. A review of extant literature on the three theories indicates that these theories have been widely applied in past studies of both offline and online communities to comprehend how the inducement of certain motivational forces can boost members' willingness to participate within such communities (see Appendix B).

In the next sections, I provide an overview of each of the three theories and draw parallels with SNSs to justify my rationale for distinguishing among identity-based, bond-based and comparison-based attachments as motivational factors behind members' participation within these sites.

2.2.1. Identity-Based Attachment in Social Networking Sites

The SIT holds that an individual's social identity consists of "those aspects of an individual's self-image that derive from the social categories to which he perceives himself as belonging" (Tajfel and Turner, 1986, p. 16; see also Dholakia et al. 2004). Social identity is cultivated from the self-segmentation of individuals into social categories (Turner, 1985; Turner et al., 1987). Criteria for such self-segmentation can be both objective (e.g., gender, race and geographical location) or subjective (e.g., shared hobbies, political views or religious beliefs) (Amichai-Hamburger, 2005; Karasawa, 1991). For an individual to identify with a particular social category, he/she must be convinced that his/her self-image aligns with qualities exhibited by members belonging to the same category (Chattopadhyay et al., 2004; Dutton et al., 1994).

Through self-segmentation, an individual assumes the communal identity of a social category and voluntarily depersonalizes self-conception so much so that most (if not all) behavioral judgments are anchored on group norms and practices (Hogg and Terry, 2000). In this sense, social identity is a psychological state that comprises cognitive, affective, and evaluative components (Cheung and Lee, 2010; Dhalokia et al., 2004; Ellemers et al., 1999). From a cognitive perspective, social identity instils self-awareness within the individual such that he/she is able to discern his/her similarities with other members of the social category while simultaneously, identifying his/her dissimilarities with non-members of the category (Ashforth and Mael, 1989; Turner, 1985). At the same time, social identity inspires affective or emotional attachment to the social category (e.g., Bagozzi and Dholakia, 2002; Bhattacharya and Sen, 2003; Ellemers et al., 1999), which aids in promoting loyalty and citizenship behaviors among members in communal settings (e.g., Bergami and Bagozzi, 2000; Meyer et al., 2002). Furthermore, because it is well-accepted that an individual's identity defines his/her sense of self-worth (Blanton and Christie, 2003), social identity is analogous with

collective self-esteem such that the assessment of self-worth is essentially founded on the basis of belonging to the community.

Due to a strong emphasis on community over self, social identity weakens relationships among individual members belonging to the same social category (Turner, 1985). In fact, when members feel attached to a community based on social identity, they regard others in the group as being interchangeable or substitutable such that the communal identity remains intact in the face of turnover in membership (Turner, 1985). Within the context of online communities, Dholakia et al. (2004) have supplied empirical evidence testifying to the role of social identity in determining members' participation within such communities. Likewise, Eckhardt et al. (2009) noted that individuals' non-adoption decisions towards technology can be attributed to pressure from peer groups of non-adopters. Ren et al. (2007) observed that members of many online health support groups are attached to the groups because of their shared identity as sufferers or survivors of a particular illness or treatment. In such communities, Ren et al. (2007) documented that shared experiences takes precedence over who the audiences might be. In the same vein, de Valck et al. (2009), through surveying 1,007 active members of an online community devoted to culinary matters, concluded that social ties to a reference group constitutes a crucial determinant of interpersonal influence. As alleged by de Valck et al. (2009), the more socially involved an individual is with an online community, the greater the likelihood that he/she will be subjected to communal influence. Wasko et al. (2009) also found that members, within electronic networks of practice, cultivate strong ties with the online community as a whole as compared to the development of interpersonal relationships. Forman et al.'s (2008) analysis of online customer review communities disclosed that members are more likely to trust reviews, which have been posted by reviewers who are closer in terms of geographical proximity.

Tribe.net [<http://www.tribe.net/tribes>] is an example of a SNS that promotes community over self by facilitating the formation of special interest groups around topical themes (e.g., hobbies, music and travel). Membership in these special interest groups is relatively fluid and member departures do not erode the groups' communal identity. Identity-based attachment can hence be construed as one of the motivational forces behind members' commitment to SNSs and it is defined in this thesis as the "*extent to*

which a member feels that he/she identifies with the online communities of a social networking site”.

2.2.2. Bond-Based Attachment in Social Networking Sites

Participants may become engaged in communities because they feel connected to other individuals in the group—what Prentice et al. (1994) term as bond-based attachment. According to the SBT, communities provide fertile breeding grounds for the development of relationships among individuals because through frequent interactions, it becomes easy for people to get acquainted and become familiar with one another (Ren et al., 2007). The same applies to SNSs. McKenna et al. (2002) noted that members’ frequency of interaction with others in online communities is deterministic of the extent to which they build relationships with one another. Similar empirical findings were documented in Utz’s (2003) investigation of online gaming. The findings revealed that the longer the period of participation for an online gamer, the greater is the likelihood of him/her developing a bond with other players. Ganley and Lampe (2009), in examining the social network structure of Slashdot [<http://slashdot.org>], uncovered that members, who are newer to the site, tend to associate with others in different circles whereas those who have been involved with the site for a much longer period are often affiliated with closely-knitted networks. In other words, one’s contacts within online communities could become less diverse and more concentrated over time (Ganley and Lampe, 2009). Bond-based attachment is thus amplified whenever members in online communities experience social co-presence: a subjective feeling of being with others in a communal environment (Slater et al. 2000).

For bond-based attachments, members feel more connected to one another and much less to the community as a whole. Consequently, members do not associate themselves with the collective identity of the community: should their friends leave the group, they are likely to drift away as well (Krackhardt and Porter, 1986). Similarly, Hahn et al. (2008) discovered that members from open source software developer networks display a greater likelihood of joining a software development project if they have strong collaborative ties with the project initiator in the past.

Blogster.com [<http://www.blogster.com>] can be seen as an example of a SNS that promotes bonding between bloggers and followers. Because bloggers tend to build up intimate relationships with followers over time due to extensive interactions on a one-to-one basis, their exit may spell an exodus of members from the site. For this reason, I conceive bond-based attachment as a second motivational force behind participants' commitment to SNSs and it is defined in this thesis as the "*extent to which a member feels that he/she connects with specific other(s) of a social networking site*".

2.2.3. Comparison-Based Attachment in Social Networking Sites

The SCT states that humans possess a drive for self-evaluation and self-improvement (Michinov and Primois, 2005). Festinger (1954a, 1954b) maintained that there is an intrinsic motivation in oneself to know if "one's opinions are correct and to know precisely what one is and is not capable of doing" (p. 217). The same sentiments were expressed by Suls et al. (2002), who alleged that people desire an accurate assessment of their opinions and performance so much so that in the absence of objective standards, they look to others (preferably those who they deemed to be similar) for information about their relative standing. Moreover, because people seek to confirm rather than disconfirm their opinions of themselves, they are inclined to perform upward comparison (when an individual compares himself/herself to someone who is better off) and crave higher standing relative to others (Baumeister and Bushman, 2008). This upward comparison process generally yields motivational incentives for self-improvement (Helgeson and Mickelson, 1995; Wood, 1989).

By comparing against better performers, individuals are inclined to set higher personal standards, which in turn can spur desires to seek improvements to oneself (e.g., Blanton et al., 1999; Huguet et al., 2001; Seta, 1982; Vrugt and Koenis, 2002). Blanton et al. (1999) discovered that the academic performance of Dutch school children tend to improve if they compared their examination grades with high performing students (see also Huguet et al., 2001). Similarly, Vrugt and Koenis (2002) showed that upward comparison produced higher personal goals, which predicted the future scientific productivity of faculty members in academic institutions. Conceivably, social comparison can be deemed as a significant motivational force behind members' participation in communal settings because it not only satisfies one's desire for an accurate assessment

of one's performance relative to others in the community, but it also compels one to seek progress in oneself through comparison with better performing members (Monteil and Huguet, 1999).

In the context of online communities, Shepherd et al. (1995) empirically demonstrated that members' comparison-based attachment to their standing relative to others within electronic brainstorming teams acts as an effective deterrent against social loafing. For instance, BeautifulPeople.com [<http://www.beautifulpeople.com>], a selective online dating website, is exemplary of SNSs that promote comparison and competition among members through rankings based on peer evaluations. To become a member of BeautifulPeople.com dating community, applicants are required to be voted in by existing members of the opposite sex over a 48 hour period. Only upon securing enough votes from members who found an applicant to be 'beautiful' would he/she be granted membership. Conceivably, SNSs such as BeautifulPeople.com draw on comparison-based attachment as the primary motivational force in promoting members' participation and it is defined in this thesis as the "*extent to which a member feels that he/she is attracted to his/her standing within the online community of a social networking site*".

2.3. Antecedents to Social Attachments in Social Networking Sites

Building on theories of social identity, social bond and social comparison, it is a central premise of my thesis that members may harbour identity-based attachment, bond-based attachment, comparison-based attachment or any combination of the three when participating on SNSs. But concurrently, the form(s) of attachment that is exhibited by members belonging to a specific SNS is dependent on the type(s) of social networking technologies being offered. Specifically, social networking technologies on SNSs are delineated into three categories depending on whether they fulfill deindividuation, personalization or tournament objectives. I further postulate that the presence of deindividuation, personalization or tournament technologies has a pronounced impact on the manifestation of identity-based, bond-based and comparison-based attachment respectively.

In the next sections, I outline my reasoning for decomposing design elements of SNSs into categories of deindividuation, personalization or tournament technologies and relate the impact of these social networking technologies to members' communal attachment within such sites.

Deindividuation Technologies: The SIDE model (Social Identity model of Deindividuation Effects) (Reicher et al., 1995; Spears and Lea, 1992, 1994) questions the assumption that interpersonal interaction is a necessary precondition for social presence. The SIDE model claims that the lack of non-verbal cues in Computer-Mediated Communication (CMC) environments may increase, rather than decrease social presence in communal settings (Spears and Lea, 1992). As opposed to the transmission of interpersonal information, the SIDE model posits that the communication of information on social categories may not be as sensitive to the media richness of CMC environments as postulated in past studies (Rogers and Lea, 2005). In situations where the transfer of personal cues or individuating information is restricted, the SIDE model suggests that the saliency of relevant social identities can be significantly enhanced through the suppression of individuality.

Applying the SIDE model to the domain of computer-mediated communications, Postmes et al. (1998) noticed that deindividuation, in the form of anonymity, depersonalizes perceptions of others and the self, thereby enhancing the saliency of social identity. The same sentiments were expressed by Spears et al., (2002) who reported a similar observation in that deindividuation within virtual teams decreases visibility of the individual within the group, which in turn accelerates the process of depersonalization and amplifies collective identity. Matheson and Zanna (1988, 1989, 1990) also found that non-anonymous computer-based communications have a detrimental impact on one's self-awareness within social communities. In the same vein, Agarwal et al. (2008) contended that anonymity afforded by certain SNSs could provide opportunities for oneself to "craft and maintain a new online persona and reinvent one's identity" (p. 244).

In light of the aforementioned empirical findings, I propose that deindividuation technologies generate identity-based attachment among members of SNSs. For instance, tribe.net [<http://www.tribe.net/tribes>] cultivates strong communal spirit among

members by offering a diversity of deindividuation technologies that de-emphasize the individuality of participants. By organizing the site into themes with message boards where contributors are represented solely by their screen name, tribe.net reduces the visibility of individual participants in place of a communal identity associated with each theme (see Figure 2). This thesis therefore defines deindividuation technologies as the “*extent to which a social networking site provides technological features that allow me to associate myself with others*” and hypothesizes that:

Hypothesis 1: Deindividuation technologies on a social networking site will positively influence members’ identity-based attachment to communal groups within the site.

tribe browse post

Google™ Custom Search Search sign in join

tribes » cultures & community »

Burning Man

moderated - created 07/29/03

Time to Burn. Spam, flooding and trolls are frowned upon. NO commercial posts in the topics area. Try to stay on topic or mark posts as OT. Play nice. This tribe is moderated by BEER : Bobzilla, ElainE and Rhino. Contact any of us if need be:
people.tribe.net/missouri-rhino people.tribe.net/bitermonkey people.tribe.net/bobzilla

<http://bm.tribe.net> XML ?

moderated by **Bobzilla** active members view all 21184
 SF Bay Area 523 friends

join this tribe bookmark tribe

ADVERTISEMENT

Nieuw: **simyo** sim only 2.50 min/1000 40%

Deindividuation technologies from tribe.net [<http://www.tribe.net/tribes>] decreases visibility of individuals within the community

related tribes

- [Burning Woman](#) 5373 members
- [SFBay Burners](#) 3944 members
- [LA Burners](#) 4308 members
- [Playalicious Playwear](#) 3133 members
- [Burning Man Art](#) 1874 members
- [The Culture of Burning Man](#) 1707 members
- [bassnectar](#) 4323 members
- [The Moon](#) 3667 members
- [The Mutaytor](#) 2006 members

all posts topics photos listings events reviews requests

THE ART OF TURNING ART INTO MONEY topic	dadara	5 replies 1:41 PM
I thought I would fir topic	THE ART OF TURNING ART INTO MONEY	305 replies 1:28 PM
Pool tickets on sale NOW! topic	Rob the...	125 replies 12:48 PM
OT: YO BURNERS! topic	Jammeth...	3 replies 03/12/11
New Burning Man book and event topic	Scribe	16 replies 03/11/11
Defaulting on your Participation Loan topic	fko	36 replies 03/10/11
TRY THE BRAND NEW BRC SEARCH ENGINE topic	Ocean	15 replies 03/09/11
Give this man your money! OT?? topic	Lonestoner	7 replies 03/08/11

Ziggo zakelijk Bestel nu ▶

Is BM an addiction? topic	Rob the...	48 replies 03/08/11
Skip Burning Man, come to Madison, WI topic	Miss Mollie	18 replies 03/08/11
A Question About Tents topic	Mitch	39 replies 03/05/11
Join Nonclave topic	Tedward	posted 03/05/11
INSPIRA~ Be the change you want to see on the ... topic	fko	2 replies 03/05/11

Figure 1: Example of Deindividuation Technology from tribe.net

Since deindividuation technologies place less emphasis on the individuality of participants in SNSs, it can be deduced that they exert a negative impact on bond- and

comparison-based attachments. In the absence of identifiable personal information in a SNS, it is neither possible for participants to establish strong bonds with one another nor is it meaningful to be fixated on one's standing in the community. As observed by Reicher (1982) in crowd settings, anonymity dilutes the personal identity of crowd members by instilling a collective identity such that members identify with and view themselves as belonging to the crowd, and the crowd's norms are adhered to strongly as a consequence. Identical findings were reported by Postmes and Spears (1998) in a meta-analysis of 60 deindividuation studies within social psychology. They found that deindividuated members in social communities exhibited normative rather than anti-normative behaviors: they refrain from engaging in disruptive individualized actions and display greater compliance with communal norms (Postmes and Spears, 1998). Apart from Postmes and Spears (1998), other scholars have also provided evidence that attests to deindividuation as having a significant impact on the weakening of members' personal identity while strengthening the collective identity of social communities (Postmes et al., 2005; Sassenberg, 2002; Sassenberg and Boos, 2003; Sassenberg and Postmes, 2002). This thesis therefore hypothesizes that:

Hypothesis 2: Deindividuation technologies on a social networking site will negatively influence members' bond-based attachment to other individual members participating within the site.

Hypothesis 3: Deindividuation technologies on a social networking site will negatively influence members' comparison-based attachment to their relative communal standing on the site.

Personalization Technologies: Self-disclosure and self-expression—the revelation of personally revealing information about the self—are pre-requisites for building interpersonal bonds (Collins and Miller 1994). Naturally, members of SNSs have a greater probability of building relationships with one another if opportunities for self-disclosure and self-expression are present: a member can learn about others in the community and vice versa. In communal settings, self-disclosure and self-expression shift attention from the community as a whole to individual members (Joinson, 2001; Postmes et al., 2002; Sassenberg and Postmes, 2002). Through self-disclosure and self-expression, members on SNSs can signal their style and personality in hope of finding similar others.

Within the Management Information System (MIS) discipline, there have been studies advocating the impact of personalization on the intensity of relationships among participants in online market exchanges (e.g., Prahalad and Ramaswamy, 2004). As noted by Prahalad and Ramaswamy (2004), personalization differs from customization in that the former embodies complete flexibility in permitting participants to freely specify their preferences whereas the latter relies on a predetermined menu of options from which to limit participants' selection. Through personalization, Prahalad and Ramaswamy (2004) contended that participants may stand to gain from greater engagement via one-to-one relationships. Conceivably, the argument can be extended to SNSs in that personalization technologies would enable participants to personify themselves within such online communities and invoke bond-based attachments among one another. Forman et al. (2008), in analyzing online customer reviews from Amazon.com [<http://www.amazon.com>], obtained empirical support for the vital role of self-disclosure. They not only found that consumers tend to rate online customer reviews containing identity-descriptive information more positively, but also established that reviewers' self-disclosure of identifiable information culminates in subsequent increase in sales (Forman et al., 2008). The same sentiments were expressed by Huang and Yen (2003), who found personalized communication to be a primary factor driving the development of friendships via instant messaging.

With respect to contemporary SNSs, MySpace [<http://ca.myspace.com>] promotes individuality within online communities through the provision of personalization technologies that enables deep profiling of members. These include highly customizable homepages (whereas Facebook [<https://www.facebook.com>] allows only plain text for members' profiles, MySpace permits profiles to be decorated via HTML coding) and capabilities for members to design applications for the community, to post classifieds for oneself as well as to upload and share photos, videos and audio tapings with others (see Figure 3). Blogs are another example of SNS that embeds personalization technologies that strengthen social bonds between bloggers and followers. Through personal self-disclosure and self-expression coupled with modulated interactivity among participants (Nardi et al., 2004), blogs enable the formation of strong bonding relationships between blog owners and followers. This thesis therefore defines personalization technologies as

the “extent to which a social networking site provides technological features that allow me to express myself to others” and hypothesizes that:

Hypothesis 4: Personalization technologies on a social networking site will positively influence members’ bond-based attachment to other individual members participating within the site.

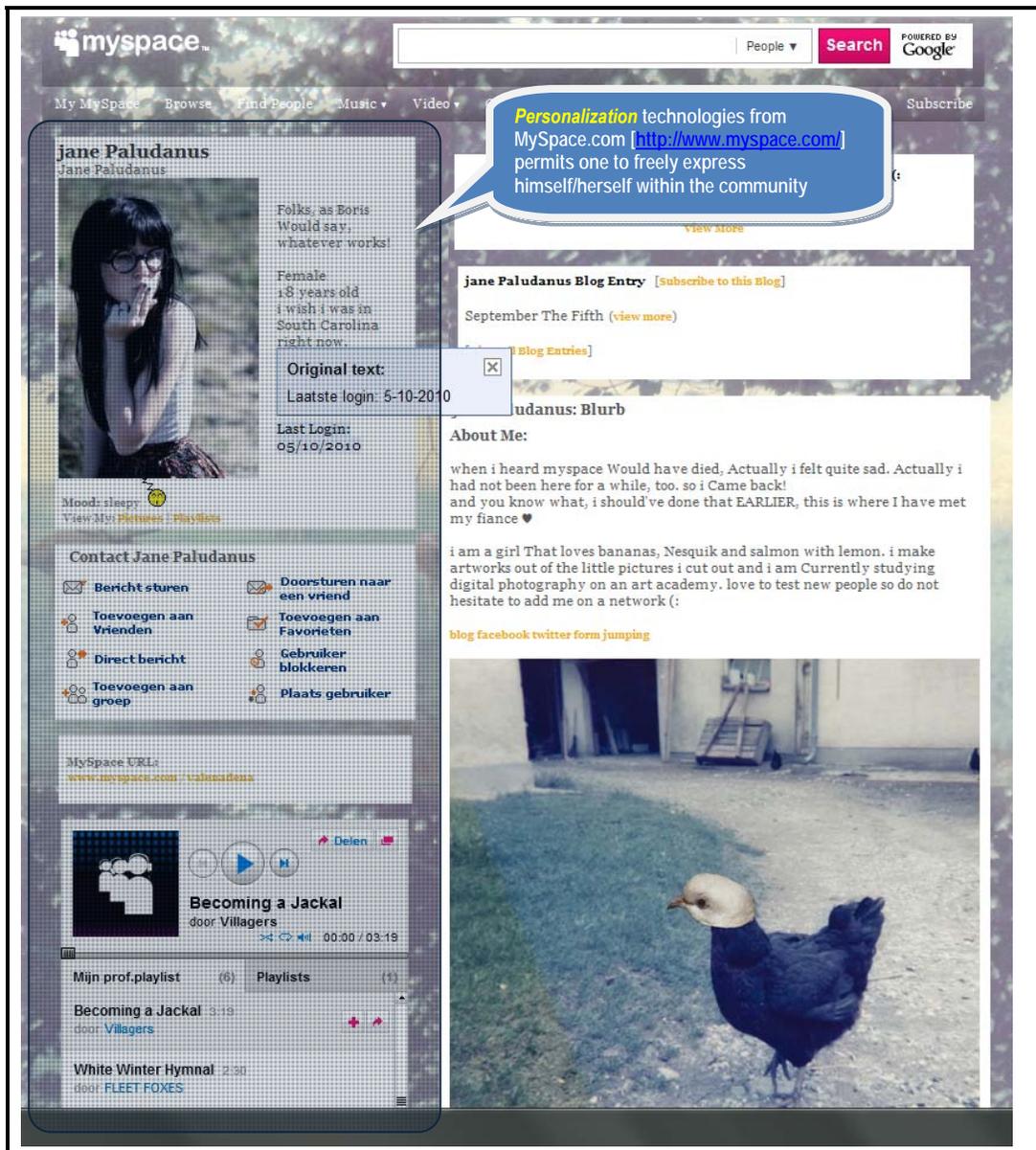


Figure 2: Example of Personalization Technology from MySpace

With personalization technologies however, the individuality of participants would overshadow the collective identity of the online community such that identity-based

attachment is unlikely to emerge. Morgan et al. (1969), in a laboratory experiment on self-disclosure, discovered that participants with more intimate disclosures are better liked than those who disclose less. In the same vein, Laurenceau et al. (1998) found that self-disclosures are crucial to the development of close relationships. Within the context of SNSs, Parks and Floyd (1996) documented that over 60% of Usenet members form personal relationships with fellow newsgroup users due to high levels of online self-disclosures. The same observation was reported by Wilkins (1991) for a self-expressing online community of church workers where one member remarked: “I know some of these people better than some of my oldest and best friends” (p. 56). This thesis therefore hypothesizes that:

Hypothesis 5: Personalization technologies on a social networking site will negatively influence members’ identity-based attachment to communal groups within the site.

Likewise, comparison-based attachment should not materialize in the presence of personalization technologies. Since personalization technologies serve to intensify relationships among individual members of online communities (Prahalad and Ramaswamy, 2004), they eliminate any incentives for upward comparison on a communal basis. The same inference can be drawn from the work of Joinson (2001), who revealed that self-disclosures are correlated with reduced public self-awareness. This thesis therefore hypothesizes that:

Hypothesis 6: Personalization technologies on a social networking site will negatively influence members’ comparison-based attachment to their relative communal standing on the site.

Tournament Technologies: Tournaments are an integral and often invisible aspect of the workplace. Because it is usually impossible to gauge performance on purely objective criteria, Lazear and Rosen (1981) maintained that workers are typically ranked relative to each other and promoted not for being the best performer at their jobs but for being better than their immediate rivals. A basic tenet of Tournament Theory holds that tournament participants are incentivized by the promise of rewards associated with winners, and this leads to competition among one another (Abrevaya, 2002; Becker and Huselid, 1992). Indeed, electronic brainstorming studies have illustrated that group members are more productive when they are provided with a real-time continuous public

display of the ideas generated by anonymous group members projected at the front of the electronic meeting room (e.g., Paulus et al., 1996; Roy et al., 1996; Shepherd et al., 1995). These empirical results suggest that technologies which provide either real-time or delayed performance feedback are particularly effective in motivating members within communal settings because they create opportunities for social comparison within the group. Extrapolated to SNSs, it can be construed that those sites which embed technologies emphasizing the relative performance, position or standing of members within such online communities, function as virtual tournaments and produces comparison-based attachment. BeautifulPeople.com [<http://www.beautifulpeople.com>] belongs to such a category of SNSs that intentionally induces comparisons among members with tournament technologies (e.g., hierarchical rankings and member ratings), which relentlessly remind members of their social standing relative to others within the online community (see Figure 4). This thesis therefore defines tournament technologies as the “*extent to which a social networking site provides technological features that allow me to evaluate myself in relation to others*” and hypothesizes that:

Hypothesis 7: Tournament technologies on a social networking site will positively influence members’ comparison-based attachment to their relative communal standing on the site.

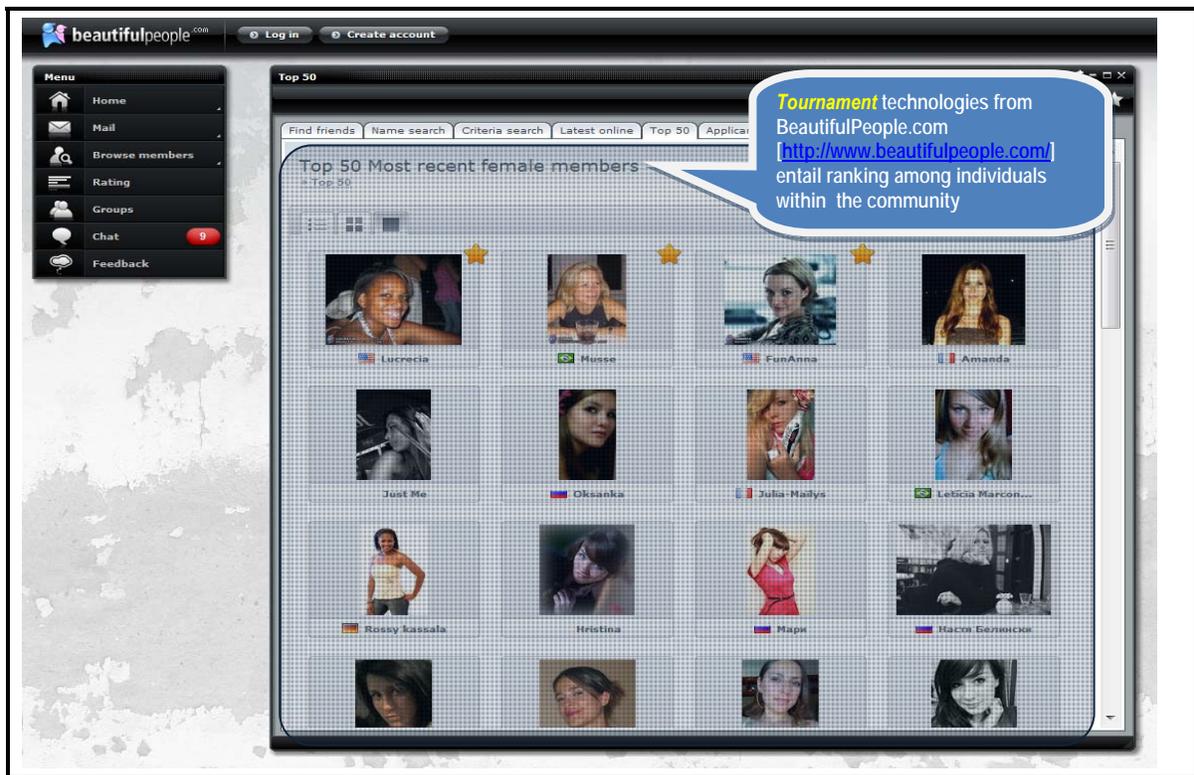


Figure 3: Example of Tournament Technology from BeautifulPeople.com

As witnessed by LePine and Van Dyne (2001) in the context of work teams, the explication of members' contribution may lead to unnecessary animosity. Whereas the 'lousiest' member from a work team could face ostracization from having his/her incapacity made public, the team's fastest member may also be afraid of having his/her ability broadcast publicly for fear of being exploited (see also Beersma et al., 2003). Conceivably, tournament technologies are highly disruptive to identity-based and bond-based attachments: they may encourage inter-participant judgement and exploitation that would lead to estranged relationships among members of SNSs. This thesis therefore hypothesizes that:

Hypothesis 8: Tournament technologies on a social networking site will negatively influence members' identity-based attachment to communal groups within the site.

Hypothesis 9: Tournament technologies on a social networking site will negatively influence members' bond-based attachment to other individual members participating within the site.

Taken together, deindividuation, personalization and tournament technologies represent a novel classification scheme from which to categorize social networking technologies on SNSs and theorize about their impact on members' communal attachments within such online communities. Even though the aforementioned three categories of social networking technologies are *orthogonal* from a conceptual point of view, they are not necessarily *mutually exclusive* in that the presence of one particular category of social networking technology on a SNS does not preclude the presence of another on the same site.

2.4. Consequences of Social Attachments in Social Networking Sites

Having identified antecedents to members' attachment in SNSs, this section will focus on the consequences that may result from such attachments. Specifically, due to the assimilation of three separate theories (i.e., Social Identity Theory, Social Bond Theory and Social Comparison Theory) into a singular Nomological network, there is a necessity to identify shared consequences that bind these theories by serving as dependent variables which could manifest from the presence of identity-based attachment, bond-based attachment, comparison-based attachment or any combination of the three. To this end, this thesis draws on extant literature in differentiating between cooperative versus competitive mentality of members participating in SNSs in postulating the impact of these opposite mental states on members' satisfaction and continual usage intentions towards these sites.

Cooperative Mentality. Both identity-based and bond-based attachments appear to have similar positive effects on members' evaluation of and commitment to communities as a whole. Studies have shown that members' exhibiting identity-based and/or bond-based attachment share a tendency to view their communities as being cohesive, thereby leading to a more favorable evaluation of these communities as compared to other communities (Back, 1951; Hogg and Turner, 1985; Michinov et al., 2004). Likewise, scholars have found that both identity-based and bond-based attachments bolster members' positive feelings towards their communities, which in turn led to a boost in their level of participation in the community, and an increased likelihood

of remaining in the group (Back, 1951; Levine and Moreland, 1998). As alleged by Krackhardt (1992), collective action is easier to achieve when social networks are dense, consisting of a large proportion of strong and direct ties among members. That is, the more members who are in regular contact with one another within a community, the more likely they are to develop a ‘habit of cooperation’ and act collectively (Marweil and Oliver, 1988; Robert Jr. et al., 2008). This thesis therefore defines cooperative mentality as the “*extent to which a member shares a tendency to cooperate with others within a social networking site*” and hypothesizes that:

Hypothesis 10: Members’ identity-based attachment to communal groups within a social networking site will positively influence their cooperative mentality towards participation within the site.

Hypothesis 11: Members’ bond-based attachment to other individual members participating within a social networking site will positively influence their cooperative mentality towards participation within the site.

The same cannot be said for comparison-based attachment. In comparison-based attachment, individuals’ sense of self-worth is derived from a craving of higher social standing relative to others in a community (Baumeister and Bushman, 2008). Therefore, in accordance with the SCT, members in comparison-based communities share a tendency to emphasize distributive justice—amount of output relative to the level of input invested by an individual (Song and Kim, 2006). In turn, an emphasis on distributive justice will fixate members on self-achievements and lessen the likelihood of cooperative mentality being manifested. This thesis therefore hypothesizes that:

Hypothesis 12: Members’ comparison-based attachment to their relative communal standing on a social networking site will negatively influence their cooperative mentality towards participation within the site.

Competitive Mentality: Discrepancies exist between identity-based and bond-based attachment with regards to the competitive mentality of members participating in SNSs. Whereas identity-based attachment tend to be associated with greater collaboration and less competition among members in communities, the reverse is true for bond-based attachment. Studies by Postmes and Spears (2000) as well as Sassenberg (2002) have revealed that members who exhibit identity-based attachment in communities display greater congeniality and higher behavioural compliance to group norms as opposed to those exhibiting bond-based attachment. For instance, Ren et al.

(2007) alleged that the cooperative character of identity-based communities is exemplified through their welcoming stance towards newcomers. In contrast, a greater number of membership obstacles may be enacted for bond-based communities due to their closely-knitted nature (Ren et al., 2007). The same deduction was made by Lakhani and Hippel (2003), whose work on open source development communities uncovered that old-timers are often willing to offer help to newcomers, even though these newcomers have not yet contributed to the community. Conversely, members who belong to bond-based communities are more likely to render assistance to specific others (Lakhani and Hippel, 2003).

Evidently, empirical studies have demonstrated that members contribute more resources to the achievement of public good, work harder to attain mutual goals and slack off less when they feel committed to their communities (Karau and Williams, 1993; Karau and Hart, 1998). They also tend to prefer equal rewards for their contribution, a clear indicator of the absence of competition among members (Karau and Williams, 1993; Karau and Hart, 1998). These effects however, are diluted for bond-based attachment. As surmised by Utz and Sassenberg (2002), members exhibiting bond-based attachment in a community feel less obligated to compensate for others' lack of effort. This thesis therefore defines competitive mentality as the "*extent to which a member shares a tendency to compete with others within a social networking site*" and hypothesizes that:

Hypothesis 13: Members' identity-based attachment to communal groups within a social networking site will negatively influence their competitive mentality towards participation within the site.

Hypothesis 14: Members' bond-based attachment to other individual members participating within a social networking site will positively influence their competitive mentality towards participation within the site.

Conversely, anecdotal evidence from previous studies on comparison-based attachment in both offline (e.g., Blanton et al., 1999; Huguet et al., 2001; Vrugt and Koenis, 2002) and online (e.g., Paulus et al., 1996; Roy et al., 1996) communities have suggested that mindfulness of one's standing relative to others in these communities fosters competition among members in a bid to outperform one another. Particularly, Shepherd et al. (1995) established a causal relationship between the quantity of ideas

generated in an electronic brainstorming session and feedback about participants' performance. They found that participants who have been made aware of their performance relative to a 'dummy' average group are able to generate 63% more ideas during the session (Shepherd et al., 1995) because nobody wanted to be seen as being below 'average' (Briggs, 2006). Further, participants, who engage in comparison, continue to exhibit above-average levels of productivity throughout the session (Shepherd et al., 1995). This thesis therefore hypothesizes that:

Hypothesis 15: Members' comparison-based attachment to their relative communal standing on a social networking site will positively influence their competitive mentality towards participation within the site.

Satisfaction: As defined by Oliver (1981), satisfaction captures the psychological state that culminates from an individual's evaluation of the extent to which post-consumption performance of products or services relative to pre-consumption expectations. Higher expectations or lower performance of products or services are therefore more likely to translate to dissatisfaction due to a disconfirmation of pre-consumption expectations in comparison to post-consumption performance (Oliver, 1981). Transplanted to the context of SNSs, Ma and Agarwal (2007) argued that membership in an online community is fundamentally a social relationship and that a member's satisfaction with the community is dependent on whether he/she is contented with his/her access to communal resources. For this reason, SNSs whose members exhibit cooperative mentalities are more likely to report greater member satisfaction with the online communities (Ma and Agarwal, 2007). Similarly, Robert Jr. et al. (2008) demonstrated that goodwill, collective bonds and pro-social behaviors give rise to relational capital among members of digitally enabled teams. The prevalence of relational capital in turn generates group solidarity and helps in overcoming problems of freeriding (Robert Jr. et al., 2008). Relational capital benefits the online community through inculcating an obligation among members to assist others, even strangers, on the basis of shared membership (Wasko and Faraj, 2005). In this sense, cooperative mentality among members within an online community builds relational capital, which would most probably lead to greater member satisfaction with the community. This thesis therefore defines satisfaction as the "*extent to which a member is satisfied with a social networking site*" and hypothesizes that:

Hypothesis 16: Members' cooperative mentality towards participation within a social networking site will positively influence their satisfaction towards the site.

Conversely, Malhotra (2010) claimed that competition induces physiological arousal that leads one to pursue aggressive behaviors without regards for costs and benefits (see also Loewenstein et al., 1997; Zillmann et al., 1975). It would not be unusual for SNS members exhibiting competitive mentalities to intentionally withhold communal resources in order to gain an advantage over others within the online community. This thesis therefore defines satisfaction as the "*extent to which a member is satisfied with a social networking site*" and hypothesizes that:

Hypothesis 17: Members' competitive mentality towards participation within a social networking site will negatively influence their satisfaction towards the site.

Continual Usage Intentions: Continual usage intentions—the "*extent to which a member intends to continue using a social networking site in the future*"—governs whether members are likely to persist with a SNS (Deng et al., 2010). Bandura (1995) attested that making regular and high quality contributions to a community convinces members that they have a positive impact on others within the community and reinforces members' own self-image as efficacious individuals. This image of self-efficacy in turn prompts members to contribute further on a constant basis (Bandura, 1995). The same observation was recorded by Wang and Fesenmaier (2003), who not only affirmed self-efficacy as an antecedent to members' willingness to contribute within an online travel community, but also uncovered reciprocity as another critical success factor behind members' active participation. Similarly, Arakji et al. (2009) revealed that members' participation within social bookmarking sites are motivated by their assessment of whether there is reciprocation from other members and their evaluations of the extent to which their contributions are valued within the online community. Skyes et al. (2009), in a longitudinal study of 87 employees within an organization, also bear witness to cooperation as a core determinant of system utilization. Particularly, they revealed network density (reflecting 'get-help' ties for an employee) and network centrality (reflecting 'give-help' ties for an employee) to be predictive of system usage within the organization (Skyes et al., 2009). Consistent with the aforementioned empirical findings, SNSs whose members' exhibit cooperative mentality are more likely to bear witness to

continual usage intentions. This thesis therefore defines continual usage intentions as the “*extent to which a member intends to continue using a social networking site in the future*” and hypothesizes that:

Hypothesis 18: Members’ cooperative mentality towards participation within a social networking site will positively influence their continual usage intentions towards the site.

Competitive mentality, on the other hand, tends to promote aggression and hostility among community members (Malhotra, 2010). Due to heightened arousal caused by competitive instincts, Zillmann et al. (1975) admitted that individuals may hold little regard for consequences and undertake aggressive and retaliatory measures in response to competitors. The significance of group cohesion in affecting one’s behavioral actions is corroborated in Yoo and Alavi’s (2001) experimental study in which they demonstrated that the absence of group cohesion decreases members’ willingness to engage in task participation. Conceivably, SNSs whose members exhibit competitive mentality would create an antagonistic and intimidating atmosphere that hastens the departure of members from these online communities. This thesis therefore hypothesizes that:

Hypothesis 19: Members’ competitive mentality towards participation within a social networking site will negatively influence their continual usage intentions towards the site.

The relationship between satisfaction and continual usage intentions is well-established within extant literature on technology acceptance. As recognized by Bhattacharjee (2001), satisfaction holds the key to building and retaining a loyal base of long-term system users. The same conclusion was reached by Keaveney and Parthasarathy (2001), who discovered satisfaction to be the main divider separating continuing customers of online services from switchers. Likewise, Ma and Agarwal (2007) have found satisfaction to be a focal determinant of members’ knowledge contributions within online communities whereas Zhang et al. (2009) have uncovered satisfaction as a salient predictor of bloggers’ switching intentions. This thesis therefore hypothesizes that:

Hypothesis 20: Members’ satisfaction towards a social networking site will positively influence their continual usage intentions towards the site.

2.5. Summary

In this chapter, theories of social bond, social identity and social comparison are assimilated to construct a communal-based technology acceptance model for SNSs together with testable hypotheses. Figure 1 depicts my proposed communal-based technology acceptance model in which I posit that members' continual usage of SNSs is dependent on the provision of deindividuation, personalization and tournament technologies to cultivate identity-based, bond-based and comparison-based attachments within online communities. As illustrated in Figure 1, I hypothesize that a member's continual usage of a SNS is shaped via his/her communal attachments within the site and that these communal attachments are in turn, driven by the presence of social networking technologies, which fulfill certain objectives. Although the majority of constructs (with the exception of deindividuation, personalizable and tournament technologies) in the theoretical model are not necessarily foreign to social psychology scholars, it should be noted that they have seldom (if ever) been incorporated into information systems research. Moreover, to-date, there has never been an integrative model that assimilates these constructs to offer a more comprehensive picture of how distinctive configurations of social networking technologies could influence members' communal attachments and participative mentalities within SNSs.

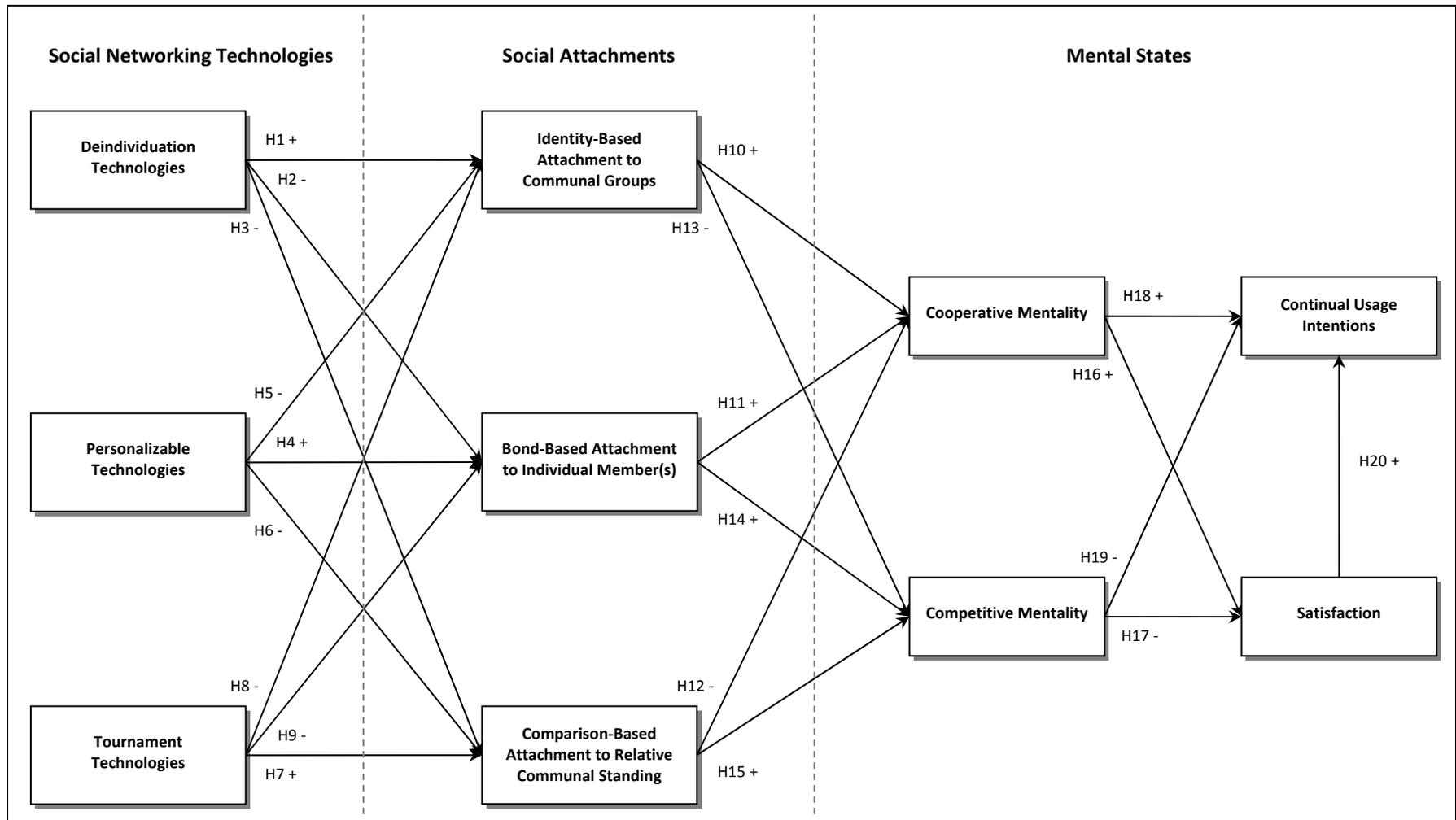


Figure 4: *Theoretical Model of Members' Communal Attachments within Social Networking Sites*

Chapter 3. Methodology

The validation of the theoretical model occurs in two stages. In the first stage, content analysis was performed to elicit technological features from predominant Social Networking Sites (SNSs) that affect how members relate to one another within such online communities. As postulated in the theoretical model (see Figure 4), social networking technologies alter the communal structure within SNSs in three ways: (1) by promoting a common identify [i.e., Social Identity Theory (SIT)]; (2) by strengthening bonds between two independent members [i.e., Social Bond Theory (SBT)], and; (3) by emphasizing the relative standing of oneself in comparison to others within the online community [i.e., Social Comparison Theory (SCT)]. Content analysis of contemporary SNSs is therefore imperative in establishing the spectrum of technological features being offered to members for social interaction and networking purposes. These features were then incorporated into an online questionnaire in the second stage to ascertain their impact on the three forms of attachment (i.e., bond-based attachment, identity-based attachment and comparison-based attachment) exhibited by members on SNSs.

In the second stage, an online questionnaire was developed and administered to a cross-sectional, representative sample population of members belonging to SNSs. The questionnaire is designed to target active members of SNSs and solicit their evaluations on: (1) the type(s) of social networking technologies present on these sites; (2) the form(s) of attachment that is prevalent within such online communities due to the existence of these technologies, and; (3) the mental states arising from such attachment(s). The remainder of this chapter elaborates on the design and execution of both stages.

3.1. 1st Stage – Content Analysis

To explicate the spectrum of technological features that support social networking activities, I begin by composing a list of SNSs that are popular among web surfers. When composing the list, I turn to eBizMBA.com [<http://www.ebizmba.com>], a commercial website that consolidates publicly available information on various aspects of e-businesses and maintains a knowledge database containing data (statistical or otherwise) on all manners of online activities. Related to this empirical study, eBizMBA.com publishes a list of ‘Top 15 Most Popular Social Networking Sites’, which is updated constantly based on web traffic [<http://www.ebizmba.com/articles/social-networking-websites>]. Noticeably, despite occasional variations in ranking among SNSs within the list published by eBizMBA.com, I observe no new addition within a six months period due to the huge and relatively stable member base of these sites. Table 1 gives a detailed breakdown of the fifteen most popular SNSs as listed by eBizMBA.com.

Table 1: Breakdown of Fifteen Most Popular Social Networking Sites

Social Networking Site	Description	Estimated Unique Monthly Visits ¹
Facebook [https://www.facebook.com]	Social networking service devoted to general purpose networking among individuals.	750 million
Twitter [https://twitter.com]	Social networking and micro-blogging service that enables individuals to send and read text-based messages.	250 million
LinkedIn [http://www.linkedin.com]	Social networking service devoted to networking among individuals with professional occupations.	110 million
MySpace [http://www.myspace.com]	Social networking service devoted to general purpose networking among individuals.	70.5 million
Google Plus+ [https://plus.google.com]	Social networking and identity service devoted to organizing friendship information.	65 million
DeviantArt [http://www.deviantart.com]	Social networking service devoted to showcasing various forms of member-created artwork.	25.5 million
LiveJournal [http://www.livejournal.com]	Social networking service devoted to hosting blogs, diaries or journal entries of individuals.	20.5 million

¹ Unique monthly visits are estimates for the month of December 2012 as compiled by eBizMBA.com [<http://www.ebizmba.com/articles/social-networking-websites>].

Social Networking Site	Description	Estimated Unique Monthly Visits ¹
Tagged [http://www.tagged.com]	Social networking service devoted to discovery whereby members are able to browse the profiles of others, play games as well as share tags and virtual gifts.	19.5 million
Orkut [http://www.orkut.com/Main]	Social networking service devoted to helping members meet new and old friends.	17.5 million
Pinterest [http://pinterest.com]	Social networking service devoted to the creation and management of theme-based image collections (e.g., hobbies, events and interests) among members via pin board-style photo sharing.	15.5 million
CafeMom [http://www.cafemom.com]	Social networking service devoted to networking among mothers and mothers-to-be.	12.5 million
Ning [https://www.ning.com/main/signin]	E-service provider offering tools for the creation of social networking sites with customized appearance and feature sets such as photos, videos, forums and blogs.	12 million
Meetup [http://www.meetup.com]	Social networking service devoted to facilitating offline group meetings among members who are unified by a common interest such as politics, books, games, movies, health, pets, careers or hobbies.	7.5 million
myLife [http://www.mylife.com]	Social networking service devoted to helping members find and keep in touch with friends, relatives and lost loves.	5.4 million
Badoo [http://badoo.com/en-ca]	Social networking service devoted to dating and discovery.	2.5 million

Of the fifteen SNSs depicted in Table 1, Ning [<https://www.ning.com/main/signin>] differs from the rest in that it is not a social networking community per se, but rather, an e-service provider offering tools for individuals to create their own communities with customized appearance and feature sets such as photos, videos, forums and blogs. With the exception of Ning, it is clear that the other fourteen SNSs constitute the most popular social networking services on the Internet (see Table 1) and are thus shortlisted for content analysis. Two independent coders were recruited from post-graduate students who are pursuing a research master's degree in the area of 'Business and ICT'. The coders were briefed on the purpose of each of the three categories of social networking technologies (i.e., deindividuation technologies, personalization technologies and

tournament technologies) specified in the theoretical model and presented with examples of technological features that characterize each of the three categories.

Each coder was instructed to elicit technological features from the each of the fourteen SNSs that can be classified under one of the three categories of social networking technologies (i.e., deindividuation technologies, personalization technologies and tournament technologies). For each elicited technological feature, the coders were asked to capture a screenshot of the technology and deliver a written description of how this technology fulfills its objective of facilitating social interaction and networking among individuals. Technological features, which do not embed social elements, were hence excluded from consideration during content analysis. Whenever a coder was unsure of the placement of an elicited technological feature, he/she was requested to temporary assign the technology to an ‘ambiguous’ category. Upon the completion of the elicitation exercise, a meeting was convened with the coders to go through their list and compile a set of generic technological features, which are readily accessible from contemporary SNSs, for each of the three categories. During the meeting, the coders relied on individual screenshots and written descriptions of elicited technological features to justify their rationale for the placement of different technologies and resolve any disagreements. Content analysis was only concluded when both coders reached consensus on the placement of all elicited technological features. In total, thirty-one technological features were elicited from the fourteen SNSs through content analysis. Table 2 illustrates my proposed typology of social networking technologies derived through content analysis. Appendix C contains screenshots depicting examples of these elicited technological features. Appendix D offers an overview of technological features elicited from each of the fourteen SNSs.

Table 2: Typology of Social Networking Technologies Derived Through Content Analysis

Category	Social Dimension	Elicited Technological Feature	Definition (Social networking site provides technological feature(s) that allows me to...)
Deindividualization	Content	Expansion of Network Capabilities	Acquire new network capabilities in connecting with others
		Participation of Others in Content Creation	Decide the extent to which others can participate in content creation

Category	Social Dimension	Elicited Technological Feature	Definition (Social networking site provides technological feature(s) that allows me to...)
		Recommendation of Social Content	Recommend others social content that is created by myself or others
	Relation	Display of Social Contacts	Display social contacts that I have
		Expand Social Contacts	Invite others I may know to serve as social contacts
		Interaction with Social Contacts	Interact with my social contacts
		Modification of Appeal of Social Contacts	Modify the appeal of social contacts that I share with others
		Recommendation of Social Contacts	Add others, whom I might have known, as my social contacts
		Request Modification of Social Contacts	Petition others to change my relationship with them
		Search for Social Contacts	Search for others that I can potentially establish as social contacts
Personalization	Content	Contextualization of Social Content	Include contextual information for content that I share with others
		Creation of Personal Profile	Create a personal profile, which I share with others, in the way that I want
		Creation of Social Content	Create content, which I share with others, in the way that I want
		Evaluation of Social Content	Evaluate content that others share with me
		Integration of Media Formats for Personal Profile Creation	Integrate different media formats in creating a personal profile that I share with others
		Integration of Media Formats for Social Content Creation	Integrate different media formats in creating content that I share with others
	Relation	Control Accessibility to Social Contacts	Control others' access to my social contacts
		Control Relational Configuration	Decide how my social contacts can relate to me
		Define Relational Configuration	Characterize the type of relationship I share with my social contacts

Category	Social Dimension	Elicited Technological Feature	Definition (Social networking site provides technological feature(s) that allows me to...)
		Establishment of Social Contacts	Establish who I want as my social contacts
		Personalization of Social Contacts	Develop a personalized space to display social contacts that I choose to share with others
	Space	Categorization of Personal Profile	Organize into categories the personal profile that I choose to share with others
		Control Accessibility of Personal Profile	Control others' access to the personal profile that I have created
		Control Accessibility of Social Content	Control others' access to content that I have created
		Customization of Common Space	Modify the common space I share with others to increase my appeal
		Customization of Social Content Display	Develop a customized space to display content that others choose to share with me
		Customization of Social Space Appearance	Customize the appearance of social space that I share with others
Personalization of Social Content Display	Develop a personalized space to display content that I choose to share with others		
Tournament	Content	Ranking of Personal Preferences	Establish the popularity of personal preferences
		Ranking of Social Content	Establish the popularity of social content that I visit
	Relation	Ranking of Social Contacts	Establish my popularity as compared to others

Next, two new coders were brought in and instructed to place the elicited technological features into the three categories of deindividuation technologies, personalization technologies and tournament technologies. Specifically, the coders were deliberately asked to ponder over the possibility of further delineating the three categories to derive a finer-grained classification scheme. From this second round of coding, it emerges that elicited technological features under each category can be further categorized according to whether they cater to the social dimensions of content,

relation and/or space. Whereas content-based social networking technologies are those that permit manipulation to be performed on informational content shared among members of SNSs, relation-based social networking technologies are those that allow members to alter their relationship with one another and space-based social networking technologies are those that enable members to customize the user interface through which one can socialize with others. In reversing the initial coding process, I was able to triangulate the elicitation and categorization of technological features by subjecting these technologies to a second round of verification. For this second round of coding, computed hit ratio² of 0.88 and inter-coder Kappa³ of 0.87 exceeded recommended thresholds, thereby implying a high level of agreement between the two coders as to their placement of elicited technological features. This inter-rater agreement in turn, lends credibility to my proposed typology of social networking technologies (see Table 2) and reaffirms the relevance of elicited technological features.

3.2. 2nd Stage – Quantitative Field Survey

In the second stage, I employed the field survey methodology for data collection. As deducible from the research question, the units of analysis are active members of SNSs. Therefore, external validity dictates that a generalizable sample population cannot be obtained from qualitative methods such as case studies. Further, because I am interested in ascertaining the impact and pragmatic relevance of a wide spectrum of social networking technologies on how members socialize with one another on SNSs, experimental manipulation is not a feasible option. Data was gathered on a variety of SNSs with the assistance of existing members; they were asked to provide evaluations of the social networking technologies accessible from a targeted SNS as well as for the remaining cognitive constructs depicted in the theoretical model. The collected data was then analyzed via Structural Equation Modeling (SEM) techniques to validate the theoretical model (Gefen et al., 2000).

² The hit ratio is a measure of how well measurement items tap on their respective targeted constructs by calculating the ratio of 'correct' item placements to total placements across all dimensions (Moore and Benbasat 1991). Though there are no strict guidelines for assessing the hit ratio, 80% is generally deemed to be acceptable.

³ Kappa assesses *inter-coder reliability* by taking into account probabilities of chance agreement. The commonly acceptable threshold for Kappa is 0.70 (Boudreau et al. 2001).

3.2.1. Development of Survey Measures

Abiding by standard psychometric procedures (Nunnally and Bernstein, 1994), three to four measurement items are generated for each technological feature elicited in the first stage as well as for the three categories of social networking technologies (i.e., deindividuation technologies, personalization technologies and tournament technologies). For each elicited technological feature, measures are developed to determine the extent to which this particular technology is present on a SNS. As for the other cognitive constructs in the theoretical model, measurement items were adapted from extant literature. Measures for bond-based attachment were adapted from Jenkins (1997) as well as Wiatrowski et al. (1981). Measures for identity-based attachment were adapted from Luhtanen and Crocker (1992) as well as Triandis and Gelfand (1998). Measures for comparison-based attachment were adapted from Buunk et al. (1990) as well as Allan and Gilbert (1995). Measures for cooperative mentality were adapted from Crosby et al. (1990) as well as Triandis and Gelfand (1998). Measures for competitive mentality were adapted from Lim (2009). Measures for satisfaction were adapted from Cenfetelli et al. (2008). Finally, measures for continual usage intention were adapted from Deng et al. (2010). The complete list of measurement items is summarized in Appendix E.

3.2.2. Design of Online Questionnaire

Combining the measures for the social networking technologies and the various cognitive constructs, an online questionnaire was developed for data collection purposes. Given the predominantly Internet-savvy target audience of SNS members, an online questionnaire was deemed to be the most appropriate platform for data collection (Stanton and Rogelberg, 2001). The questionnaire was pre-tested on a sample of 50 active SNS members (48% female with more than five years of experience with SNSs on average), who were selected with the help of a commercial marketing research firm, to verify the wording of the items. These pre-test subjects are vital in ensuring the clarity of the survey instructions as there will not be any form of face-to-face interaction between the researcher and actual respondents. At the same time, the proper functioning of the questionnaire was also assessed across different browser platforms (e.g., Microsoft

Internet Explorer, Mozilla Firefox and Netscape), display resolutions and hardware systems (e.g., Pentium PCs and Macintoshes).

3.2.3. Sample and Data Collection Procedures

Survey respondents were recruited via a commercial marketing research firm with a track record in online surveys. The marketing research firm houses a database of potential survey respondents from North America that was purchased at a premium for this empirical study. Incentives for participation in the survey were arranged through the marketing research firm and they take the form of a point-based system. Through taking part in such surveys, respondents accumulate points that are redeemable for prizes from the marketing research firm. According to Comley (1996), a much higher response rate can be expected when survey respondents have given their prior consent for participation. An email containing survey instructions was thus sent, via the marketing research firm, to invite each individual to enroll for the study. The email also contains a hyperlink to the online questionnaire for willing respondents to click through. In addition, the first page of the questionnaire displays a consent form that potential respondents must acknowledge electronically before they can proceed further. Participation is voluntary and respondents are reminded that they can choose to withdraw from answering the questionnaire at any moment in time by simply closing their browser.

One of the challenges in web data collection is in the computation of non-response bias because it is difficult to keep track of multiple submissions by the same respondent or the contamination of the data sample by outsiders (Stanton and Rogelberg 2001). Furthermore, due to the possibility of disabled e-mail accounts, spam filtering, or other forms of account blockages (Cenfetelli et al. 2008), no mechanism was readily available to gauge the diffusion rate of the email invitation to potential respondents. Following Cenfetelli et al. (2008), I reviewed the computer log of the web server on which the questionnaire was hosted. The server log recorded 1,183 visits to the questionnaire, some of which may not be unique. Of the 1,183 visitors, 818 completed the entire questionnaire. Therefore, a conservative estimate of the response rate is 69.15% of invited respondents. After deleting another 31 responses due to data runs, I arrive at an eventual sample of 787 (66.53%) data points for analysis. Table 3 gives a detailed breakdown of descriptive statistics for the data sample.

Table 3: Descriptive Statistics for Data Sample of Online Survey

Demographic Characteristic	No. of Respondents [%]	Experience with Social Networking Sites	Frequency of Visits to Recalled Social Networking Site
Gender			
Male	336 (42.69%)	3 years $\leq t < 4$ years	\geq Once per week
Female	451 (57.31%)	3 years $\leq t < 4$ years	\geq Once per day
Unwilling to disclose	0 (0.00%)	-	-
Age			
Age 19-29	59 (7.50%)	4 years $\leq t < 5$ years	\geq Once per day
Age 30-49	377 (47.90%)	4 years $\leq t < 5$ years	\geq Once per day
Age 50-64	274 (34.82%)	3 years $\leq t < 4$ years	\geq Once per day
Age 65+	75 (9.53%)	3 years $\leq t < 4$ years	\geq Once per day
Unwilling to disclose	2 (0.25%)	4 years $\leq t < 5$ years	\geq Once per week
Educational Level			
Less than college education	220 (27.95%)	3 years $\leq t < 4$ years	\geq Once per day
College education or higher	557 (70.78%)	3 years $\leq t < 4$ years	\geq Once per week
Unwilling to disclose	10 (1.27%)	3 years $\leq t < 4$ years	\geq Once per week
Income			
\$0-\$30,000	175 (22.24%)	3 years $\leq t < 4$ years	\geq Once per day
\$30,000-\$50,000	181 (23.00%)	3 years $\leq t < 4$ years	\geq Once per day
\$50,000-\$75,000	187 (23.76%)	3 years $\leq t < 4$ years	\geq Once per week
\$75,000+	210 (26.68%)	3 years $\leq t < 4$ years	\geq Once per week
Unwilling to disclose	34 (4.32%)	3 years $\leq t < 4$ years	\geq Once per day

Survey respondents were instructed to recall an SNS for which they have actively participated during the past six months. Respondents were then asked to evaluate their recalled SNS in accordance with the social networking technologies offered and their perception of the extent to which they exhibit: (1) identity-based attachment to communal purpose(s); (2) bond-based attachment to specific member(s), and; (3) comparison-based attachment to relative social standing. While it is not uncommon for individuals to participate in two or more SNSs, requiring respondents to answer the questionnaire based on a familiar SNS guarantees a singular point of reference from which to anchor their evaluations of social networking technologies. Otherwise, respondents may

alternate among different SNSs when answering the questionnaire, thereby confounding the results of the empirical study. Further, due to the complexity of SNSs and the vast amount of technological features accessible from such sites, it is conceivable that survey respondents may not be entirely familiar with each and every social networking technology being evaluated in the questionnaire. Therefore, to ensure that respondents are able to provide meaningful evaluations of elicited technological features, screenshots portraying an example of each feature (see Appendix C) was presented to respondents before they were required to respond to items measuring the extent to which the portrayed feature is available on the SNS they recalled. Data on respondents' continual usage intentions, satisfaction as well as cooperative and competitive mentalities towards their recalled SNS were also gathered as part of the online survey. Table 4 summarizes descriptive statistics for the list of SNSs that have been recalled by survey respondents.

Table 4: Descriptive Statistics for List of Social Networking Sites (SNSs) Recalled in Survey

Social Networking Site (SNS)	No. of Respondents [%]	Experience with Social Networking Sites	Frequency of Visiting Recalled Social Networking Site
Facebook [https://www.facebook.com]	655 (83.23%)	3 years $\leq t < 4$ years	\geq Once per day
LinkedIn [http://www.linkedin.com]	50 (6.35%)	3 years $\leq t < 4$ years	\geq Once per week
Twitter [https://twitter.com]	28 (3.56%)	2 years $\leq t < 3$ years	\geq Once per week
Others	24 (3.05%)	3 years $\leq t < 4$ years	\geq Once per week
Google Plus+ [https://plus.google.com]	15 (1.91%)	1 years $\leq t < 2$ years	\geq Once per week
MySpace [http://www.myspace.com]	8 (1.02%)	3 years $\leq t < 4$ years	\geq Once per week
Flickr [http://www.flickr.com]	5 (0.64%)	4 years $\leq t < 5$ years	\geq Once per week
LiveJournal [http://www.livejournal.com]	2 (0.25%)	$t \geq 5$ years	\geq Once per day

3.2.4. Preparation for Data Analysis

Partial Least Squares (PLS) analysis was employed to analyze data gathered through the online survey (Chin 1998; Gefen et al. 2000). The PLS analytical technique

is chosen for its ability in handling highly complicated predictive models comprising a combination of formative and reflective constructs (Barclay et al. 1995). To perform data analysis, I rely on the SmartPLS [<http://www.smartpls.de/forum>] software application. Because survey methodologies may be plagued by common method bias, I applied Harman's (1967) one-factor extraction test to the data sample. No single factor accounted for more than 50% of total variance explained (Schriesheim 1979), implying that common method bias is not a threat in this empirical study.

For data analysis, the elicited technological features are divided into those catering to social dimensions of content, relation and/or space for each of the three categories of social networking technologies (i.e., deindividuation technologies, personalization technologies and tournament technologies). Next, I modeled these social dimensions as second-order aggregates (i.e., deindividuating content, deindividuating relation, personalizable content, personalizable relation, personalizable space and tournament content), each comprising a weighted sum of the elicited technological features that belong to the dimension (see Table 2). This method of modeling is consistent with the work of Tan et al. (2013), who claimed that technological features, which manifest independently of one another, can contribute towards a higher-order service principle. For instance, although both creation and contextualization of social content contributes to personalizable content on SNSs (see Table 2), the presence of technological features catering to the creation of social content is not indicative of the presence of technological features facilitating the contextualization of such content (see Appendix C). Consequently, the modeling of the social dimensions as second-order aggregates best capture their relationships with the technological features under them.

Given the existence of second-order aggregate constructs in the structural model, PLS analysis is preferred over other analytical techniques because it: (1) facilitates the modeling of formative (and therefore aggregate) constructs, and; (2) tests the psychometric properties of the measurement items (i.e., the measurement model) while simultaneously, analyzing the direction and strength of each hypothesized relationship (i.e., the structural model) (Chin 1995, 1998). Consistent with Chin et al.'s (2003) recommendation, I modeled the second-order aggregate constructs (i.e., deindividuating content, deindividuating relation, personalizable content, personalizable relation, personalizable space and tournament content) as hierarchical elements

comprising repeated indicators from their respective constituent dimensions during data analysis.

3.2.5. Test of Measurement Model

The verification of the measurement model involves the estimation of internal consistency as well as the convergent and discriminant validity of the measurement items included in the survey instrument. Because reflective items capture the effects of the construct under scrutiny (Bollen, 1989), internal consistency can be assessed through standard estimates of Cronbach's alpha (Nunnally and Bernstein, 1994), composite reliability and the Average Variance Extracted (AVE) (Fornell and Larcker 1981). After dropping 3 measurement items due to low factor loadings (i.e., < .80), the latent constructs exceed prescribed thresholds (see Table 5), thus supporting convergent validity.

Table 5: Internal Consistency⁴ of Latent Constructs

Construct	Average Variance Extracted (AVE) [> 0.50]	Composite Reliability [> 0.70]	Cronbach's Alpha (α) [> 0.70]
Content-Based Deindividuation Technologies			
Expansion of Network Capabilities (ENC)	0.94	0.98	0.97
Participation of Others in Content Creation (PCC)	0.91	0.97	0.95
Recommendation of Social Content (RSC)	0.90	0.96	0.94
Relation-Based Deindividuation Technologies			
Display of Social Contacts (DSC)	0.87	0.95	0.93
Expand Social Contacts (XSC)	0.90	0.97	0.95
Interaction with Social Contacts (ISC)	0.89	0.96	0.94
Modification of Appeal of Social Contacts (ASC)	0.87	0.95	0.92
Recommendation of Social Contacts (RSR)	0.89	0.96	0.94
Request Modification of Social Contacts (MSC)	0.90	0.97	0.95
Search for Social Contacts (SSC)	0.86	0.95	0.92

⁴ Recommended threshold values for Cronbach's alpha, Composite Reliability (Fornell), and the Average Variance Extracted (AVE) are 0.70 (Nunnally and Bernstein 1994), 0.70, and 0.50 (Fornell and Larcker 1981) respectively.

Construct	Average Variance Extracted (AVE) [> 0.50]	Composite Reliability [> 0.70]	Cronbach's Alpha (α) [> 0.70]
Content-Based Personalization Technologies			
Contextualization of Social Content (TSC)	0.90	0.96	0.94
Creation of Personal Profile (CPP)	0.92	0.97	0.96
Creation of Social Content (CSC)	0.91	0.97	0.95
Evaluation of Social Content (ESC)	0.83	0.93	0.89
Integration of Media Formats for Personal Profile Creation (FPP)	0.94	0.98	0.97
Integration of Media Formats for Social Content Creation (FSC)	0.87	0.95	0.92
Relation-Based Personalization Technologies			
Control Accessibility to Social Contacts (CAR)	0.93	0.97	0.96
Control Relational Configuration (CRC)	0.90	0.96	0.94
Define Relational Configuration (DRC)	0.91	0.97	0.95
Establishment of Social Contacts (BSC)	0.90	0.96	0.94
Personalization of Social Contacts (PSC)	0.92	0.97	0.96
Space-Based Personalization Technologies			
Categorization of Personal Profile (ZPP)	0.93	0.98	0.96
Control Accessibility of Personal Profile (CAP)	0.94	0.98	0.97
Control Accessibility of Social Content (CAC)	0.93	0.98	0.96
Customization of Common Space (CCC)	0.93	0.98	0.96
Customization of Social Content Display (CCD)	0.94	0.98	0.97
Customization of Social Space Appearance (CSA)	0.94	0.98	0.97
Personalization of Social Content Display (PCD)	0.95	0.98	0.97
Content-Based Tournament Technologies			
Ranking of Personal Preferences (RKP)	0.91	0.98	0.97
Ranking of Social Content (RKC)	0.84	0.96	0.94
Relation-Based Tournament Technologies			
Ranking of Social Contacts (RKR)	0.91	0.98	0.98
Social Networking Technology Categories			
Deindividuation Technologies (DIT)	0.81	0.94	0.92
Personalization Technologies (PZT)	0.86	0.97	0.96
Tournament Technologies (TOT)	0.87	0.96	0.95

Construct	Average Variance Extracted (AVE) [> 0.50]	Composite Reliability [> 0.70]	Cronbach's Alpha (α) [> 0.70]
Social Attachments			
Bond-Based Attachment (BBA)	0.81	0.96	0.94
Identity-Based Attachment (IBA)	0.82	0.96	0.94
Comparison-Based Attachment (CBA)	0.89	0.97	0.96
Mental States			
Cooperative Mentality (COM)	0.87	0.96	0.95
Competitive Mentality (CMM)	0.88	0.97	0.95
Satisfaction (SAT)	0.90	0.97	0.96
Continual Usage Intention (CUI)	0.84	0.94	0.91

For sufficient discriminant validity, the AVE from each construct should be greater than the variance shared between the construct and other constructs in the model (Chin 1998). Based on the inter-construct correlation matrix generated from SmartPLS, all constructs display sufficient discriminant validity (see Appendix F). Of the 820 unique bivariate correlations⁵ among the 41 latent constructs in the measurement model, only 19 pairs (0.02%) surpass the 0.70 mark for the dataset, and even then, their values are still much lower than the square root of intra-construct AVE for each (see Appendix F). This indicates that respondents are able to distinguish among the constructs in the theoretical model when answering the questionnaire.

Discriminant and convergent validity are further confirmed when individual items load above 0.5 on their associated factors and there is a minimum difference of 0.10 between loadings within constructs and cross-loadings among constructs (Gefen and Straub, 2005). Based on the factor loading matrix⁶ accessible through SmartPLS, it can be observed that all items load above 0.70 on their targeted constructs (see Appendix E), and that these loadings are much higher than any cross-loadings on any other

⁵ Number of unique bivariate correlations can be calculated with the formula $\frac{\chi}{2}(\chi - 1)$, where χ is the given number of constructs.

⁶ The entire factor loading matrix is too large to be included in this dissertation and can be made available upon request.

untargeted constructs, thus supporting convergent and discriminant validity (Gefen and Straub 2005).

Formative measures are items that *cause* variance in the construct under scrutiny (Bollen 1984); they neither correlate with one another nor exhibit internal consistency (Chin 1998). Statistics for assessing internal consistency, such as Cronbach's alpha, composite reliability and Average Variance Extracted (AVE), are therefore inappropriate. The same reasoning applies to the second-order aggregates of social dimensions (i.e., deindividuating content, deindividuating relation, personalizable content, personalizable relation, personalizable space and tournament content). Multicollinearity is a major concern for formative/aggregate constructs because multiple indicators are jointly predicting a latent construct in an analogous fashion to variables in multiple regression (Diamantopoulos and Winklhofer 2001). However, multicollinearity was not a threat in the study because: (1) none of the bivariate correlations were above .90 (refer to Appendix F) (Tabachnick and Fidell 2001); (2) tolerance values averaged more than .30; and (3) the maximum variance inflation factor (VIF) was well below the prescriptive diagnostic of 5.0 or 10.0 (Hair et al. 1998; Mathieson et al. 2001).

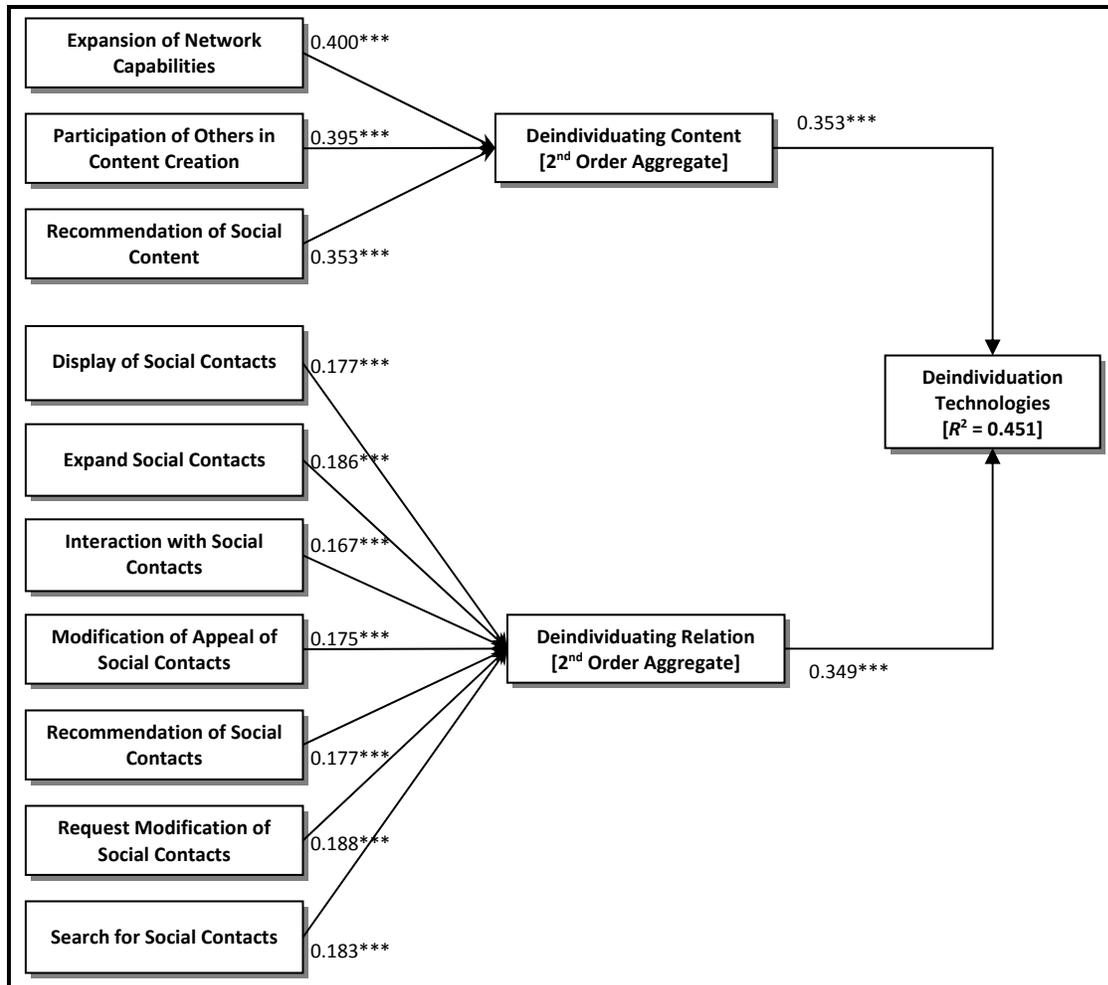
3.2.6. Test of Structural Model

The test of the structural model include estimates of the path coefficients that indicate the strengths of the relationships between independent and dependent variables as well as R^2 values that capture the amount of variance explained by the independent variables on its dependent counterpart. Taken together, the R^2 values and the path coefficients (i.e., coefficient values and their significance) provide a strong indication of how well the hypothesized model is supported by the data. The bootstrap re-sampling technique was employed to generate 500 random samples from the original data set to compute for standard errors⁷.

Figures 5, 6 and 7 depict statistical results from analyzing the structural models of deindividuation technologies, personalization technologies and tournament

⁷ A bootstrap with 500 resamples is generally deemed to be sufficient as advocated by Henseler and Chin (2010). Moreover, as demonstrated by Sharma and Kim (2012), PLS bootstrapping produces accurate estimates of structural model parameters.

technologies respectively whereas Figure 8 depicts statistical results from analyzing my proposed theoretical model of members' attachments within SNSs (see Figure 4).



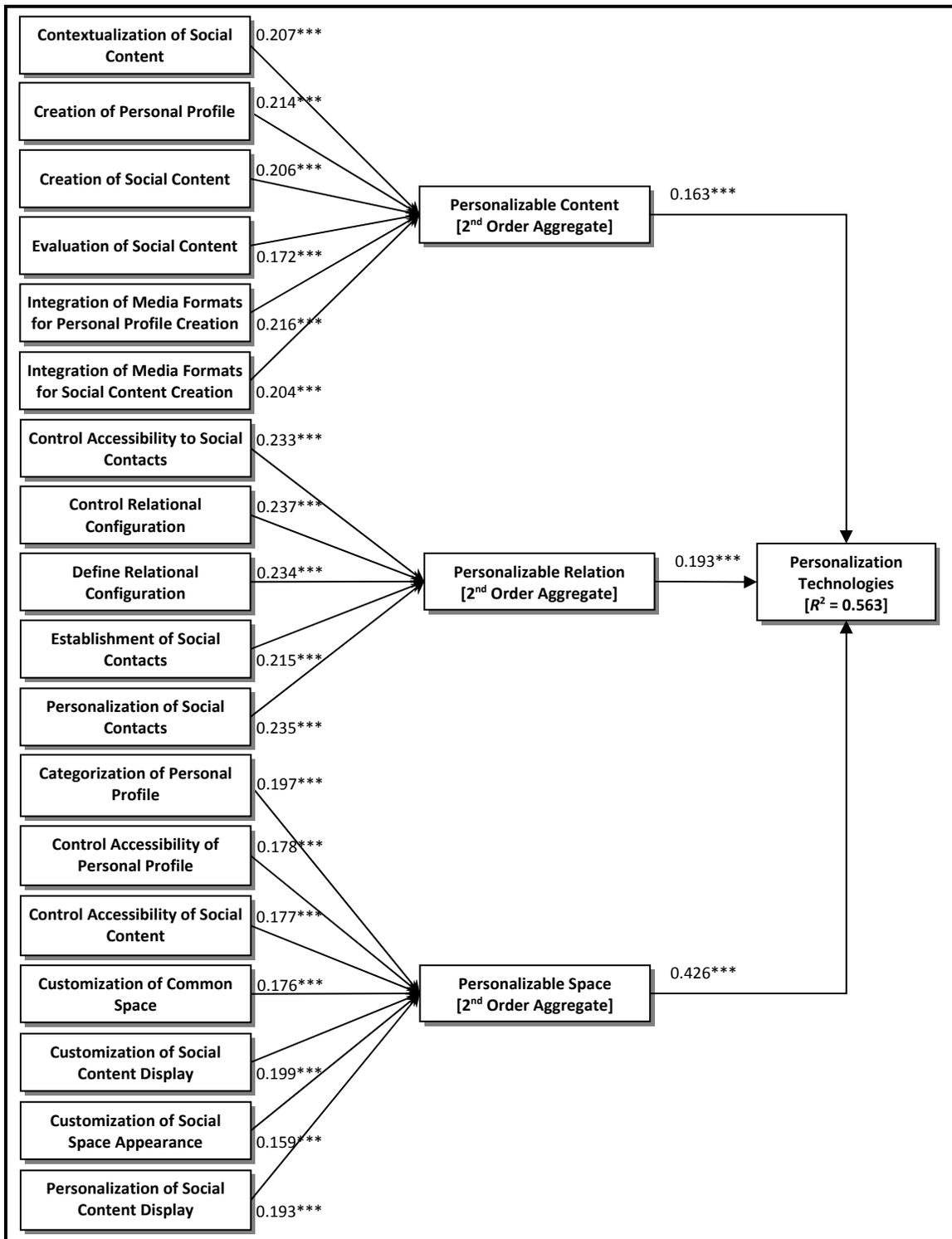
*** Correlation is significant at the 0.001 level (two-tailed).

Figure 5: Structural Model Analysis of Deindividuation Technologies

For deindividuation technologies, each elicited technological feature is a positive and highly significant contributor⁸ to its associated second-order aggregate (i.e., *deindividuating content* and *deindividuating relation*) (see Figure 5). *Expansion of network capabilities* ($\beta = 0.40$, $p < 0.001$), *participation of others in content creation* ($\beta =$

⁸ Because the path coefficients from independent technological features to their associated second-order aggregates represent weights and not reflective loadings, they should be evaluated for statistical significance similar to that of beta weights in multiple regression functions.

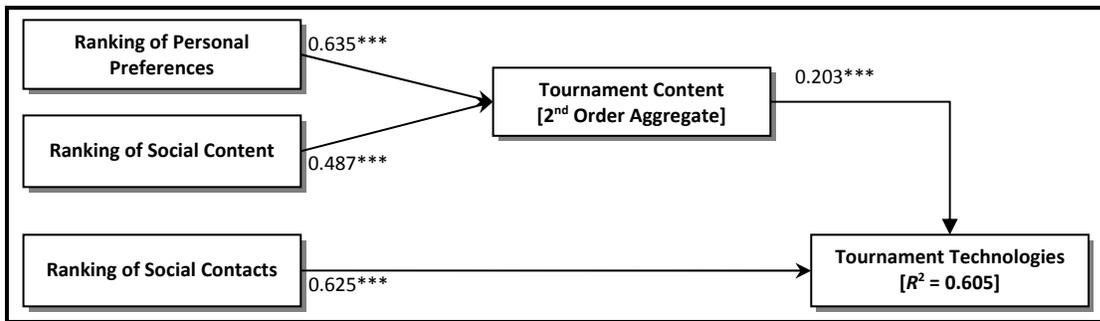
0.40, $p < 0.001$) and *recommendation of social content* ($\beta = 0.35$, $p < 0.001$) are positive and significant contributors to *deindividuating content*. Likewise, display of social contacts ($\beta = 0.18$, $p < 0.001$), expand social contacts ($\beta = 0.19$, $p < 0.001$), interaction with social contacts ($\beta = 0.17$, $p < 0.001$), modification of appeal of social contacts ($\beta = 0.18$, $p < 0.001$), recommendation of social contacts ($\beta = 0.18$, $p < 0.001$), request modification of social contacts ($\beta = 0.19$, $p < 0.001$) and search for social contacts ($\beta = 0.18$, $p < 0.001$) are positive and significant contributors to *deindividuating relation*. In turn, *deindividuating content* ($\beta = 0.35$, $p < 0.001$) and *deindividuating relation* ($\beta = 0.35$, $p < 0.001$) exert equal and significantly positive impact on *deindividuation technologies*, explaining 45% of variance in the latter. Consequently, the aforementioned analytical results reinforce my delineation of deindividuation technologies into those catering to dimensions of social content and social relation.



*** Correlation is significant at the 0.001 level (two-tailed).

Figure 6: Structural Model Analysis of Personalization Technologies

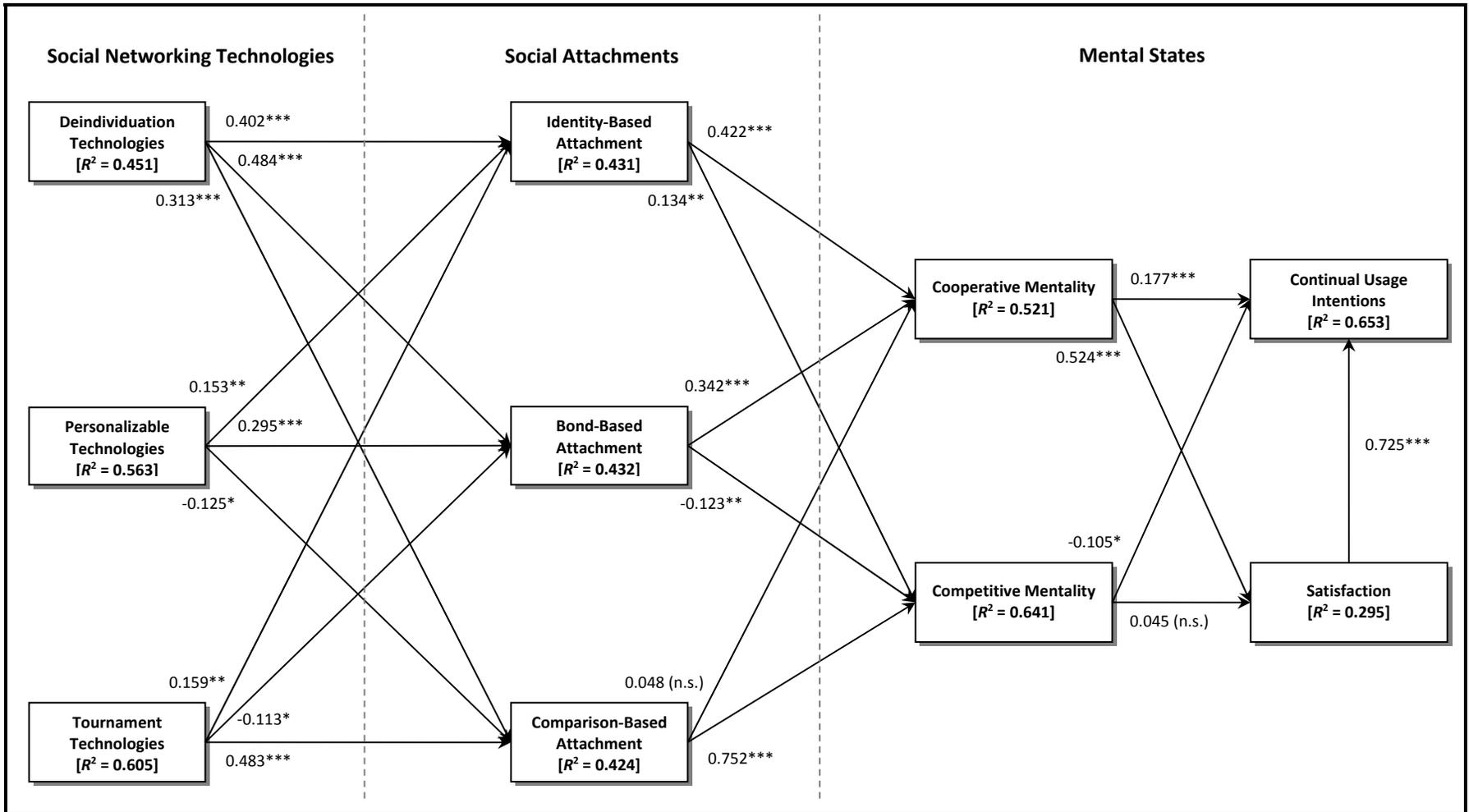
For personalization technologies, each elicited technological feature is a positive and highly significant contributor to its associated second-order aggregate (i.e., *personalizable content*, *personalizable relation* and *personalizable space*) (see Figure 6). *Contextualization of social content* ($\beta = 0.21, p < 0.001$), *creation of personal profile* ($\beta = 0.21, p < 0.001$), *creation of social content* ($\beta = 0.21, p < 0.001$), *evaluation of social content* ($\beta = 0.17, p < 0.001$), *integration of media formats for personal profile creation* ($\beta = 0.22, p < 0.001$) and *integration of media formats for social content creation* ($\beta = 0.20, p < 0.001$) are positive and significant contributors to *personalizable content*. Likewise, *control accessibility to social contacts* ($\beta = 0.23, p < 0.001$), *control relational configuration* ($\beta = 0.24, p < 0.001$), *define relational configuration* ($\beta = 0.23, p < 0.001$), *establishment of social contacts* ($\beta = 0.22, p < 0.001$) and *personalization of social contacts* ($\beta = 0.24, p < 0.001$) are positive and significant contributors to *personalizable relation*. Finally, *categorization of personal profile* ($\beta = 0.20, p < 0.001$), *control accessibility of personal profile* ($\beta = 0.18, p < 0.001$), *control accessibility of social content* ($\beta = 0.18, p < 0.001$), *customization of common space* ($\beta = 0.18, p < 0.001$), *customization of social content display* ($\beta = 0.20, p < 0.001$), *customization of social space appearance* ($\beta = 0.16, p < 0.001$) and *personalization of social content display* ($\beta = 0.19, p < 0.001$) are positive and significant contributors to *personalizable space*. In turn, *personalizable content* ($\beta = 0.16, p < 0.001$), *personalizable relation* ($\beta = 0.19, p < 0.001$) and *personalizable space* ($\beta = 0.43, p < 0.001$) exert significantly positive impact on *personalization technologies*, explaining 56% of variance in the latter. Consequently, the aforementioned analytical results reinforce my delineation of personalization technologies into those catering to dimensions of social content, social relation and social space. Further, of the social dimensions (i.e., content, relation and space), technological features catering to personalizable space have the most salient influence on members' perception of the presence of personalization technologies on SNSs.



*** Correlation is significant at the 0.001 level (two-tailed).

Figure 7: Structural Model Analysis of Tournament Technologies

For tournament technologies, each elicited technological feature is a positive and highly significant contributor to its associated second-order aggregate (i.e., *tournament content*) (see Figure 7). *Ranking of personal preferences* ($\beta = 0.64$, $p < 0.001$) and *ranking of social content* ($\beta = 0.49$, $p < 0.001$) are positive and significant contributors to *tournament content*. Together with *tournament content* ($\beta = 0.20$, $p < 0.001$), *ranking of social contacts* ($\beta = 0.23$, $p < 0.001$), as a form of *tournament relation*, exert significantly positive impact on *tournament technologies*, explaining 61% of variance in the latter. Consequently, the aforementioned analytical results reinforce my delineation of tournament technologies into those catering to dimensions of social content and social relation. Further, of the social dimensions (i.e., content and relation), technological features catering to *tournament relation* have the most salient influence on members' perceptions of the presence of tournament technologies on SNSs.



*** Correlation is significant at the 0.001 level (two-tailed); ** Correlation is significant at the 0.01 level (two-tailed); * Correlation is significant at the 0.05 level (two-tailed); n.s. Correlation is not significant at the 0.05 level (two-tailed).

Figure 8: Structural Model Analysis of Members' Attachment within Social Networking Sites

From the data analysis, a majority of hypothesized relationships are substantiated by the empirical evidence (see Figure 8). *Deindividuation technologies* ($\beta = 0.40, p < 0.001$), *personalization technologies* ($\beta = 0.15, p < 0.01$) and *tournament technologies* ($\beta = 0.16, p < 0.01$) exert positive and significant effects on members' *identity-based attachment* within SNSs, explaining 43% of variance in the latter. Hypothesis 1 is hence supported whereas hypotheses 5 and 8 are not supported. Conversely, *deindividuation technologies* ($\beta = 0.48, p < 0.001$) and *personalization technologies* ($\beta = 0.30, p < 0.001$) exert positive and significant effects on members' *bond-based attachment* within SNSs whereas *tournament technologies* ($\beta = -0.11, p < 0.05$) have a significantly negative impact on the latter. Together, deindividuation technologies, personalization technologies and tournament technologies account for 43% of variance in members' bond-based attachment within SNSs. Hypotheses 4 and 9 are thus corroborated whereas hypothesis 2 is unsupported. Likewise, *deindividuation technologies* ($\beta = 0.31, p < 0.001$) and *tournament technologies* ($\beta = 0.48, p < 0.001$) exert positive and significant effects on members' *comparison-based attachment* within SNSs whereas *personalization technologies* ($\beta = -0.13, p < 0.05$) have a significantly negative impact on the latter. Together, deindividuation technologies, personalization technologies and tournament technologies account for 42% of variance in members' comparison-based attachment within SNSs. Hypotheses 6 and 7 are therefore substantiated whereas hypothesis 3 is unsupported.

Identity-based attachment ($\beta = 0.42, p < 0.001$) and *bond-based attachment* ($\beta = 0.34, p < 0.001$) exert positive and significant effects on members' cooperative mentality within SNSs whereas *comparison-based attachment* ($\beta = 0.05, p > 0.05$) has no impact on the latter. Together, identity-based attachment, bond-based attachment and comparison-based attachment account for 52% of variance in members' cooperative mentality within SNSs. Hypotheses 10 and 11 are hence supported whereas hypotheses 12 is not supported. As hypothesized, *identity-based attachment* ($\beta = 0.13, p < 0.01$) and *comparison-based attachment* ($\beta = 0.75, p < 0.001$) exert positive and significant effects on members' *competitive mentality* within SNSs whereas *bond-based attachment* ($\beta = -0.12, p < 0.05$) have a significantly negative impact on the latter. Together, identity-based attachment, bond-based attachment and comparison-based attachment account

for 64% of variance in members' competitive mentality within SNSs. Hypotheses 13, 14 and 15 are thus corroborated.

While *cooperative mentality* ($\beta = 0.52, p < 0.001$) exerts a positive and significant effect on members' *satisfaction* towards SNSs, *competitive mentality* ($\beta = 0.05, p > 0.05$) has no impact on the latter. Together, cooperative mentality and competitive mentality account for 30% of variance in members' satisfaction towards SNSs. Hypothesis 16 is hence supported whereas hypothesis 17 is not supported. Lastly, *cooperative mentality* ($\beta = 0.18, p < 0.001$) and *satisfaction* ($\beta = 0.73, p < 0.001$) exert positive and significant effects on members' *continual usage intentions* towards SNSs whereas *competitive mentality* ($\beta = -0.11, p < 0.05$) have a significantly negative impact on the latter. Together, cooperative mentality, competitive mentality and satisfaction account for 65% of variance in members' continual usage intentions towards SNSs. Hypotheses 18, 19 and 20 are thus corroborated.

Table 6 summarizes the results of my hypotheses testing.

Table 6: Results of Hypotheses Testing

Hypothesis		Supported
H1	Deindividuation technologies on a social networking site will positively influence members' identity-based attachment to communal groups within the site.	Supported
H2	Deindividuation technologies on a social networking site will negatively influence members' bond-based attachment to other individual members participating within the site.	Not Supported
H3	Deindividuation technologies on a social networking site will negatively influence members' comparison-based attachment to their relative communal standing on the site.	Not Supported
H4	Personalization technologies on a social networking site will positively influence members' bond-based attachment to other individual members participating within the site.	Supported
H5	Personalization technologies on a social networking site will negatively influence members' identity-based attachment to communal groups within the site.	Not Supported
H6	Personalization technologies on a social networking site will negatively influence members' comparison-based attachment to their relative communal standing on the site.	Supported

Hypothesis		Supported
H7	Tournament technologies on a social networking site will positively influence members' comparison-based attachment to their relative communal standing on the site.	Supported
H8	Tournament technologies on a social networking site will negatively influence members' identity-based attachment to communal groups within the site.	Not Supported
H9	Tournament technologies on a social networking site will negatively influence members' bond-based attachment to other individual members participating within the site.	Supported
H10	Members' identity-based attachment to communal groups within a social networking site will positively influence their cooperative mentality towards participation within the site.	Supported
H11	Members' bond-based attachment to other individual members participating within a social networking site will positively influence their cooperative mentality towards participation within the site.	Supported
H12	Members' comparison-based attachment to their relative communal standing on a social networking site will negatively influence their cooperative mentality towards participation within the site.	Not Supported
H13	Members' identity-based attachment to communal groups within a social networking site will negatively influence their competitive mentality towards participation within the site.	Not Supported
H14	Members' bond-based attachment to other individual members participating within a social networking site will positively influence their competitive mentality towards participation within the site.	Not Supported
H15	Members' comparison-based attachment to their relative communal standing on a social networking site will positively influence their competitive mentality towards participation within the site.	Supported
H16	Members' cooperative mentality towards participation within a social networking site will positively influence their satisfaction towards the site.	Supported
H17	Members' competitive mentality towards participation within a social networking site will negatively influence their satisfaction towards the site.	Not Supported
H18	Members' cooperative mentality towards participation within a social networking site will positively influence their continual usage intentions towards the site.	Supported
H19	Members' competitive mentality towards participation within a social networking site will negatively influence their continual usage intentions towards the site.	Supported
H20	Members' satisfaction towards a social networking site will positively influence their continual usage intentions towards the site.	Supported

Chapter 4. Discussion

Social Networking Sites (SNSs) are becoming an integral part of the social fabric in virtual landscapes. With greater connectivity realized through SNSs, online communities of geographically and/or temporally dispersed individuals can be brought together via social networking technologies (e.g., wikis, podcasts, message boards and instant messaging) to participate in a wide range of communal activities (Preece, 2000). Although there is general recognition that the viability and sustainability of SNSs hinges on continued active involvement among participants (Cheung and Lee, 2010), the fluidity of membership in such sites makes it difficult to retain interest among members on a prolonged basis. Further, there is a paucity of studies that is able to put forward actionable design principles, which can be harnessed by practitioners to develop self-sustaining online communities. To this end, this thesis positions members' communal attachments within SNSs as a vital driving force behind their participation and argues for an amplified role of social networking technologies in shaping these attachments.

Espousing theories of social identity, social bond and social comparison, this thesis advances a theoretical model claiming that members' commitment to a SNS is driven by: (1) their identity-based attachment to the communal purpose of the online community; (2) their bond-based attachment to specific member(s) of the online community; (3) their comparison-based attachment to their relative standing in the online community, or; (4) any combination of the three. It is further argued in this thesis that these distinct forms of attachment can be induced through the provision of matching social networking technologies. From this premise, social networking technologies are delineated into categories of deindividuation technologies (i.e., technologies that de-personalize members in SNSs), personalization technologies (i.e., technologies that individualize members in SNSs) and tournament technologies (i.e., technologies that compare and contrast members in SNSs), which are in turn associated with the inducement of identity-based, bond-based and comparison-based attachment among SNS members. It is also posited in the theoretical model that depending on the form(s)

of attachment being fostered within a SNS, it may culminate in cooperative and/or competitive behaviors among members, leading to differences in satisfaction and continual usage intentions towards the site.

Grounded in the theoretical model, a two-stage empirical study was conducted to: (1) elicit technological features which can inform the design of SNSs for fostering active participation among members, and; (2) validate the relationships being hypothesized. Empirical findings raise several points of interest.

First, content analysis yields a total of thirty-one technological features that have been elicited from contemporary SNSs and classified into the three categories of social networking technologies (i.e., deindividuation technologies, personalization technologies and tournament technologies). Furthermore, as revealed through the coding exercise, each elicited technological feature can be distinguished along social dimensions in that it either caters to: (1) manipulation of informational content shared among members (i.e., social content); (2) alteration of relationships among members (social relation), or; (3) customization of user interface through which members can socialize with others. Assimilating the three categories of social networking technologies with the three social dimensions, I derive a typology of social networking technologies (see Table 2) that can be harnessed by practitioners to design SNSs in an informative and purposeful manner. Coupled with strong convergent (see Table 5) and discriminant validity (see Appendix F) among elicited technological features, the corroboration of my proposed typology by the empirical evidence lends weight to its credibility as a valid classification scheme for deconstructing SNSs into their fundamental design elements.

Second, against my expectations, both personalization and tournament technologies have significantly positive impacts on identity-based attachment (see Figure 8). One plausible explanation for these observations could be due to members' tendency in contrasting themselves with an "in-group target who supports their personal identity (by serving as a downward social comparison)" (Schmitt et al., 2000, p. 1604; see also Lemaine, 1974). As noted by Schmitt et al. (2000), members, who identify strongly with a group, could develop concerns over the erosion of their personal identity and as a consequence, rely on in-group comparisons as a means of maintaining their individuality within the group. In this sense, the presence of both personalization and

tournament technologies could aid in strengthening identity-based attachment among members of SNSs by offering protection for personal identity. Whereas the presence of personalization technologies facilitates members in expressing their distinctiveness as compared to in-group others, the presence of tournament technologies offers social comparison platforms for members to distinguish themselves from the latter as well. The same reasoning could perhaps apply to the other contradictory finding whereby identity-based attachment was found to exert a positive and significant effect on members' competitive mentality towards participation within SNSs. Again, members' conflict between communal and personal identities may drive them to view in-group comparisons as a form of self-differentiation (Schmitt et al., 2000).

Third, contrary to my hypotheses, deindividuation technologies have significantly positive impacts on bond-based attachment and comparison-based attachment (see Figure 8). As alleged by Ren et al. (2007), interpersonal similarity is a core determinant of bond-based attachment. Yet, as acknowledged by Bowden (1926) in a study of presidents of student bodies or councils in American colleges, these leaders tend to possess well-balanced and inclusive personalities: they are often accommodating without being domineering. Arguably, it can be deduced that people are drawn to individuals with moderate personalities. By extension, the presence of deindividuation technologies on SNSs can perhaps mitigate the effects of personalization (or self-expression) and in turn, strengthens bond-based attachment among members. In the same vein, Suls et al. (2002) claimed that people look to similar others for comparison and as such, the capacity of deindividuation technologies to suppress interpersonal differences while accentuating interpersonal similarity could aid in strengthening comparison-based attachment among members of SNSs.

Fourth, members' bond-based attachment was found to have significantly negative impacts on their competitive mentality within SNSs. A viable explanation could be that members who exhibit bond-based attachment within SNSs share a greater affiliation with one another and much less to the online community as a whole (Prentice et al., 1994; Ren et al. 2007). As a by-product of their apathy to the collective identity and general functioning of the online community (Krackhardt and Porter, 1986), members exhibiting bond-based attachment may not hold much interest in competing with uninterested others.

Fifth, empirical findings indicate that members' comparison-based attachment does not affect their cooperative mentality within SNSs (see Figure 8). While surprising, an explanation for this contradictory observation could be that comparison-based attachment triggers physiological arousal on the part of SNS members and renders them oblivious to cooperative possibilities. As observed by Malhotra (2010), competitive environmental cues induce physiological arousal among individuals: narrowing their attention to concentrate on an immediate 'desire to win' while abandoning cognitive rationality (see Zillmann et al., 1975). Therefore, it could be the case that comparison-based attachment compels members of SNSs to disregard prospects for cooperation in exchange for self-gratification.

Finally, competitive mentality does not have an impact on satisfaction as shown in Figure 8. Unlike cooperative members, competitive ones may not seek to build intimate and prolonged relationships with others, whom they are competing with. For this reason, members with strong competitive mentality would probably view the social networking platform provided by most SNSs as a misalignment with their expectations. In line with the Expectation Disconfirmation Theory (EDT) (Oliver 1980), a mismatch between expectations and performance would make it difficult for individuals to assess the extent to which their expectations have been disconfirmed through actual product or service performance, a direct antecedent to satisfaction. Likewise, Malhotra (2010) noted that competitive individuals tend to be fixated on out-performing identifiable rivals to the extent to which they are ignorant of their immediate environment. In turn, this might account for the insignificant relationship between competitive mentality and satisfaction.

4.1. Implications for Theory

From a theoretical standpoint, this thesis is one of the first studies to blend the social and technical aspects of SNSs in recommending actionable design principles that can shape cooperative and competitive inclinations among members of such online communities. Although past studies have made substantial progress in harnessing network effects associated with SNSs (see Appendix A), few have touched on how such sites can be designed to promote active participation among members. Specifically, this thesis answers Ren et al.'s (2007) call for a "social engineering theoretical approach to

community design and treat online communities as social-technical systems in which design decisions strongly influence user behaviors” (p. 400). As can be seen in Figure 8, social networking technologies on contemporary SNSs can be broadly classified according to whether they promote deindividuation, personalization and tournament among members. In turn, these deindividuation, personalization and tournament technologies were found to be key drivers of identity-based, bond-based and comparison-based attachment among members of SNSs. By decomposing members’ motives for participation into identity-based attachment, bond-based attachment and comparison-based attachment, I proffer theoretical explanations and empirical evidence for why members would be inclined to participate (in the event of bond-based and identity-based attachment) or not to participate (in the event of comparison-based attachment) within SNSs. In doing so, this thesis also hints at a probable reason for the co-existence of SNSs with distinct communal missions as well as individuals’ choice to participate in more than one online community simultaneously.

Moreover, this thesis acts as a bridge between demand-side and supply-side studies within extant literature on social networks. As uncovered in my review of extant literature (see Appendix A), demand-side studies recognize the communal nature of online communities even though they are lacking in the prescription of actionable design principles for accommodating this development (e.g., Arakji et al., 2009; Bagozzi and Dholakia, 2004; Blanchard and Markus, 2004; Ganley and Lampe, 2009; Peddibhotla and Subramani, 2007; Sykes et al., 2009; Wasko and Faraj, 2005; Wiertz and de Ruyter, 2007). Conversely, supply-side studies tend to view members’ participation within online communities as a function of individualistic motivations without paying due attention to the communal context within which such participation occurs (e.g., Dholakia et al. 2004; Huang and Yen, 2003; Lu and Hsiao, 2007; Ridings and Gefen, 2004). Consistent with demand-side studies, my proposed theoretical model underscores the significance of communal attachments as a binding characteristic of SNSs while at the same time, advancing actionable design principles for realizing such attachments, which is in line with supply-side studies.

Additionally, this thesis advances an inductive typology of social networking technologies that not only serves a first inventory of technological features which are accessible from contemporary SNSs (see Table 2), but also has been demonstrated to

be instrumental in shaping the different forms of attachment exhibited by members within SNSs (see Figures 5, 6, 7 and 8). In the absence of any systematic classification of social networking technologies within extant literature (see Appendix A), this typology represents a small but significant step towards opening a novel line of research into interactive design elements of SNSs.

Lastly, although 8 out of 20 hypotheses in the theoretical model are not corroborated by empirical evidence, findings still bear significant implications for theory development. One, all thirty-one elicited technological features—as grouped under social dimensions of content, relation and/or space for each of the three categories of social networking technologies (i.e., deindividuation technologies, personalization technologies and tournament technologies)—have been substantiated in the empirical study. This lends credibility to the typology of social networking technologies that has been derived inductively, a major contribution of this thesis. Two, empirical findings reveal that the impact of deindividuation, personalization and tournament technologies may not be as orthogonal as initially conceptualized. This could mean that there exist interdependencies among different categories of social networking technologies and that an optimal configuration of technological features may be necessary to guarantee that desirable form(s) of attachment—coinciding with the communal mission of a SNS—is induced without introducing undesired form(s) of attachment concurrently, an area deserving of future research. Likewise, the comparison-competitive strand of the theoretical model does not influence members of SNSs as hypothesized, thereby suggesting that there could be intricacies involved when inducing competitive mentalities within such online communities. Further investigation into competition within SNSs may hence be warranted.

4.2. Implications for Practice

Pragmatically, this thesis could be of interest to practitioners for three reasons. First, the delineation of members' participation motives into the three forms of attachment (i.e., identity-based attachment, bond-based attachment and comparison-based attachment) constitutes a formalized method for practitioners to strategize about the evolution of SNSs. Through an in-depth appreciation of the drivers of members'

participation on SNSs, practitioners can be better informed in deciding the direction with which to grow a specific online community depending on its communal vision. For instance, while open source software development teams (e.g., Sourceforge [<http://sourceforge.net>]) could benefit from the inducement of cooperative mentality to secure members' sustained participation, gaming communities (e.g., msn games [<http://zone.msn.com/en-us/home>]) and online dating sites (e.g., Badoo [<http://badoo.com/en-ca>]) may be better suited for competitive members where short bouts of active participation within a limited time frame is preferred over protracted involvement.

Second, the existence of a diversity of social networking technologies that are accessible from contemporary SNSs has created a landscape where service features are being introduced on a constant basis without any way of knowing whether these features are achieving their intended purposes. To address this predicament, my proposed typology of social networking technologies (see Table 2) performs two vital functions: (1) it conducts an inventory of generic technological features which are accessible from mature SNSs, and; (2) it validates the practical value of these elicited technological features as evaluated by members in terms of their ability to fulfill social networking objectives. Consequently, this thesis expound lessons learnt from mature SNSs on the provision of communal-based social networking technologies to arrive a parsimonious collection of actionable design principles that can be leveraged by practitioners to bolster the participation of members within online communities. Yet, as shown in the empirical findings, the impacts of deindividuation, personalization and tournament technologies on communal attachments within online communities are not as distinguishable as originally conceptualized. Indeed, spillovers can be detected for all three categories of social networking technologies. Practitioners must therefore be aware of the tradeoffs to be made in the provision of certain social networking technologies. For instance, while online dating sites such as BeautifulPeople [<http://www.beautifulpeople.com>] may strive from active participation of competitive members who are spurred on by tournament technologies, an overemphasis on such technologies may inhibit social bonds to develop among individuals, which runs contrary to site objectives.

Third, the typology of social networking technologies derived from content analysis can act as a benchmark for practitioners to analyze the performance of contemporary SNSs and pinpoint areas of service inadequacies. Particularly, as can be inferred from Table 2, the bulk of social networking technologies on contemporary SNSs are tuned towards personalization such that more could be done in terms of deindividuation and tournament technologies. Furthermore, the collection of thirty-one technological features elicited from contemporary SNSs and their subsequent endorsement by active members of such sites (see Figure 8) implies that these technological features can serve as a knowledge repository from which to extract ideas for bolstering the connectivity and interactivity of online communities. As noted by Zhang et al. (2009), the existence of attractive alternatives entices bloggers to switch from their current blog service provider. Consequently, the ability of contemporary SNSs to offer exceptional social networking services is paramount in attracting and retaining members. In a way, the provision of enhanced social networking technologies would also benefit members of SNSs as they could lead to expanded avenues of communication and socialization within such online communities.

4.3. Limitations and Future Research

There are six main limitations to this study, within which lie probable avenues for future research. First, my proposed theoretical model caters exclusively to the socializing objectives of SNSs and does not take into account platforms designed for other networking purposes. For instance, Zhu et al. (2009) found that network sites catering to collaborative online shopping should include technological support for both communication and navigation. Though the typology of social networking technologies does offer actionable design prescriptions for improving communication and interactivity within online communities (see Table 2), it cannot make recommendations as to the technological features required for collaborative transactional activities such as shared navigation (see Zhu et al., 2009). Future research could perhaps refine the typology of social networking technologies through further exploration of collaborative online shopping sites.

Second, due to my choice of perceptual measures for validating the theoretical model, empirical findings may be subjected to response bias in that social desirability may affect how survey respondents react to the online questionnaire. While I have controlled for response bias by computing the amount of common method variance across measurement items, future research could explore ways of validating the theoretical model objectively. For instance, collaborations may be sought with contemporary SNSs to obtain web analytics data that not only exposes the extent to which elicited technological features in the typology are utilized by members, but also monitors the level of participation for these members relative to their usage of these social networking technologies.

Third, 'ceiling effects' may exist due to the self-selective nature of the sample population. Because respondents were recruited from active members of SNSs, it is likely that they already possess favorable impressions of the site being evaluated: one is likely to witness relatively higher means for the constructs being investigated in the theoretical model. Nevertheless, as the primary objective of this paper is to validate the pragmatic relevance of technological features elicited from contemporary SNSs, it would have been meaningless to survey respondents without prior exposure to such sites. Still, I call for further empirical inquiries in the future to ascertain the predictability of the theoretical model for potential adopters.

Fourth, the sample of respondents is drawn from a relatively homogenous population of North American members of SNSs. I therefore caution against generalizing the empirical findings beyond member populations that share similar demographic compositions. Moreover, I have opted to exclude popular SNSs in Asia from content analysis such as Renren [<http://renren.com>] and Weibo [<http://www.weibo.com>]. Therefore, the typology of social networking technologies may be incomplete in that it could have omitted design elements unique to other cultures. As alleged by Weiss (2008), cultural discrepancies in technology adoption can be traced to the effects of power distance, uncertainty avoidance, individualism, masculinity, and long-term orientation. I hence call for future research to incorporate cultural elements into the theoretical model in order to augment its explanatory and predictive powers across various social networking platforms.

Fifth, it is by no means a coincidence that most respondents (i.e., 83.23%) referenced Facebook [<http://www.facebook.com>] when answering the survey questionnaire. As depicted in Table 1, Facebook [<http://www.facebook.com>] is by far the most popular SNS with a huge member base and a high volume of unique monthly visits that outstrip the rest. While sample characteristics could be argued to be representative of membership composition of SNSs in reality, I admit that an over-emphasis on a single source of reference may cast doubt on the generalizability of our empirical findings beyond that of Facebook [<http://www.facebook.com>]. Consequently, a plausible avenue for future research could lie in verifying the applicability of the theoretical model across a diverse collection of SNSs.

Finally, the validation of the theoretical model relies on a singular methodology (i.e., online survey questionnaire). While steps have been undertaken to control for common method bias (e.g., Harman's (1967) one-factor extraction test), future studies hoping to adapt or refine the model may benefit from a more pluralistic methodological strategy such as that of the Multitrait-Multimethod (MTMM) approach advocated by Burton-Jones (2009). Such a strategy helps to eliminate both knowledge and rating biases during measurement (Burton-Jones, 2009). For instance, to ascertain members' utilization of social networking technologies on SNSs, future studies might consider the possibility of performing triangulation between data collected from subjective, self-reported reflective measures and those gathered from objective eye-tracking equipment.

4.4. Conclusion

In summary, it is foreseeable that participation in SNSs will become a familiar routine for most individuals. Yet, a surge in the quantity of SNSs has culminated in a fragmented social networking landscape that inspires fluid memberships and dormant involvement. This thesis hence contributes to a deeper understanding of the motivational forces driving members' participation on SNSs and the technological levers that can be harnessed by practitioners to foster such motives. Insights can hence be gleaned from this thesis in rethinking the way SNSs can be structured to better serve their communal purposes and create self-sustaining online communities.

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Appendices

Appendix A. Summary of Extant Literature on Social Networks

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Arakji et al. (2009)	Social Exchange Theory, Theory of Critical Mass	Social Bookmarking Sites	<ul style="list-style-type: none"> • Demand Side - Examining the contribution behavior of members in social bookmarking sites e.g. blogs, wikis. 	<ul style="list-style-type: none"> • Bookmarking for self • Perceived contribution by others • Perceived use of others' bookmarking • Perceived value of own bookmarks to others • Bookmarking for others 	<ul style="list-style-type: none"> • Bookmarking for others • Bookmarking for self • Individual level of public contribution 	<ul style="list-style-type: none"> • Perceived contribution by others positively influences bookmarking for others • Perceived value of own bookmarks to others positively influences bookmarking for others • Bookmarking for others positively influences individual level of public contribution
Bagozzi and Dholakia (2006)	Social Identity Theory	Open Source Software User Community	<ul style="list-style-type: none"> • Demand Side – Examining the interaction behaviors among members in a user community 	<ul style="list-style-type: none"> • Identification with open source movement 	<ul style="list-style-type: none"> • Cognitive social identity (Part of second order) • Affective social identity (Part of second order) • Evaluative social identity (Part of second order) • “We-intentions” – Intentions to participate in the virtual community 	<ul style="list-style-type: none"> • Identification with open source movement positively affects social identity of virtual user community • Social identity of virtual user community positively affects we-intentions to participate in virtual user community
Blanchard and Markus (2004)	N.A.	Virtual Communities on Newsgroups	<ul style="list-style-type: none"> • Demand Side - Study of the user behavioral processes that contribute to the sense of virtual community 	<ul style="list-style-type: none"> • Exchanging support • Creating identities and making identifications • Production of trust 	<ul style="list-style-type: none"> • Sense of virtual community: Recognition of members, exchange of support, attachment obligation, identity of self and identification of others, relationship specific members 	<ul style="list-style-type: none"> • Exchange support leads to creating and making identification that leads to trust production that leads to sense of virtual community

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Bonhard and Sasse (2006)	Utility Theory of Decision Making	Provision of Recommendations to Internet Users	<ul style="list-style-type: none"> • Supply Side – Study of how the performance of recommender systems can be improved to serve internet users better 	<ul style="list-style-type: none"> • Familiarity • Profile similarity • Rating overlap 	<ul style="list-style-type: none"> • Trust • Confidence in choice 	<ul style="list-style-type: none"> • Familiarity, profile similarity and rating overlap help to influence the appropriateness and trust of recommendations in an online context where recommenders may not be well known
Borgatti and Cross (2003)	N.A.	Organizational Work Setting	<ul style="list-style-type: none"> • Demand Side – Examining learned characteristics of relationships that affect the decision to seek information from other people. 	<ul style="list-style-type: none"> • Knowing that person's area of expertise • Valuing of that person's knowledge • Ability to gain timely access to that person's thinking • Perceived cost of seeking information from that person • Physical proximity 	<ul style="list-style-type: none"> • Probability of seeking information from another person 	<ul style="list-style-type: none"> • Knowing that person's area of expertise positively affects the probability of seeking information from another person • Valuing that person's area of expertise positively affects the probability of seeking information from another person • Ability to gain timely access to that person's thinking positively affects the probability of seeking information from another person • Knowing, access mediate the relationship between physical proximity and information seeking
Bruque et al. (2008)	Socio Cognitive Theory and Coping Theory	Organizational Social Network	<ul style="list-style-type: none"> • Demand Side – Examining the role that employees' social environment plays in individual adaptation following an IT-induced change 	<ul style="list-style-type: none"> • Size of individual support social network • Strength of ties of the individual informational network • Density of the individual information network. 	<ul style="list-style-type: none"> • Adaption to IT induced change 	<ul style="list-style-type: none"> • Size of individual support social network, strength of ties of the individual informational network and density of the individual information network positively influence adaption to IT induced change

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Burkhardt and Brass (1990)	Diffusion of Innovation Theory	Change In Technology in an Organization	<ul style="list-style-type: none"> • Demand Side – Study of actors within an organization network as changes in technology comes about 	<ul style="list-style-type: none"> • Early adoption of technology • Centrality of adopters • Power of adopters • Characteristics of adopters 	<ul style="list-style-type: none"> • Network centrality • Power • Change in existing organization structure • Distribution of power 	<ul style="list-style-type: none"> • Considerable change in both structure and power follows technological change • Being central and powerful prior to the introduction of a new technology was not related to early adoption • Early adopters gained more in-degree centrality and power than later adopter • Late adopters decreased their in-degree centrality to a great extent
Cheung and Lee (2010)	Social Identity Theory and Social Influence Theory	Online Social Networks	<ul style="list-style-type: none"> • Demand Side – Examining the interactions among users of online social networks 	<ul style="list-style-type: none"> • Subjective norm • Group norm • Social identity 	<ul style="list-style-type: none"> • We-intention to use an online social networking site • Cognitive social identity • Affective social identity • Evaluative social identity 	<ul style="list-style-type: none"> • Subjective norm and social identity positively influence We-intention to use an online social networking site • Cognitive social identity, Affective social identity and Evaluative social identity positively influence social identity
de Valck et al. (2009)	N.A.	Virtual Communities	<ul style="list-style-type: none"> • Demand Side - Examining how virtual communities acts as social and information networks in influencing consumer decision process, interaction patterns and discussion practices 	<ul style="list-style-type: none"> • Need recognition • Search for information • Pre-purchase evaluation • Post-purchase evaluation 	<ul style="list-style-type: none"> • Consumer decision process • Consumer interaction patterns • Consumer discussion practices 	<ul style="list-style-type: none"> • Social involvement and frequency of visits as factors that are strongly related to community influence • 6 types of interaction patterns – Core members, conversationalists, informationalists, hobbyists, functionalists, and opportunists • Discussants typically engage in, sharing knowledge, negotiating norms, opposing values, celebrating similarities

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Duan et al. (2009)	Information Cascade Theory	Online Adoption of Software	<ul style="list-style-type: none"> • Demand Side – Examining how information flows from user to user in influencing their software adoption choice 	<ul style="list-style-type: none"> • User reviews 	<ul style="list-style-type: none"> • User online adoption of software 	<ul style="list-style-type: none"> • User reviews have no impact on user adoption of the most popular product, while having an increasingly positive impact on the adoption of lower ranking products
Forman et al. (2008)	Social Identity Theory	Online Markets and Reviews	<ul style="list-style-type: none"> • Demand Side – Examining the relationship between reviews and sales in online markets 	<ul style="list-style-type: none"> • Prevalence of reviewer disclosure of identity descriptive information • Subsequent reviewer disclosure of identity descriptive information 	<ul style="list-style-type: none"> • Online product sales • Helpfulness rating • Subsequent reviewer disclosure of identity descriptive information 	<ul style="list-style-type: none"> • Positive relationship between the self-descriptive information disclosed by previous and subsequent reviewers • Subsequent reviewer disclosure of identity descriptive information positively influences helpfulness rating • Prevalence of reviewer disclosure of identity descriptive information is associated with higher subsequent sales
Ganley and Lampe (2009)	Social Capital Perspective	Online Community	<ul style="list-style-type: none"> • Demand Side – Examining the types of relationship among users in determining the accrument of social capital intensity in an online community 	<ul style="list-style-type: none"> • Between-ness – The count or the percent of the relationships of a node that are not directly connected to each other • Constraint Evaluates the interconnectivity, or relationship redundancy, of the sub-network immediately surrounding a node • Investment in network • Participation intensity in network 	<ul style="list-style-type: none"> • Social capital 	<ul style="list-style-type: none"> • Between-ness negatively affects participation social capital • Constraint positively affects participation social capital • Participation intensity positively affects participation social capital • Network investment negatively affects social capital
Hahn et al. (2008)	N.A.	Open Source Software Development	<ul style="list-style-type: none"> • Demand Side – Examining the relationship among developers in open source software development 	<ul style="list-style-type: none"> • Prior collaborative ties with initiator of a project • Perceived status of the noninitiator members of a project 	<ul style="list-style-type: none"> • Likelihood of developer joining a project • Probability of attracting developers 	<ul style="list-style-type: none"> • Prior collaborative ties with initiator of a project positively influences likelihood of developer joining a project • Perceived status of the noninitiator members of a project positively influences probability of attracting developers

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Mehra et al. (1998)	Distinctness Theory, Social Identity and	Social Groups in Campus Setting	<ul style="list-style-type: none"> • Demand Side – Study of actors within a social network 	<ul style="list-style-type: none"> • Race • Sex • Identity network • Friendship network 	<ul style="list-style-type: none"> • Race homophily • Sex homophily 	<ul style="list-style-type: none"> • Both sex and race are both positively affect race and sex homophily in both Identity and Friendship Networks
Messinger et al. (2009)	N.A.	Social Computing	<ul style="list-style-type: none"> • Demand Side – Characteristics and behaviors of members of social gaming 	<ul style="list-style-type: none"> • Characteristics of in-game members • Behavior of in-game members 	N.A.	N.A.
Nebus (2006)	Theory of Network Generation and Expectancy Theory	Organizational Work Setting	<ul style="list-style-type: none"> • Demand Side – Study of actors in forming their own advice network for an intellectual task 	<ul style="list-style-type: none"> • Perceived value of contacting an alter • Expectation of obtaining value • Perceived cost of contacting alter • Accessibility, risk of exceeding cost 	<ul style="list-style-type: none"> • Probability of person being contacted by ego 	N.A.
Peddibhotla and Subramani (2007)	Critical Mass Theory	Public Document Repositories [e.g., Reviews on Amazon.Com or Wikipedia]	<ul style="list-style-type: none"> • Demand Side – Examining the motivations behind contributors to such public document repositories 	<ul style="list-style-type: none"> • Self-oriented motives: Self expression, personal development, utilitarian motives, and enjoyment • Other-oriented motives: Social affiliation, altruism, and reciprocity 	<ul style="list-style-type: none"> • Quantity and quality of contribution 	<ul style="list-style-type: none"> • Utilitarian benefits, self-expression are positively correlated with quantity of contributions • Social affiliation motive is negatively correlated with the quantity of contributions • Reciprocity and Altruism are positively correlated with the quality of contributions • Personal development is negatively correlated with the quality of contributions.

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Ren et al. (2007)	Common Identity Theory and Common Bond Theory	Online Communities	<ul style="list-style-type: none"> • Supply Side – Examining how to design online communities to enhance participation and commitment of users 	<ul style="list-style-type: none"> • Social categorization • In-group interdependence • Intergroup comparison • Social interaction • Personal information • Interpersonal similarity • Identity based attachment to community purpose • Bond-based attachment to community members 	<ul style="list-style-type: none"> • Identity based attachment to community purpose • Bond-based attachment to community members • On-topic discussion • Compensation for others loafing • High conformation to group norm • Generalized reciprocity • Newcomers feel welcomed • -Robustness to member turnover • In-group loyalty and evaluation • Active participation • Off-topic discussion • Attitudes toward loafing (tolerance) • Low conformity to group norms • Direct reciprocity • Newcomers feel ostracized • Robustness to situational context 	N.A.
Ross (2007)	Goffman's Theory of Region Behavior	Organic Online Learning Community (OOLC) or Self-Organizing and Self-Governing Learning Communities	<ul style="list-style-type: none"> • Demand Side – Examining the interaction among members of an online learning community 	<ul style="list-style-type: none"> • Language and Pseudonymity 	<ul style="list-style-type: none"> • Indemnification of OOLC back-regions 	<ul style="list-style-type: none"> • Language and Pseudonymity creates the indemnification of OOLC back-regions

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Sykes et al. (2009)	Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology	Employee's System Use within an Organization	<ul style="list-style-type: none"> • Demand Side – Examining employees' system usage behavior within an organization 	<ul style="list-style-type: none"> • Behavioral intention • Facilitating conditions • Network density • Value network density • Network centrality • Value network centrality 	<ul style="list-style-type: none"> • System use 	<ul style="list-style-type: none"> • Behavioral intention and facilitating conditions positively predicts system use • All the network variables are significant predictors of system use
van Alstynne and Brynjolfsson (2005)	Dynamic Social Impact Theory	Cross-Border International Setting	<ul style="list-style-type: none"> • Demand Side – Examining the interaction behaviors among people as technology advances 	<ul style="list-style-type: none"> • Improved access, search and screening • Personal preferences 	<ul style="list-style-type: none"> • Integrative or fragmented interaction • Determination of community boundaries 	N.A.
Wasko and Faraj (2005)	Social Capital Theory	Electronic Network of Practice	<ul style="list-style-type: none"> • Demand Side – Examining how individual motivations and social capital influence knowledge contribution in electronic networks 	<ul style="list-style-type: none"> • Individual Motivations – Reputation, Enjoy helping • Structural capital Centrality • Cognitive capital – Self-rated expertise, tenure in the field • Relational Capital – Commitment and reciprocity 	<ul style="list-style-type: none"> • Knowledge contribution – Helpfulness and Volume of contribution 	<ul style="list-style-type: none"> • Reputation, enjoy helping, and centrality positively influence contribution helpfulness • Commitment negatively influences contribution helpfulness • Reputation, centrality and tenure in field positively influence volume of contribution • Reciprocity negatively influences volume of contribution

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Wasko et al. (2009)	N.A.	Electronic Networks of Practice – Computer-Mediated Social Spaces Where Individuals Working on Similar Problems Self-Organize to Help Each Other and Share Knowledge, Advice, and Perspectives about their Occupational Practice or Common Interests	<ul style="list-style-type: none"> • Demand Side – Examining the structural and social characteristics that support the online provision and maintenance of knowledge in an electronic network of practice 	<ul style="list-style-type: none"> • Quality of the tie between each individual and the network as a whole 	<ul style="list-style-type: none"> • Relational strength of the ties 	<ul style="list-style-type: none"> • Individuals who participate more in the network are more likely to feel committed to the network and intend to continue their participation in the network
Wellman et al. (1996)	N.A.	Commentary on Computer Network Development	<ul style="list-style-type: none"> • Demand Side – Examination of changes in social behavior due to the impact of computer connectivity on social networks 	N.A.	<ul style="list-style-type: none"> • Computer-supported networks • Communication online • Support online • Relationship online • Social network online • Telework online • Global networks 	N.A.

Author(s)	Theory	Context	Demand and/or Supply Side	Independent Variables	Dependent Variables	Finding(s)
Wiertz and de Ruyter (2007)	Social Capital Perspective	Firm-Hosted Commercial Online Communities	<ul style="list-style-type: none"> • Demand Side – Examining the interaction among members of a commercial online community 	<ul style="list-style-type: none"> • Norm of reciprocity Specifies that people should help those who have helped them by returning equivalent benefits • Commitment to community Importance of the relationship with the community • Commitment to host firm Act out of concern for the host company 	<ul style="list-style-type: none"> • Quality of knowledge contribution • Quantity of knowledge contribution 	<ul style="list-style-type: none"> • Commitment to the community positively influences quality and quantity of knowledge contribution • Commitment to the host firm has a significant negative impact on the quality of knowledge contribution and no impact on quantity
Zhang et al. (2009)	Social Role Theory	Online Blogs	<ul style="list-style-type: none"> • Demand Side – Examining the switching behavior of users in online blogs 	<ul style="list-style-type: none"> • Satisfaction • Attractive alternatives • Sunk costs 	<ul style="list-style-type: none"> • Intention to switch 	<ul style="list-style-type: none"> • Satisfaction and Attractive alternatives and positively influence Intention to switch • Sunk costs negatively influence intention to switch
Zhu et al. (2009)	Common Ground Theory, Media Richness Theory and Social Presence Theory	Collaborative Online Shopping Support	<ul style="list-style-type: none"> • Supply Side – Examining the influence of two design components namely, navigation support and communication support on coordination performance among online shoppers 	<ul style="list-style-type: none"> • Navigation support • Communication support 	<ul style="list-style-type: none"> • Coordination performance • Social presence 	<ul style="list-style-type: none"> • Shared navigation effectively reduces uncoupling (enhances coordination performance) as compared to separate navigation • Compared to text chat, voice chat does not help reduce the occurrence of uncoupling, but likely increases the efficiency in resolving uncoupling • Shared navigation and voice chat can significantly enhance the collaborative shoppers' perceptions of social presence derived from their online shopping experiences

Appendix B. Summary of Extant Literature on Social Bond, Social Identity and Social Comparison Theories

Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Ang and Slaughter (2001)	Social Comparison Theory	Contract Versus Permanent Information Systems Professionals on Software Development Teams	<ul style="list-style-type: none"> Social comparison among contract and permanent information systems professionals 	N.A.	<ul style="list-style-type: none"> Work attitudes: Organizational support, distributive justice, alienation Work behavior: In-role behavior, extra-role behavior Performance: Loyalty, obedience, trustworthiness, performance 	<ul style="list-style-type: none"> Contractors perceived higher level of organizational support Contractors perceived lower level in-role behaviors and extra-role behaviors Contractors have lower loyalty, obedience, trustworthiness and performance
Bagozzi and Dholakia (2006)	Social Identity Theory	Open Source Software User Community	<ul style="list-style-type: none"> Social identity among members of a virtual user community 	<ul style="list-style-type: none"> Identification with open source movement 	<ul style="list-style-type: none"> Cognitive social identity (Part of second order) Affective social identity (Part of second order) Evaluative social identity (Part of second order) "We-intentions" – Intentions to participate in the virtual community 	<ul style="list-style-type: none"> Identification with open source movement positively affects social identity of virtual user community Social identity of virtual user community positively affects we-intentions to participate in virtual user community
Chattopadhyay et al. (2004)	Social Identity Theory and Self-Categorization Theory	Social Setting in Workplace	<ul style="list-style-type: none"> Social Identity – Categorization of oneself with group perceived to be similar 	<ul style="list-style-type: none"> Use of Different Strategies to enhance their Social Identities: Status Maintenance, Social Creativity, Social Competition, and Social Mobility Belong to either higher or lower status demographic categories Level of demographic dissimilarity. Legitimacy, stability and permeability of status hierarchy 	<ul style="list-style-type: none"> Enhancement of Social Identities 	N.A.

Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Cheung and Lee (2010)	Social Identity Theory and Social Influence Theory	Online Social Networks	<ul style="list-style-type: none"> • Social identity among members of online social networks 	N.A.	<ul style="list-style-type: none"> • Social identity • Cognitive social identity • Affective social identity • Evaluative social identity • We-intention to use an online social networking site 	<ul style="list-style-type: none"> • Social identity positively influence We-intention to use an online social networking site • Cognitive social identity, Affective social identity and Evaluative social identity positively influence social identity
Dholakia et al. (2004)	Social Identity Theory	Small-Group-Based Virtual Communities	<ul style="list-style-type: none"> • Social Identity among members of a virtual group. 	<ul style="list-style-type: none"> • Purposive value – Value derived from accomplishing some pre-determined instrumental purpose • Self-discovery – Understanding and deepening salient aspects of self through social interactions. • Maintaining interpersonal interconnectivity • Social enhancement – Value derives from gaining acceptance and approval of other members • Entertainment value • Group norms 	<ul style="list-style-type: none"> • Cognitive social identity (Part of second order) • Affective social identity (Part of second order) • Evaluative social identity (Part of second order) • Desires to be participate in the virtual community “We-intentions” – Intentions to participate in the virtual community 	<ul style="list-style-type: none"> • Purposive value, group norms, entertainment value positively affect to social identity • Social identity positively affects cognitive social identity, affective social identity, evaluative social identity, desires to participate in virtual community
Eckhardt et al. (2009)	Social Identity or Social Influence Theory	Individuals in Organizations	<ul style="list-style-type: none"> • Social Identity among individuals in an organization 	N.A.	<ul style="list-style-type: none"> • Technology adoption intention 	<ul style="list-style-type: none"> • Social influence of peers from HR department has a significant effect on adopters’ and non-adopters’ technology adoption intention • Social influence of peers from operations and IT departments has significant effect on non-adopters’ technology adoption intention • Social influence of superiors has significant effect on adopters’ technology adoption intention

Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Forman et al. (2008)	Social Identity Theory	Online Markets and Reviews	<ul style="list-style-type: none"> • Social identity among reviewers and consumers in online markets 	<ul style="list-style-type: none"> • Prevalence of reviewer disclosure of identity descriptive information • Subsequent reviewer disclosure of identity descriptive information 	<ul style="list-style-type: none"> • Online product sales • Helpfulness rating • Subsequent reviewer disclosure of identity descriptive information 	<ul style="list-style-type: none"> • There is a positive relationship between the self-descriptive information disclosed by previous and subsequent reviewers • Subsequent reviewer disclosure of identity descriptive information positively influences helpfulness rating • Prevalence of reviewer disclosure of identity descriptive information is associated with higher subsequent sales
Gibson (2001)	Social Comparison Theory	Group Setting in Organization	<ul style="list-style-type: none"> • Social Comparison between groups within an organization 	<ul style="list-style-type: none"> • Discrepancies between groups 	<ul style="list-style-type: none"> • Time spent on examination activities within a group 	N.A.
Hennessy and West (1999)	Social Identity Theory and Realistic Conflict Theory	Team-Based Community-Health Care Organization	<ul style="list-style-type: none"> • Social Identity among members of a group • Social Identity among members of an organization 	N.A.	<ul style="list-style-type: none"> • Evaluative in-group favoritism • Discriminatory in-group favoritism 	<ul style="list-style-type: none"> • Work group identification is positively related to evaluative in-group favoritism • In the absence inter-competition, organizational identification is negatively related to discriminatory in-group favoritism
Kane et al. (2005)	Social Identity Theory	Group Setting in Organization	<ul style="list-style-type: none"> • (Superordinate) Social Identity among members of a different groups 	N.A.	<ul style="list-style-type: none"> • Knowledge transfer among groups 	<ul style="list-style-type: none"> • Knowledge was more likely to transfer from a rotating member to a recipient group when both shared a superordinate social identity
Lea et al. (2001)	Social Identity Model of Deindividuation Effects	Group Setting Using Computer Based Conferencing System	<ul style="list-style-type: none"> • Social identity among members of a group communicating using computer based conference 	<ul style="list-style-type: none"> • Visual anonymity 	<ul style="list-style-type: none"> • Other stereotyping • Group self-categorization 	<ul style="list-style-type: none"> • Visual anonymity positively influences self-categorization and other stereotyping • Self-categorization and other stereotyping positively influences group attraction • Self-categorization positively influences other stereotyping

Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Ma and Agarwal (2007)	Social Presentation Theory (Social Bonds)	Knowledge Contribution in Online Communities	<ul style="list-style-type: none"> Perceived Identity Verification of oneself by members in online communities 	<ul style="list-style-type: none"> Community artifacts that reduce attribution differences and increase perceived identification: Virtual co-presence, persistent labeling, self-presentation, deep profiling 	<ul style="list-style-type: none"> Satisfaction Knowledge contribution 	<ul style="list-style-type: none"> Virtual co-presence, self presentation and deep profiling positively affects perceived identity verification Perceived identity verification positively affects knowledge contribution and satisfaction
Mehra et al. (1998)	Distinctiveness Theory and Social Identity Theory	Social Groups in Campus Setting	<ul style="list-style-type: none"> Identity Network – Network of others similar to oneself Friendship Network – Network of personal friends with oneself 	N.A.	<ul style="list-style-type: none"> Race Homophily – Identification with others based on Racial Characteristics Sex Homophily – Identification with others based on Gender Characteristics 	<ul style="list-style-type: none"> Both Gender and Race are both positively affect Race and Sex Homophily in both Identity and Friendship Networks
Michinov and Primois (2005)	Social Comparison Theory	Computer-Supported Collaborative Group	<ul style="list-style-type: none"> Social Comparison among members of a asynchronous virtual group 	<ul style="list-style-type: none"> Absence or presence of feedback function (delayed or real time) 	<ul style="list-style-type: none"> Productivity in generating ideas 	<ul style="list-style-type: none"> Presence of feedback function improves productivity and creativity of ideas generated
Pelled et al. (1999)	N.A.	Workgroup Setting	<ul style="list-style-type: none"> Social Comparison through Race, Gender, Age, Company Tenure, Functional Background Diversity 	N.A.	<ul style="list-style-type: none"> Task Conflict Emotional Conflict 	<ul style="list-style-type: none"> Functional Background Diversity positively affects Task Conflict Tenure and Race Diversity positively affects Emotional Conflict Age Diversity negatively affects Emotional Conflict
Pfeffer et al. (1976)	Social Comparison Theory	Decision Making of Grant Allocation by the National Science Foundation (US)	<ul style="list-style-type: none"> Social Comparison – A person's perceptions and opinions about his or her own worth and the nature of reality were partly developed through comparison with the capabilities and beliefs of others 	<ul style="list-style-type: none"> Level of one's uncertainty 	<ul style="list-style-type: none"> Use of Universalistic Criteria when making decisions 	<ul style="list-style-type: none"> Universalistic Criteria are used more in decision making when level of uncertainty is high i.e. the influence of Social Comparison is more pronounced

Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Ren et al. (2007)	Common Identity Theory and Common Bond Theory	Online Communities	<ul style="list-style-type: none"> • Identity and bond-based attachments within online communities 	<ul style="list-style-type: none"> • Social categorization • In-group interdependence • Intergroup comparison • Social interaction • Personal information • Interpersonal similarity • Identity based attachment to community purpose • Bond-based attachment to community members 	<ul style="list-style-type: none"> • Identity based attachment to community purpose • Bond-based attachment to community members • On-topic discussion • Compensation for others loafing • High conformation to group norm • Generalized reciprocity • Newcomers feel welcomed • -Robustness to member turnover • In-group loyalty and evaluation • Active participation • Off-topic discussion • Attitudes toward loafing (tolerance) • Low conformity to group norms • Direct reciprocity • Newcomers feel ostracized • Robustness to situational context 	N.A.
Rogers and Lea (2005)	Social Identity Theory, Self Categorization Theory and Social Identity Model of Deindividuation Effects	Distributed Group Environment	<ul style="list-style-type: none"> • Social Identity among members of a virtual group 	<ul style="list-style-type: none"> • Deindividuation effects of computer mediated communication 	<ul style="list-style-type: none"> • Social presence 	<ul style="list-style-type: none"> • Increase in personal cues may lead to strong personal bonds among individual members which may actually decrease social identity among members • Decrease in personal cues may lead to increased social identity which may increase social presence

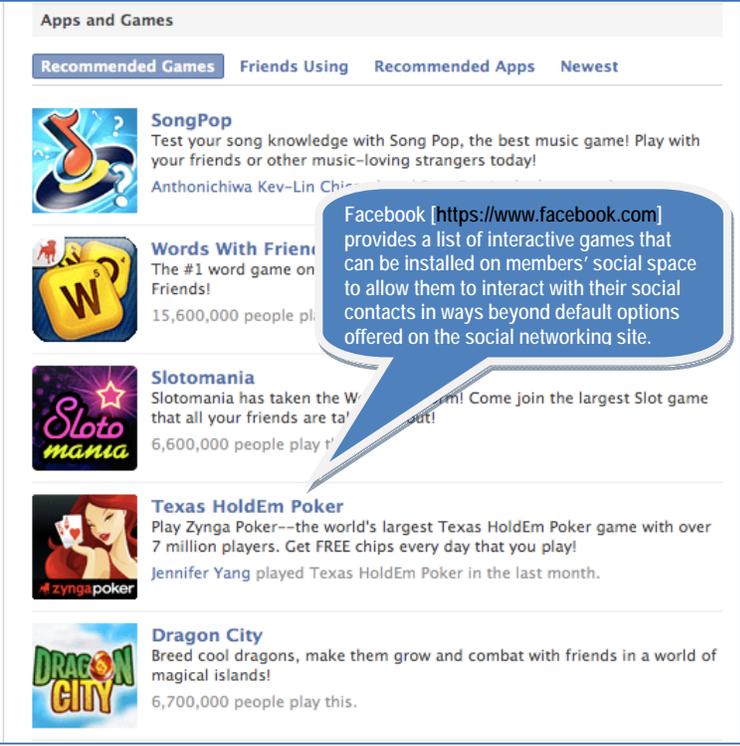
Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Saavedra and Kwun (1993)	Social Comparison Theory	Undergraduate and Graduate Workgroups in a University	<ul style="list-style-type: none"> • Social Comparison between individuals within a workgroup 	<ul style="list-style-type: none"> • An Individual's own performance or contribution to the workgroup 	<ul style="list-style-type: none"> • An Individual's evaluation tendency (variance) • An Individual's perceptions of the level of group heterogeneity 	<ul style="list-style-type: none"> • Outstanding contributors were the most discriminating evaluators in a workgroup • Below average contributors were the least discriminating evaluators in a workgroup • An Individual's own performance or contribution to the workgroup has not relation to his or her perceptions of the level of group heterogeneity •
Sarker et al. (2005)	Social Comparison Theory, Distributive Valence Model and Group Valence Model	Group Setting in Organizations	<ul style="list-style-type: none"> • Social Comparison – Effect of Individual <i>a priori</i> attitudes on group outcome 	N.A.	<ul style="list-style-type: none"> • Group valence 	N.A.
Schneider and Northcraft (1999)	Social Identity Theory and Social Dilemma Theory	Organization Setting	<ul style="list-style-type: none"> • Social Identity Functional Diversity • Social Identity Social Category Diversity 	<ul style="list-style-type: none"> • Uncertainty of Cost and Benefit of Functional or Social Category Diversity 	<ul style="list-style-type: none"> • Resistance of Functional or Social Category Diversity 	N.A.

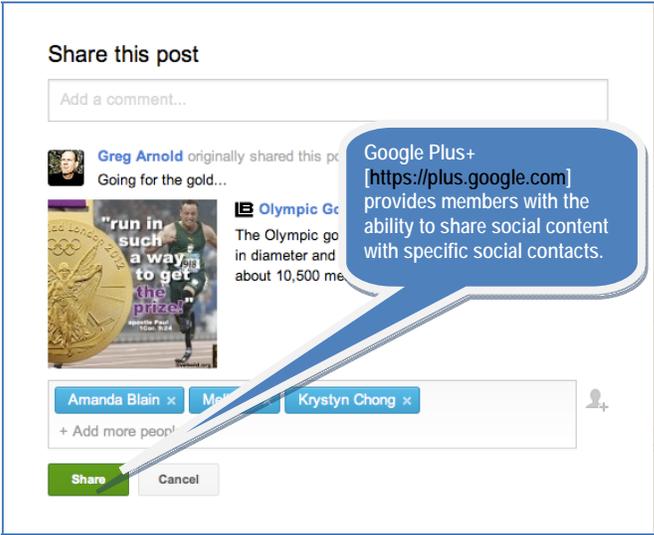
Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Scott and Timmerman (1999)	Social Identity Theory	Teleworkers in a Virtual Setting	<ul style="list-style-type: none"> • Social Identity among members of work team, department, and organization 	<ul style="list-style-type: none"> • Communication technology use • Virtuality • Demographics 	<ul style="list-style-type: none"> • Identity with personal interests, work team, department, organization and occupation 	<ul style="list-style-type: none"> • No significant relationship between use of technology with identity in general • Use of specific technologies such as advanced phone is positively related to organizational identification and occupational identification • Age teleworker is positively related to identification to work team and department • Teleworker with supervisory responsibilities is positively related to identification to work team and department and organization
Shepherd et al. (1995)	Social Comparison Theory	Electronic Brainstorming Groups	<ul style="list-style-type: none"> • Social Comparison among groups 	<ul style="list-style-type: none"> • Feedback on performance • Provision of a baseline for comparison 	<ul style="list-style-type: none"> • Productivity in idea generation 	<ul style="list-style-type: none"> • Social comparison increases productivity
Sia et al. (2002)	Social Comparison Theory and Persuasive Argument Theory	Computer-Mediated-Communication Setting	<ul style="list-style-type: none"> • Social Comparison among members of a group in a computer-mediated-communication setting 	<ul style="list-style-type: none"> • Social presence Presence of communication cues presented by CMC • Content Anonymity – Content cannot be attributed to specific individuals 	<ul style="list-style-type: none"> • Choice shift – Difference between the average pre-meeting position of all group members and the final collective position • Preference shift Average difference between the pre-meeting and post-meeting position of each person involved 	<ul style="list-style-type: none"> • Removal of visual cues (lower social presence) results in greater group-polarization • Anonymity results in greater group-polarization

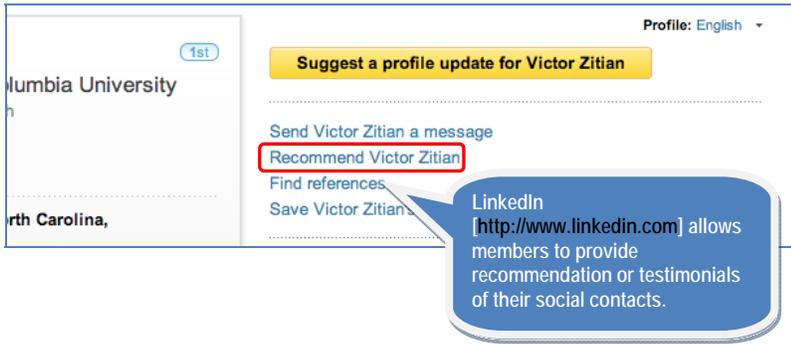
Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Smith and Leach (2004)	Relative Deprivation Theory, Social Identity Theory and Social Comparison Theory	Social Setting in a Public University	<ul style="list-style-type: none"> • Social Comparison and Social Identity • People thinking of themselves (or those with whom they compare) as group members rather than as individuals 	<ul style="list-style-type: none"> • Belonging to either an Ethnic Minority or Majority Group 	<ul style="list-style-type: none"> • Individual-Based Comparison • Group-Based Comparison • Individual-Based Target of Comparison • Group-Based Target of Comparison 	<ul style="list-style-type: none"> • Participants higher in ethnic group identification more often reported that they thought of their own ethnic group membership when comparing to others • Those higher in ethnic group identification more often reported comparing themselves to a member of another ethnic group.
Song and Kim (2006)	Social Identity Theory and Social Comparison Theory	Use of Avatar Virtual Community Service	<ul style="list-style-type: none"> • Social Comparison among members of a virtual community • Social Identity among members of a virtual community 	N.A.	<ul style="list-style-type: none"> • Intention to use avatar • External subjective norm – Compliance with social pressure 	<ul style="list-style-type: none"> • Social comparison tendency and social identity positively affect intention to use avatar • Social identity positively affects external subjective norm
Turner (1992)	Social Identity Theory and Self-Categorization Theory	Undergraduate Group Setting in a University	<ul style="list-style-type: none"> • Social Identity among members of a group 	<ul style="list-style-type: none"> • Threat – Degree of potential loss • Cohesion – Desire for the rewards of remaining in a pleasant group atmosphere or in a prestigious group. 	<ul style="list-style-type: none"> • Group performance • Groupthink symptoms • Defective decision making symptoms 	<ul style="list-style-type: none"> • Low threat and cohesion are related to group performance • High threat and cohesion are related to group think and defective decision making symptoms
Tyler and Bladder (2003)	Social Identity Theory and Group Engagement Model	Group Setting	<ul style="list-style-type: none"> • Social Identity among members of a group 	<ul style="list-style-type: none"> • Procedural Justice: Formal quality of decision making processes, Informal quality of decision making processes, Formal quality of treatment and Informal quality of treatment 	<ul style="list-style-type: none"> • Psychological engagement • Behavioral engagement: Mandatory behavior, Discretionary behavior 	N.A.
Whitworth et al. (2000)	Social Identity Theory and Social Influence Theory	Computer-Mediated Group Interaction	<ul style="list-style-type: none"> • Social Identity among members of a virtual group • Social relationship among members of a virtual group 	<ul style="list-style-type: none"> • Information influence • Personal influence • Normative influence 	<ul style="list-style-type: none"> • Task purposes • Relational purposes • Group purposes 	N.A.

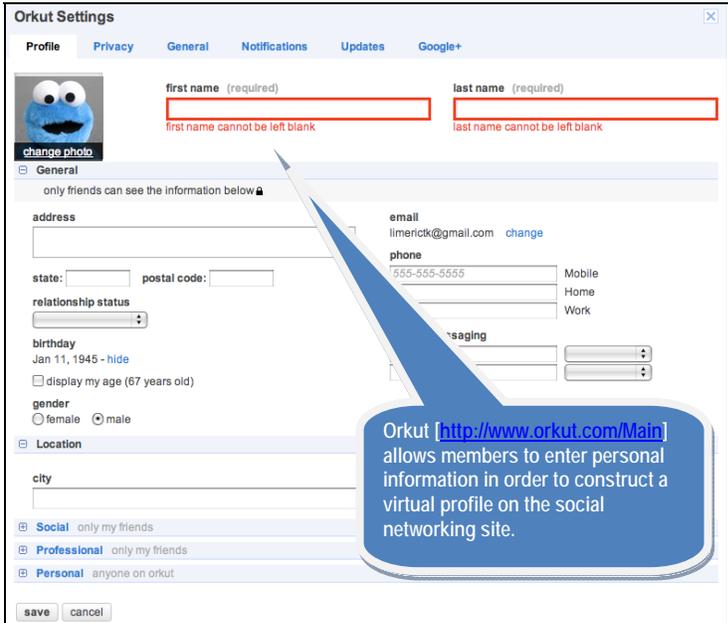
Author(s)	Theory	Context	Concept(s) Investigated [Types of Network]	Antecedent(s)	Outcome(s)	Finding(s)
Wiesenfeld et al. (2001)	Social Identity Theory	Virtual Setting in Organizations	<ul style="list-style-type: none"> • Identification among members with their organization 	<ul style="list-style-type: none"> • Need for affiliation • Perceived work-based social support 	<ul style="list-style-type: none"> • Organization identification 	<ul style="list-style-type: none"> • Need for affiliation and perceived work-based social support positively affect organization identification
Yoo and Alavi (2001)	Social Identity Theory	Electronic Technology-Mediated Group Setting	<ul style="list-style-type: none"> • Group cohesion among members in an electronic technology-mediated group 	N.A.	<ul style="list-style-type: none"> • Social presence • Task participation 	<ul style="list-style-type: none"> • Group cohesion positively affects social presence and task participation

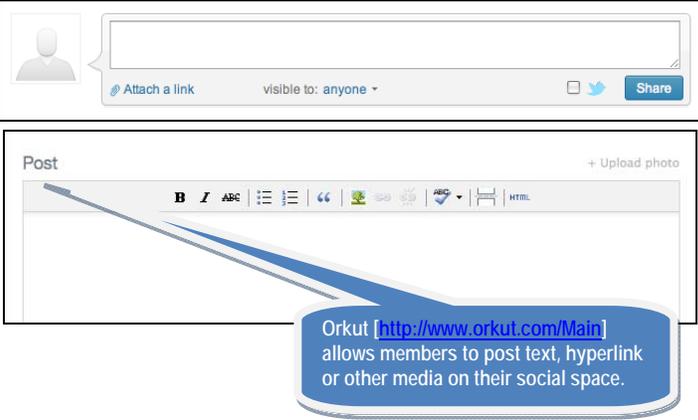
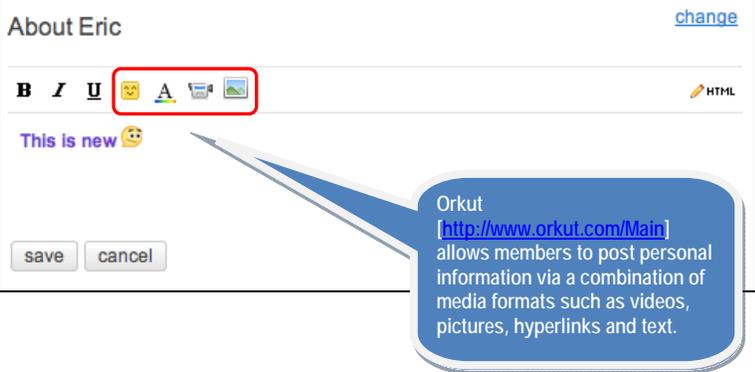
Appendix C. Screenshots of Social Networking Technologies Elicited Through Content Analysis

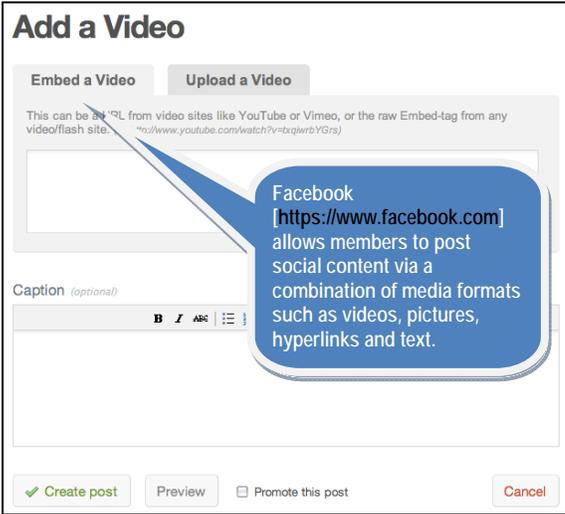
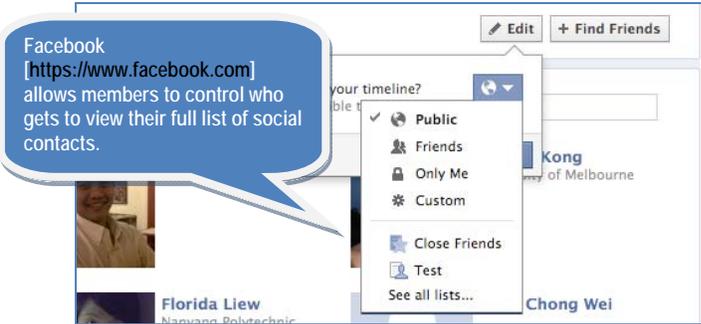
Social Networking Technology	Screenshot
Content-Based Deindividuation Technologies	
<p><u>Expansion of Network Capabilities</u></p> <p>Social networking site provides technological feature(s) that allows me to acquire new network capabilities in connecting with others.</p>	 <p>Apps and Games</p> <p>Recommended Games Friends Using Recommended Apps Newest</p> <p>SongPop Test your song knowledge with Song Pop, the best music game! Play with your friends or other music-loving strangers today! Anthonichiwa Kev-Lin Ch...</p> <p>Words With Friends The #1 word game on Friends! 15,600,000 people pl...</p> <p>Slotomania Slotomania has taken the W...! Come join the largest Slot game that all your friends are ta... out! 6,600,000 people play t...</p> <p>Texas HoldEm Poker Play Zynga Poker--the world's largest Texas HoldEm Poker game with over 7 million players. Get FREE chips every day that you play! Jennifer Yang played Texas HoldEm Poker in the last month.</p> <p>Dragon City Breed cool dragons, make them grow and combat with friends in a world of magical islands! 6,700,000 people play this.</p> <p>Facebook [https://www.facebook.com] provides a list of interactive games that can be installed on members' social space to allow them to interact with their social contacts in ways beyond default options offered on the social networking site.</p>
<p><u>Participation of Others in Content Creation</u></p> <p>Social networking site provides technological feature(s) that allows me to decide the extent to which others can participate in content creation.</p>	 <p>Timeline and Tagging</p> <p>Who can post on your timeline? Friends</p> <p>Who can see what others post on your timeline? Friends of Friends</p> <p>Review posts friends tag you in before they appear on timeline Off</p> <p>Who can see posts you've been tagged in on your timeline? Friends of Friends</p> <p>Facebook [https://www.facebook.com] provides members with the ability to control the extent to which their social contacts can contribute and modify social content appearing on their social space.</p> <p>Done</p>

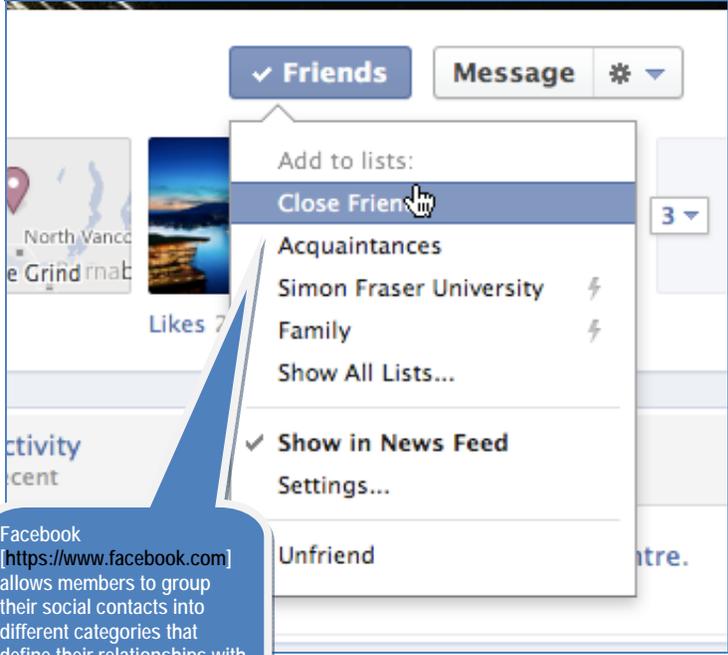
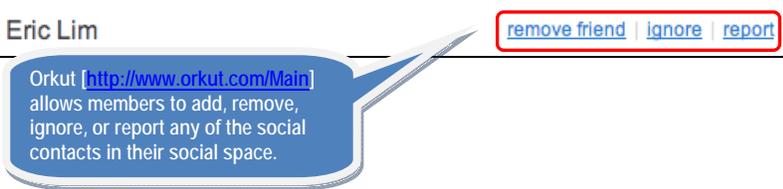
Social Networking Technology	Screenshot
<p>Recommendation of Social Content</p> <p>Social networking site provides technological feature(s) that allows me to recommend others social content that is created by myself or others.</p>	
Relation-Based Deindividuation Technologies	
<p>Display of Social Contacts</p> <p>Social networking site provides technological feature(s) that allows me to display social contacts that I have.</p>	
<p>Expand Social Contacts</p> <p>Social networking site provides technological feature(s) that allows me to invite others I may know to serve as social contacts.</p>	

Social Networking Technology	Screenshot
<p><u>Interaction with Social Contacts</u></p> <p>Social networking site provides technological feature(s) that allows me to interact with my social contacts.</p>	
<p><u>Modification of Appeal of Social Contacts</u></p> <p>Social networking site provides technological feature(s) that allows me to modify the appeal of social contacts that I share with others.</p>	
<p><u>Recommendation of Social Contacts</u></p> <p>Social networking site provides technological feature(s) that allows me to add others, whom I might have known, as my social contacts.</p>	
<p><u>Request Modification of Social Contacts</u></p> <p>Social networking site provides technological feature(s) that allows me to petition others to change my relationship with them.</p>	

Social Networking Technology	Screenshot
<p>Search for Social Contacts</p> <p>Social networking site provides technological feature(s) that allows me to search for others that I can potentially establish as social contacts.</p>	
Content-Based Personalization Technologies	
<p>Contextualization of Social Content</p> <p>Social networking site provides technological feature(s) that allows me to include contextual information for content that I share with others.</p>	
<p>Creation of Personal Profile</p> <p>Social networking site provides technological feature(s) that allows me to create a personal profile, which I share with others, in the way that I want.</p>	

Social Networking Technology	Screenshot
<p>Creation of Social Content</p> <p>Social networking site provides technological feature(s) that allows me to create content, which I share with others, in the way that I want.</p>	 <p>Orkut [http://www.orkut.com/Main] allows members to post text, hyperlink or other media on their social space.</p>
<p>Evaluation of Social Content</p> <p>Social networking site provides technological feature(s) that allows me to evaluate content that others share with me.</p>	 <p>Facebook [https://www.facebook.com] allows members to indicate their approval in the form of 'Like' for social content found on the social networking site.</p>
<p>Integration of Media Formats for Personal Profile Creation</p> <p>Social networking site provides technological feature(s) that allows me to integrate different media formats in creating a personal profile that I share with others.</p>	 <p>Orkut [http://www.orkut.com/Main] allows members to post personal information via a combination of media formats such as videos, pictures, hyperlinks and text.</p>

Social Networking Technology	Screenshot
<p>Integration of Media Formats for Social Content Creation</p> <p>Social networking site provides technological feature(s) that allows me to integrate different media formats in creating content that I share with others.</p>	
Relation-Based Personalization Technologies	
<p>Control Accessibility to Social Contacts</p> <p>Social networking site provides technological feature(s) that allows me to control others' access to my social contacts.</p>	
<p>Control Relational Configuration</p> <p>Social networking site provides technological feature(s) that allows me to decide how my social contacts can relate to me.</p>	

Social Networking Technology	Screenshot
<p>Define Relational Configuration</p> <p>Social networking site provides technological feature(s) that allows me to characterize the type of relationship I share with my social contacts.</p>	 <p>A screenshot of a Facebook interface showing a dropdown menu for a friend's profile. The menu includes options: 'Add to lists:', 'Close Friends' (highlighted by a mouse cursor), 'Acquaintances', 'Simon Fraser University', 'Family', 'Show All Lists...', 'Show in News Feed', 'Settings...', and 'Unfriend'. A blue callout box points to the 'Close Friends' option.</p> <p>Facebook [https://www.facebook.com] allows members to group their social contacts into different categories that define their relationships with these social contacts.</p>
<p>Establishment of Social Contacts</p> <p>Social networking site provides technological feature(s) that allows me to establish who I want as my social contacts.</p>	 <p>A screenshot of an Orkut user profile for 'Eric Lim'. At the top right, there are three links: 'remove friend', 'ignore', and 'report'. A blue callout box points to these links.</p> <p>Orkut [http://www.orkut.com/Main] allows members to add, remove, ignore, or report any of the social contacts in their social space.</p>
<p>Personalization of Social Contacts</p> <p>Social networking site provides technological feature(s) that allows me to develop a personalized space to display social contacts that I choose to share with others.</p>	 <p>A screenshot of the Facebook 'Create New Group' form. It includes fields for 'Group Name' and 'Members'. Under 'Privacy', there are three radio button options: 'Open' (selected), 'Closed', and 'Secret'. A blue callout box points to the 'Open' option.</p> <p>Facebook [https://www.facebook.com] allows members to create categories with which to group social contacts.</p>

Space-Based Personalization Technologies

Categorization of Personal Profile

Social networking site provides technological feature(s) that allows me to organize into categories the personal profile that I choose to share with others.

Facebook [\[https://www.facebook.com\]](https://www.facebook.com) allows members to organize personal information into specific categories.

Control Accessibility of Personal Profile

Social networking site provides technological feature(s) that allows me to control others' access to the personal profile that I have created.

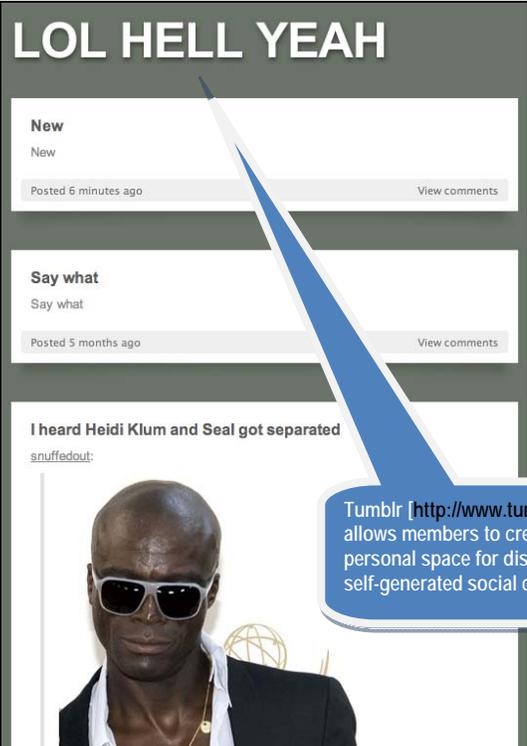
Orkut [\[http://www.orkut.com/Main\]](http://www.orkut.com/Main) allows members to control who gets to view personal information contained within their virtual profile.

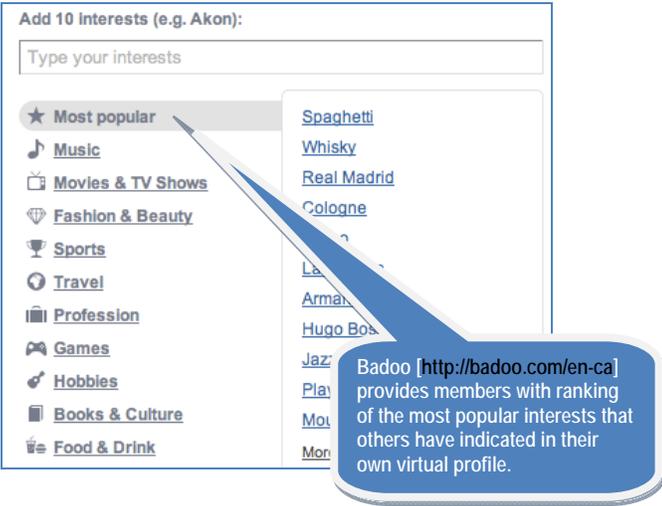
Control Accessibility of Social Content

Social networking site provides technological feature(s) that allows me to control others' access to content that I have created.

Facebook [\[https://www.facebook.com\]](https://www.facebook.com) allows members to determine who can access social content posted on their social space.

Social Networking Technology	Screenshot
<p>Customization of Common Space</p> <p>Social networking site provides technological feature(s) that allows me to modify the common space I share with others to increase my appeal.</p>	
<p>Customization of Social Content Display</p> <p>Social networking site provides technological feature(s) that allows me to develop a customized space to display content that others choose to share with me.</p>	

Social Networking Technology	Screenshot
<p>Customization of Social Space Appearance</p> <p>Social networking site provides technological feature(s) that allows me to customize the appearance of social space that I share with others.</p>	 <p>The screenshot shows the Tumblr theme customization interface. At the top, there are 'Themes', 'Save', and 'Close' buttons. Below is a preview of a theme titled 'Untitled' by 'Redux by jacob'. A blue callout bubble points to the preview with the text: 'Tumblr [http://www.tumblr.com] allows members to change the appearance of their social space such as background color, font type and header.' Below the preview is an 'Edit HTML' button. At the bottom, there is an 'APPEARANCE' section with settings for Background, Title (Arial), Body (Arial), Accent (Lucida Sans), Header (Upload), and Background (Upload).</p>
<p>Personalization of Social Content Display</p> <p>Social networking site provides technological feature(s) that allows me to develop a personalized space to display content that I choose to share with others.</p>	 <p>The screenshot shows a Tumblr social feed. At the top, it says 'LOL HELL YEAH'. Below are three posts: 'New' (Posted 6 minutes ago), 'Say what' (Posted 5 months ago), and 'I heard Heidi Klum and Seal got separated' (with a 'snuffedout:' link). A blue callout bubble points to the feed with the text: 'Tumblr [http://www.tumblr.com] allows members to create a personal space for displaying self-generated social content.' At the bottom, there is a profile picture of a man wearing sunglasses.</p>

Social Networking Technology	Screenshot
Content-Based Tournament Technologies	
<p>Ranking of Personal Preferences</p> <p>Social networking site provides technological feature(s) that allows me to establish the popularity of personal preferences.</p>	 <p>Badoo [http://badoo.com/en-ca] provides members with ranking of the most popular interests that others have indicated in their own virtual profile.</p>
<p>Ranking of Social Content</p> <p>Social networking site provides technological feature(s) that allows me to establish the popularity of social content that I visit.</p>	 <p>Facebook [https://www.facebook.com] provides members with ranking of social content found within the social networking site.</p>
Relation-Based Tournament Technologies	
<p>Ranking of Social Contacts</p> <p>Social networking site provides technological feature(s) that allows me to establish my popularity as compared to others.</p>	 <p>Badoo [http://badoo.com/en-ca] provides members with their ranking in relation to others within the social networking site.</p>

Appendix D. Summary of Social Networking Technologies Elicited from Each of the Fourteen Social Networking Sites

Social Networking Technology	Facebook	Twitter	LinkedIn	MySpace	Google Plus+	DeviantArt	LiveJournal	Tagged	Orkut	Pinterest	CafeMom	Meetup	myLife	Badoo	Total [%]
Content-Based Deindividuation Technology															
Expansion of Network Functionalities	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗	✓	✓	✓	✗	10 [71.4%]
Participation of Others in Content Creation	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	11 [78.6%]
Recommendation of Social Content	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✗	✗	✗	9 [64.3%]
Relation-Based Deindividuation Technology															
Communication with Social Contacts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	13 [92.9%]
Display of Social Contacts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	13 [92.9%]
Expand Social Contacts	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✗	✗	✓	10 [71.4%]
Modification of Appeal of Social Contacts	✗	✗	✓	✗	✗	✓	✗	✓	✓	✗	✗	✗	✗	✗	4 [28.6%]
Recommendation of Social Contacts	✓	✓	✓	✓	✓	✗	✗	✓	✗	✗	✗	✓	✓	✓	9 [64.3%]
Request Modification of Social Contacts	✗	✗	✓	✗	✓	✗	✓	✓	✓	✗	✓	✓	✗	✗	7 [50.0%]
Search for Social Contacts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14 [100%]
Content-Based Personalization Technology															
Contextualization of Social Content	✓	✓	✗	✗	✓	✓	✓	✗	✓	✗	✗	✓	✓	✓	9 [64.3%]
Creation of Personal Profile	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14 [100%]
Creation of Social Content	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14 [100%]
Evaluation of Social Content	✓	✗	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	11 [78.6%]
Integration of Media Formats for Personal Profile Creation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✗	✓	11 [78.6%]
Integration of Media Formats for Social Content Creation	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	12 [85.7%]

Social Networking Technology	Facebook	Twitter	LinkedIn	MySpace	Google Plus+	DeviantArt	LiveJournal	Tagged	Orkut	Pinterest	CafeMom	Meetup	myLife	Badoo	Total [%]
Relation-Based Deindividuation Technology															
Control Accessibility to Social Contacts	✓	✗	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	12 [85.7%]
Control Relational Configuration	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✗	✓	✓	12 [85.7%]
Define Relational Configuration	✓	✗	✓	✓	✓	✓	✓	✗	✓	✗	✗	✗	✓	✗	8 [57.1%]
Modification of Social Contacts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	13 [92.9%]
Personalization of Social Contacts	✓	✗	✓	✓	✓	✓	✓	✗	✓	✗	✓	✗	✗	✗	8 [57.1%]
Space-Based Deindividuation Technology															
Categorization of Personal Profile	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14 [100%]
Control Accessibility of Personal Profile	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	11 [78.6%]
Control Accessibility of Social Content	✓	✓	✓	✗	✓	✗	✓	✗	✓	✓	✓	✓	✗	✓	10 [71.4%]
Customization of Common Space	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✗	✗	✓	2 [14.3%]
Customization of Social Content Display	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✗	✗	✗	10 [71.4%]
Customization of Social Space Appearance	✓	✓	✗	✓	✓	✓	✓	✓	✓	✗	✓	✗	✗	✓	10 [71.4%]
Personalization of Social Content Display	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	13 [92.9%]
Content-Based Tournament Technology															
Ranking of Personal Preferences	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	1 [7.1%]
Ranking of Social Content	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗	✓	12 [85.7%]
Relation-Based Deindividuation Technology															
Ranking of Social Contacts	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✗	✗	✓	2 [14.3%]
Total [%]	26 [83.9%]	20 [64.5%]	24 [77.4%]	23 [74.2%]	27 [87.1%]	23 [74.2%]	24 [77.4%]	23 [74.2%]	25 [80.7%]	16 [51.6%]	25 [80.7%]	18 [58.1%]	12 [38.7%]	23 [74.2%]	

Appendix E. List of Measurement Items for Online Survey

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Content-Based Deindividuation Technologies [Newly Created]					
Expansion of Network Capabilities	Social networking site provides technological feature(s) that allow me to acquire new network capabilities in connecting with others.	The social network site allows me to install new functionalities to connect with others.	4.95 [1.45]	0.965	0.965
		The social network site allows me to connect with others by installing new functionalities.	4.96 [1.43]	0.969	0.969
		The social network site allows me to improve my connectivity with others by installing new functionalities.	4.97 [1.43]	0.968	0.968
Participation of Others in Content Creation	Social networking site provides technological feature(s) that allow me to decide the extent to which others can participate in content creation.	The social network site lets me decide if others are allowed to participate in content creation.	5.15 [1.36]	0.948	0.948
		The social network site allows me to decide how much I wish for others to participate in content creation.	5.08 [1.37]	0.964	0.964
		The social network site allows me to manage the intensity by which others are able to participate in content creation.	5.01 [1.42]	0.947	0.947

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Recommendation of Social Content	Social networking site provides technological feature(s) that allow me to recommend others social content that is created by myself or others.	The social network site allows me to let others know about certain content.	5.38 [1.26]	0.953	0.953
		The social network site allows me to share certain content with others.	5.44 [1.27]	0.954	0.954
		The social network site allows me to disseminate certain content to others.	5.27 [1.26]	0.932	0.932
Relation-Based Deindividuation Technologies [Newly Created]					
Display of Social Contacts	Social networking site provides technological feature(s) that allow me to display social contacts that I have.	The social network site allows me to display all my contacts.	5.16 [1.37]	0.935	0.935
		The social network site allows me to see at a glance all my contacts.	5.08 [1.41]	0.931	0.931
		The social network site allows me to find in one place, all my contacts.	5.28 [1.32]	0.938	0.938
Expand Social Contacts	Social networking site provides technological feature(s) that allow me to invite others I may know to serve as social contacts.	The social network site allows me to invite people who are not already on the site to sign up.	5.32 [1.33]	0.945	0.945
		The social network site allows me to contact people who are not already on the site to sign up.	5.26 [1.34]	0.961	0.961
		The social network site allows me to appeal to people who are not already on the site to sign up.	5.21 [1.35]	0.945	0.945

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Interaction with Social Contacts	Social networking site provides technological feature(s) that allow me to interact with my social contacts.	The social network site allows me to communicate with my contacts.	5.73 [1.23]	0.947	0.947
		The social network site allows me to correspond with my contacts.	5.75 [1.22]	0.958	0.958
		The social network site allows me to converse with my contacts.	5.63 [1.28]	0.918	0.918
Modification of Appeal of Social Contacts	Social networking site provides technological feature(s) that allow me to modify the appeal of social contacts that I share with others.	The social network site allows me to make my contacts more appealing to others.	4.65 [1.45]	0.924	0.924
		The social network site allows me to give a positive review of my contacts.	4.75 [1.44]	0.951	0.951
		The social network site allows me to recommend my contacts to others.	4.90 [1.42]	0.919	0.919
Recommendation of Social Contacts	Social networking site provides technological feature(s) that allow me to recommend others that I might wish to add as my social contacts.	The social network site provides me with recommendation about people I might wish to add to as my contacts.	5.60 [1.23]	0.940	0.940
		The social network site notifies me about people I might wish to add to as my contacts.	5.55 [1.25]	0.952	0.952
		The social network site prompts me about people I might wish to add to as my contacts.	5.52 [1.26]	0.943	0.943

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Request Modification of Social Contacts	Social networking site provides technological feature(s) that allow me to petition others to change my relationship with them.	The social network site allows me to petition others to modify my relationships with them.	4.90 [1.41]	0.945	0.945
		The social network site allows me to send requests to others to modify my relationships with them.	5.00 [1.38]	0.952	0.952
		The social network site allows me to appeal to others to modify my relationships with them.	4.92 [1.40]	0.957	0.957
Search for Social Contacts	Social networking site provides technological feature(s) that allow me to search for others that I can potentially establish as social contacts.	The social network site allows me to search for potential contacts that I may know.	5.49 [1.25]	0.903	0.936
		The social network site allows me to browse for potential contacts that I may know.	5.45 [1.27]	0.920	0.943
		The social network site allows me to bookmark potential contacts that I may know.	4.89 [1.45]	0.725	<i>Dropped</i>
		The social network site allows me to add potential contacts that I may know.	5.36 [1.25]	0.898	0.900

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Content-Based Personalization Technologies [Newly Created]					
Contextualization of Social Content	Social networking site provides technological feature(s) that allow me to include contextual information for content that I share with others.	The social network site allows me to add contextual information to the content I create.	5.23 [1.33]	0.939	0.939
		The social network site allows me to offer background information to the content I create.	5.21 [1.34]	0.957	0.957
		The social network site allows me to provide circumstantial information to the content I create.	5.17 [1.31]	0.948	0.948
Creation of Personal Profile	Social networking site provides technological feature(s) that allow me to create a personal profile, which I share with others, in the way that I want.	The social network site allows me to input my personal information the way I want.	4.99 [1.38]	0.956	0.956
		The social network site allows me to enter my personal information the way I want.	5.03 [1.35]	0.967	0.967
		The social network site allows me to create my personal information the way I want.	5.02 [1.37]	0.952	0.952
Creation of Social Content	Social networking site provides technological feature(s) that allow me to generate content the way I want.	The social network site allows me to generate content the way I want.	4.82 [1.39]	0.950	0.950
		The social network site allows me to produce content the way I want.	4.82 [1.37]	0.962	0.962
		The social network site allows me to create content the way I want.	4.79 [1.40]	0.958	0.958

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Evaluation of Social Content	Social networking site provides technological feature(s) that allow me to evaluate content that others share with me.	The social network site allows me to express my fondness of content generated by others.	5.46 [1.30]	0.923	0.923
		The social network site allows me to indicate my preference of content generated by others.	5.21 [1.37]	0.874	0.874
		The social network site allows me to communicate my liking of content generated by others.	5.57 [1.26]	0.929	0.929
Integration of Media Formats for Personal Profile Creation	Social networking site provides technological feature(s) that allow me to integrate different media formats in creating a personal profile that I share with others.	The social network site allows me to utilize different media formats to input my personal information.	4.81 [1.48]	0.964	0.964
		The social network site allows me to combine various media formats to enter my personal information.	4.80 [1.47]	0.972	0.972
		The social network site allows me to merge different media formats to create my personal information.	4.73 [1.48]	0.968	0.968
Integration of Media Formats for Social Content Creation	Social networking site provides technological feature(s) that allow me to integrate different media formats in creating content that I share with others.	The social network site allows me to utilize different media formats in creating content.	4.94 [1.38]	0.908	0.908
		The social network site allows me to combine different media formats in creating content.	4.79 [1.42]	0.958	0.958
		The social network site allows me to merge different media formats in creating content.	4.71 [1.39]	0.928	0.928

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Relation-Based Personalization Technologies [Newly Created]					
Control Accessibility to Social Contacts	Social networking site provides technological feature(s) that allow me to control others' access to my social contacts.	The social network site allows me to control who has access to my contacts.	5.24 [1.36]	0.962	0.962
		The social network site allows me to decide who can view my contacts.	5.28 [1.33]	0.963	0.963
		The social network site allows me to manage the accessibility of my contacts.	5.26 [1.35]	0.963	0.963
Control Relational Configuration	Social networking site provides technological feature(s) that allow me to decide how my social contacts can relate to me.	The social network site allows me to set rules with regards to how others relate to me.	5.17 [1.34]	0.951	0.951
		The social network site allows me to have control over how involved I would like to be with others.	5.19 [1.33]	0.953	0.953
		The social network site allows me to specify how my relationship with others would be.	5.15 [1.33]	0.942	0.942
Define Relational Configuration	Social networking site provides technological feature(s) that allow me to characterize the type of relationship I share with my social contacts.	The social network site allows me to indicate the type of relationship I have with others.	5.37 [1.29]	0.956	0.956
		The social network site allows me to categorize the type of relationship I have with others.	5.40 [1.29]	0.958	0.958
		The social network site allows me to define the type of relationship I have with others.	5.33 [1.31]	0.955	0.955

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Establishment of Social Contacts	Social networking site provides technological feature(s) that allow me to establish who I want as my social contacts.	The social network site allows me to change who my contacts are on the social network site.	5.40 [1.36]	0.949	0.949
		The social network site allows me to determine who my contacts are on the social network site.	5.40 [1.32]	0.954	0.954
		The social network site allows me to configure who my contacts are on the social network site.	5.31 [1.36]	0.938	0.938
Personalization of Social Contacts	Social networking site provides technological feature(s) that allow me to develop a personalized space to display social contacts that I choose to share with others.	The social network site allows me to utilize a customized list to display specific contacts of mine.	5.18 [1.34]	0.961	0.961
		The social network site allows me to develop a customized list to display specific contacts of mine.	5.19 [1.36]	0.962	0.962
		The social network site allows me to make use of a customized list to display specific contacts of mine.	5.20 [1.35]	0.958	0.958
Space-Based Personalization Technologies [Newly Created]					
Categorization of Personal Profile	Social networking site provides technological feature(s) that allow me to organize into categories the personal profile that I choose to share with others.	The social network site allows me to display my personal information in pre-specified or newly-created categorical formats.	5.07 [1.38]	0.963	0.963
		The social network site allows me to present my personal information in pre-specified or newly-created categorical formats.	5.05 [1.36]	0.973	0.973

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
		The social network site allows me to organize my personal information in pre-specified or newly created categorical formats.	5.03 [1.38]	0.963	0.963
Control Accessibility of Personal Profile	Social networking site provides technological feature(s) that allow me to control others' access to the personal profile that I have created.	The social network site allows me to control who has access to my personal information.	5.31 [1.37]	0.963	0.963
		The social network site allows me to decide who can view my personal information.	5.36 [1.36]	0.975	0.975
		The social network site allows me to manage the accessibility of my personal information.	5.37 [1.33]	0.972	0.972
Control Accessibility of Social Content	Social networking site provides technological feature(s) that allow me to control others' access to content that I have created.	The social network site allows me to control who has access to the content I create.	5.49 [1.31]	0.960	0.960
		The social network site allows me to decide who can view the content I create.	5.52 [1.30]	0.973	0.973
		The social network site allows me to manage the accessibility of the content I create.	5.46 [1.30]	0.958	0.958
Customization of Common Space	Social networking site provides technological feature(s) that allow me to modify the common space I share with others to increase my appeal.	The social network site allows me to make myself more appealing to others.	4.58 [1.44]	0.958	0.958
		The social network site allows me to increase my appeal to others.	4.56 [1.45]	0.973	0.973
		The social network site allows me to enhance how I am perceived by others.	4.59 [1.45]	0.961	0.961

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Customization of Social Content Display	Social networking site provides technological feature(s) that allow me to develop a customized space to display content that others choose to share with me.	The social network site allows me to utilize a customized list to display specific content generated by others.	4.86 [1.40]	0.960	0.960
		The social network site allows me to develop a customized list to display specific content generated by others.	4.89 [1.38]	0.972	0.972
		The social network site allows me to make use of a customized list to display specific content generated by others.	4.88 [1.40]	0.974	0.974
Customization of Social Space Appearance	Social networking site provides technological feature(s) that allow me to customize the appearance of social space that I share with others.	The social network site allows me to change its appearance to match my preference.	4.54 [1.70]	0.960	0.960
		The social network site allows me to change its appearance to look the way I want	4.44 [1.74]	0.979	0.979
		The social network site allows me to change its appearance to fit with my desired look.	4.45 [1.71]	0.973	0.973
Personalization of Social Content Display	Social networking site provides technological feature(s) that allow me to develop a personalized space to display content that I choose to share with others.	The social network site allows me to utilize a personal list to display all content I create.	4.67 [1.42]	0.967	0.967
		The social network site allows me to develop a personal list to display all content I create.	4.68 [1.45]	0.981	0.981
		The social network site allows me to make use of a personal list to display all content I create.	4.69 [1.43]	0.973	0.973

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Content-Based Tournament Technologies [Newly Created]					
Ranking of Personal Preferences	Social networking site provides technological feature(s) that allow me to establish the popularity of personal preferences.	The social network site allows me to see how well-received a particular type of personal information is.	4.61 [1.49]	0.957	0.957
		The social network site allows me to see how popular a particular type of personal information is.	4.68 [1.49]	0.957	0.957
		The social network site allows me to see how well-liked a particular type of personal information is.	4.67 [1.51]	0.955	0.955
		The social network site allows me to see how others rate the quality of a particular type of personal information.	4.65 [1.52]	0.947	0.947
Ranking of Social Content	Social networking site provides technological feature(s) that allow me to establish the popularity of social content that I visit.	The social network site allows me to see how well-received a particular content is.	5.30 [1.35]	0.935	0.935
		The social network site allows me to see how popular a particular content is.	5.32 [1.34]	0.945	0.945
		The social network site allows me to see how well-liked a particular content is.	5.42 [1.32]	0.929	0.929
		The social network site allows me to see how others rate the quality of a particular content.	5.15 [1.39]	0.862	0.862

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Relation-Based Tournament Technologies [Newly Created]					
Ranking of Social Contacts	Social networking site provides technological feature(s) that allow me to establish my popularity as compared to others.	The social network site allows me to see how well-received I am as compared to others.	4.29 [1.61]	0.950	0.950
		The social network site allows me to see how popular I am as compared to others.	4.34 [1.62]	0.967	0.967
		The social network site allows me to see how well-liked I am as compared to others.	4.29 [1.64]	0.960	0.960
		The social network site allows me to compare where I stand among others.	4.42 [1.63]	0.954	0.954
		The social network site allows me to see how I rank among others.	4.37 [1.65]	0.942	0.942
Social Networking Technology Categories [Newly Created]					
Deindividuation Technologies	Extent to which a social networking site provides technological features that allow me to associate myself with others	The social network site contains technologies that allow me to blend in with others.	4.85 [1.32]	0.918	0.918
		The social network site contains technologies that allow me to identify with others.	5.09 [1.29]	0.912	0.912
		The social network site contains technologies that allow me to see myself as being similar to others.	4.90 [1.32]	0.923	0.923
		The social network site contains technologies that allow me to adopt the same identity as others.	4.49 [1.50]	0.836	0.836

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Personalization Technologies	Extent to which a social networking site provides technological features that allow me to express myself to others	The social network site contains technologies that allow me to emphasize my personality.	4.87 [1.36]	0.913	0.913
		The social network site contains technologies that allow me to express my individuality.	5.05 [1.32]	0.930	0.930
		The social network site contains technologies that allow me to disclose my personality.	4.97 [1.33]	0.925	0.925
		The social network site contains technologies that allow me to show who I am.	5.06 [1.32]	0.933	0.933
		The social network site contains technologies that allow me to reveal the kind of person I am.	4.98 [1.35]	0.925	0.925
Tournament Technologies	Extent to which a social networking site provides technological features that allow me to evaluate myself in relation to others	The social network site contains technologies that allow me to know where I stand in relation to others.	4.46 [1.59]	0.936	0.936
		The social network site contains technologies that highlight my performance relative to others.	4.43 [1.60]	0.960	0.960
		The social network site contains technologies that stress my standing relative to others.	4.37 [1.62]	0.955	0.955
		The social network site contains technologies that make me feel like I am in a tournament with others.	4.17 [1.74]	0.871	0.871

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Social Attachments					
Bond-Based Attachment [as adapted from Jenkins (1997) as well as Wiatrowski et al. (1981)]	Extent to which a member feels that he/she connects with specific other(s) of a social networking site	I feel close to certain individuals within the social network site.	5.03 [1.40]	0.857	0.873
		I care a lot about what certain individuals within the social network site think about me.	4.52 [1.68]	0.812	<i>Dropped</i>
		I want to be the kind of person that certain individuals within the social network site are.	4.28 [1.64]	0.751	<i>Dropped</i>
		I find certain individuals within the social network site to be important to me.	5.08 [1.44]	0.895	0.907
		I like to spend time with certain individuals within the social network site.	5.07 [1.46]	0.874	0.902
		I favor certain individuals within the social network site.	5.17 [1.43]	0.861	0.905
		I prefer certain individuals within the social network site.	5.20 [1.40]	0.868	0.918
		Identity-Based Attachment [as adapted from Luhtanen and Crocker (1992) as well as Triandis and Gelfand (1998)]	Extent to which a member feels that he/she identifies with the online community of a social networking site	I identify very much with certain groups within the social network site.	4.61 [1.55]
I fit well into certain groups within the social network site.	4.69 [1.46]			0.893	0.893
The groups I belong to within the social network site are an important reflection of who I am.	4.49 [1.56]			0.924	0.924

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
		The groups I belong to within the social network site are important to my sense of what kind of person I am.	4.32 [1.66]	0.933	0.933
		The groups I belong to within the social network site have a lot to do with how I feel about myself.	4.08 [1.74]	0.879	0.879
Comparison-Based Attachment [as adapted from Buunk et al. (1990) as well as Allan and Gilbert (1995)]	Extent to which a member feels that he/she is attracted to his/her standing within the online community of a social networking site	I often compare myself with others within the social network site.	3.63 [1.83]	0.930	0.930
		I like comparing myself with others within the social network site.	3.51 [1.84]	0.949	0.949
		I like to know my standing among others within the social network site.	3.73 [1.81]	0.944	0.944
		I like to know how I rank relative to others within the social network site.	3.58 [1.86]	0.955	0.955
Mental States					
Cooperative Mentality [as adapted from Crosby et al. (1990) as well as Triandis and Gelfand (1998)]	Extent to which a member shares a tendency to cooperate with others within a social networking site	I tend to cooperate with others within the social network site.	4.79 [1.40]	0.935	0.935
		I tend to engage in cooperation with others within the social network site.	4.73 [1.41]	0.948	0.948
		I tend to work with others within the social network site.	4.71 [1.43]	0.940	0.940
		I tend to help others within the social network site even if there's nothing in it for me.	4.81 [1.46]	0.906	0.906

Construct	Definition	Measurement Items	Mean [S.D.]	Factor Loading	
				Before Dropping Item	After Dropping Item
Competitive Mentality [as adapted from Lim (2009)]	Extent to which a member shares a tendency to compete with others within a social networking site	I tend to want to perform better than others within the social network site.	3.79 [1.72]	0.892	0.892
		I tend to be annoyed when others within the social network site perform better than I do.	3.32 [1.84]	0.947	0.947
		I tend to pit myself against others within the social network site.	3.24 [1.85]	0.957	0.957
		I tend to strive to outdo others within the social network site.	3.23 [1.91]	0.956	0.956
Satisfaction [as adapted from Cenfetelli et al. (2008)]	Extent to which a member is satisfied with a social networking site	Overall, I am satisfied with the social network site.	5.22 [1.33]	0.956	0.956
		Overall the social network site is satisfactory.	5.25 [1.32]	0.948	0.948
		Overall, I am pleased with the social network site.	5.22 [1.37]	0.964	0.964
		Overall I am delighted with the social network site.	4.88 [1.50]	0.917	0.917
Continual Usage Intention [as adapted from Deng et al. (2010)]	Extent to which a member intends to continue using a social networking site in the future	I intend to continue using the social network site in the future.	5.61 [1.31]	0.913	0.913
		I will always try to use the social network site as part of my routine.	5.19 [1.47]	0.923	0.923
		I will keep using the social network site as regularly as I do now.	5.40 [1.33]	0.914	0.914

Appendix F. Inter-Construct Correlation Matrix

	ASC	BBA	BSC	CAC	CAP	CAR	CBA	CCC	CCD	CMM	COM	CPP	CRC	CSA	CSC	CUI	DIT	DRC	DSC	ENC	ESC	FPP	FSC	IBA	ISC	MSC	PCC	PCD	PSC	PZT	RKC	RKP	RKR	RSC	RSR	SAT	SSC	TOT	TSC	XSC	ZPP							
ASC	0.93																																															
BBA	0.42	0.90																																														
BSC	0.43	0.51	0.95																																													
CAC	0.41	0.50	0.66	0.96																																												
CAP	0.42	0.51	0.68	0.77	0.97																																											
CAR	0.46	0.49	0.68	0.74	0.74	0.96																																										
CBA	0.41	0.42	0.11	0.10	0.13	0.20	0.94																																									
CCC	0.68	0.42	0.44	0.37	0.41	0.46	0.44	0.96																																								
CCD	0.57	0.48	0.63	0.64	0.57	0.62	0.28	0.53	0.97																																							
CMM	0.33	0.28	0.03	0.00	0.02	0.10	0.79	0.34	0.22	0.94																																						
COM	0.42	0.63	0.37	0.35	0.38	0.39	0.49	0.41	0.40	0.41	0.93																																					
CPP	0.52	0.50	0.56	0.60	0.60	0.60	0.27	0.58	0.61	0.20	0.42	0.96																																				
CRC	0.54	0.55	0.66	0.65	0.64	0.72	0.26	0.50	0.67	0.17	0.47	0.62	0.95																																			
CSA	0.49	0.32	0.31	0.35	0.36	0.42	0.32	0.48	0.53	0.28	0.31	0.46	0.43	0.97																																		
CSC	0.50	0.44	0.53	0.50	0.49	0.53	0.31	0.53	0.58	0.24	0.42	0.61	0.54	0.60	0.96																																	
CUI	0.36	0.63	0.52	0.53	0.52	0.50	0.27	0.32	0.45	0.16	0.53	0.51	0.50	0.28	0.46	0.92																																
DIT	0.62	0.63	0.46	0.45	0.47	0.52	0.57	0.58	0.56	0.45	0.59	0.56	0.56	0.45	0.50	0.56	0.90																															
DRC	0.48	0.57	0.65	0.68	0.67	0.72	0.18	0.46	0.64	0.08	0.44	0.59	0.76	0.35	0.51	0.52	0.55	0.96																														
DSC	0.56	0.45	0.57	0.52	0.56	0.54	0.26	0.59	0.54	0.15	0.41	0.58	0.48	0.43	0.49	0.43	0.51	0.51	0.93																													
ENC	0.53	0.51	0.52	0.52	0.56	0.59	0.30	0.57	0.63	0.21	0.42	0.54	0.69	0.46	0.48	0.42	0.56	0.65	0.48	0.97																												
ESC	0.40	0.52	0.64	0.69	0.65	0.61	0.13	0.43	0.58	0.02	0.41	0.58	0.62	0.34	0.52	0.53	0.44	0.67	0.49	0.55	0.91																											
FPP	0.63	0.39	0.48	0.47	0.46	0.50	0.35	0.62	0.65	0.27	0.36	0.64	0.56	0.63	0.60	0.35	0.54	0.51	0.56	0.52	0.46	0.97																										
FSC	0.55	0.44	0.52	0.51	0.49	0.54	0.32	0.57	0.64	0.26	0.42	0.59	0.58	0.59	0.69	0.43	0.53	0.54	0.52	0.56	0.56	0.68	0.93																									
IBA	0.45	0.63	0.31	0.31	0.28	0.34	0.69	0.44	0.42	0.58	0.67	0.37	0.41	0.31	0.39	0.50	0.64	0.36	0.37	0.37	0.31	0.36	0.40	0.91																								
ISC	0.37	0.51	0.67	0.65	0.61	0.59	0.04	0.31	0.50	-0.04	0.39	0.46	0.59	0.23	0.39	0.56	0.41	0.64	0.54	0.47	0.62	0.35	0.43	0.28	0.94																							
MSC	0.61	0.44	0.52	0.46	0.52	0.55	0.31	0.63	0.57	0.21	0.40	0.58	0.58	0.41	0.50	0.42	0.57	0.56	0.61	0.63	0.51	0.56	0.55	0.41	0.45	0.95																						
PCC	0.58	0.52	0.55	0.58	0.59	0.65	0.30	0.55	0.64	0.22	0.45	0.55	0.71	0.39	0.47	0.47	0.62	0.69	0.49	0.67	0.58	0.52	0.54	0.41	0.59	0.64	0.95																					
PCD	0.59	0.45	0.55	0.52	0.51	0.52	0.36	0.65	0.70	0.30	0.42	0.62	0.52	0.54	0.62	0.42	0.57	0.52	0.59	0.55	0.52	0.66	0.67	0.43	0.39	0.57	0.56	0.97																				
PSC	0.52	0.53	0.64	0.62	0.63	0.70	0.25	0.54	0.69	0.16	0.44	0.61	0.67	0.39	0.55	0.44	0.57	0.67	0.57	0.61	0.58	0.57	0.57	0.36	0.53	0.58	0.62	0.57	0.96																			
PZT	0.64	0.60	0.55	0.54	0.54	0.57	0.44	0.59	0.62	0.32	0.55	0.61	0.65	0.50	0.55	0.54	0.77	0.60	0.59	0.61	0.52	0.61	0.58	0.57	0.50	0.61	0.66	0.58	0.63	0.93																		
RKC	0.52	0.55	0.61	0.57	0.57	0.58	0.18	0.44	0.56	0.09	0.43	0.52	0.64	0.34	0.47	0.50	0.55	0.66	0.50	0.60	0.65	0.43	0.52	0.38	0.64	0.54	0.68	0.48	0.55	0.58	0.92																	
RKP	0.68	0.44	0.41	0.36	0.39	0.47	0.41	0.62	0.54	0.34	0.41	0.51	0.53	0.50	0.47	0.34	0.59	0.46	0.51	0.54	0.40	0.62	0.56	0.43	0.35	0.58	0.58	0.63	0.52	0.59	0.58	0.95																
RKR	0.69	0.36	0.31	0.28	0.31	0.40	0.54	0.67	0.51	0.46	0.37	0.45	0.44	0.52	0.42	0.26	0.62	0.36	0.48	0.49	0.30	0.64	0.52	0.44	0.22	0.51	0.51	0.59	0.47	0.60	0.44	0.74	0.95															
RSC	0.43	0.53	0.72	0.63	0.65	0.66	0.13	0.50	0.59	0.04	0.40	0.60	0.69	0.34	0.53	0.51	0.48	0.70	0.60	0.64	0.66	0.51	0.58	0.30	0.67	0.58	0.60	0.50	0.64	0.57	0.64	0.42	0.33	0.95														
RSR	0.44	0.53	0.59	0.60	0.64	0.61	0.09	0.34	0.47	-0.02	0.40	0.50	0.60	0.24	0.40	0.55	0.45	0.67	0.54	0.55	0.63	0.37	0.43	0.28	0.74	0.52	0.60	0.39	0.55	0.52	0.66	0.39	0.26	0.66	0.95													
SAT	0.46	0.63	0.53	0.53	0.52	0.54	0.38	0.43	0.51	0.26	0.54	0.56	0.54	0.38	0.53	0.79	0.66	0.53	0.49	0.46	0.48	0.47	0.49	0.54	0.51	0.45	0.50	0.50	0.53	0.66	0.47	0.45	0.41	0.51	0.50	0.95												
SSC	0.49	0.56	0.67	0.66	0.67	0.63	0.12	0.43	0.56	0.03	0.40	0.61	0.59	0.33	0.46	0.57	0.50	0.63	0.66	0.55	0.61	0.46	0.48	0.33	0.72	0.60	0.56	0.48	0.58	0.59	0.63	0.46	0.33	0.69	0.71	0.54	0.93											
TOT	0.63	0.43	0.28	0.27	0.29	0.36	0.63	0.60	0.48	0.54	0.45	0.43	0.41	0.47	0.41	0.33	0.72	0.35	0.43	0.47	0.30	0.56	0.48	0.55	0.21	0.49	0.52	0.53	0.42	0.67	0.42	0.67	0.76	0.29	0.27	0.45	0.30	0.93										
TSC	0.45	0.48	0.65	0.66	0.60	0.60	0.21	0.47	0.64	0.13	0.43	0.60	0.64	0.46	0.64	0.46	0.49	0.64	0.54	0.57	0.68	0.57	0.66	0.34	0.54	0.52	0.52	0.55	0.66	0.57	0.58	0.43	0.38	0.68	0.52	0.49	0.59	0.32	0.95									
XSC	0.52	0.50	0.54	0.52	0.52	0.56	0.22	0.47	0.54	0.14	0.41	0.50	0.57	0.38	0.45	0.45	0.51	0.55	0.57	0.55	0.50	0.52	0.50	0.32	0.60	0.56	0.59	0.50	0.55	0.58	0.59	0.51	0.46	0.60	0.60	0.48	0.65	0.39	0.55	0.95								