ABSTRACT
This paper investigates the determinants of relationship attachment and subjective vitality in a social networking site (SNS) use context. Following the social bond theory, we hypothesize that utilitarian value and hedonic value would influence relationship attachment. In addition, drawing the concept of autonomous vs. controlled motivations and relationship attachment theory, we hypothesize that hedonic value, utilitarian value, and relationship attachment would influence subjective vitality. The hypothesized research model is tested by collecting data from 150 Facebook users from a Facebook group using Partial Least Squares (PLS) approach. The findings suggest that relationship attachment is predicted by only hedonic value. Interestingly, utilitarian value did not have significant influence on relationship attachment. The findings also suggest that subjective vitality is predicted utilitarian value, hedonic value, and relationship attachment.

Keywords
Subjective vitality, Attachment, Social networking sites, Utilitarian value, Hedonic value

Introduction
Engagement in social networking sites (SNSs) such as Facebook and its Chinese equivalent Renren has mushroomed globally in the past years. Nearly 80% of the Internet users use SNS services and these sites currently account for nearly one quarter of the total time spent online (Panek et al., 2013). For example, Facebook alone reported to have 1.19 billion monthly active users in September 2013.

SNSs are “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system” (Boyd & Ellison, 2007, p. 211).

SNSs offer their users various features for social interaction and communications and hence afford maintaining existing social relationships and establishing new ones. Good social relationships and interaction with other people have been broadly found to support one’s psychological well-being (Valkenburg et al., 2006). Thus, considering the number of SNS users globally, it is particularly interesting to investigate to what extent SNS use helps maintain relationships with one’s significant others and supports one’s psychological well-being. For example, receiving positive feedback to one’s postings may increase an individual’s self-esteem and well-being (Valkenburg et al., 2006). In addition, interacting with others in SNSs may help individual construct mental representations about others. These representations help an individual maintain subsequent relationship with others (Fraley et al., 2011).

Prior IS literature has traditionally emphasized work performance improvement as the main benefit of IS use (Davis, 1989; DeLone & McLean, 2003; Venkatesh et al., 2012). In addition, due to the proliferation of hedonic IS and consumer use of information technologies, the hedonic outcomes have gained increasing attention in the literature (Turel & Serenko, 2012; Van der Heijden, 2004; Venkatesh et al., 2012).
However, psychosocial outcomes such as relationships with other people or increased well-being have thus far remained under investigated in the IS literature. To fill this gap, we examine relationship attachment and individuals' subjective vitality as the psychosocial outcomes of SNS use. Furthermore, we argue that SNS use can create both hedonic and utilitarian value for an individual. Thus, we place hedonic and utilitarian value as antecedents of relationship attachment and subjective vitality.

The paper proceeds as follows. In section 2 we present the literature reviews and constructs of interest. In section 3 we present the research model and develop hypotheses. Section 4 is dedicated to study design. In section 5 we describe the key results, implications of our findings for theory and practice, unveil the limitations of study as well as suggest areas for future research.

### Theoretical underpinnings

#### Subjective vitality

Vitality is regarded as an important concept within the psychology literature (see e.g. Ryan & Deci, 2008). According to the *Oxford English Dictionary*, an individual with vitality has vigor and liveliness, a general energy for life. When vital, an individual experiences a sense of enthusiasm, aliveness, and energy available to the self (Ryan & Fredrick, 1997).

As one cannot, in principle, directly measure the energy available to the self, Ryan & Fredrick (1997) suggested exploring vitality as a *subjective* variable. In relation to this, Akin (2012) defined subjective vitality as the subjective experience of being full of energy and alive. Furthermore, subjective vitality is considered as an aspect of eudaimonic well-being, as being vital and energetic is part of what it means to be fully functioning and psychologically well (Ryan & Deci, 2001).

Prior research on psychology and medicine has empirically found that subjective vitality is robustly associated with both behavioral and health-related outcomes (e.g., Pennix et al., 2000; Ryan & Deci, 2008; Thayer, 1996). This assertion has been supported by neuroscientific research that has shown that when experiencing vitality, specific configurations in the brain are activated (Barrett et al., 2004). Consequently, subjective vitality has been linked to other positively toned and energized states such as feelings of vigor (McNair et al., 1971), calm energy (Thayer, 1996), and activated positive affect (Watson & Tellegen, 1985). Vital individuals have been found more active and productive and possess better abilities to cope with stress and challenges (Ryan & Deci, 2008). In addition, vital individuals are less vulnerable to illness, have better mental health as well as are more resilient to physical and viral stressors (Pennix et al., 2000; Ryan & Deci, 2008).

Ryan & Deci (2008) argued that subjective vitality as a complex and dynamic outcome that is influenced by social and psychological factors. They pointed that social events could leave even a well-nourished person feeling excited and energized, or alternatively stressed, anergic, and drained. As SNSs have become an integral part of people's social life, it is important for IS researchers to investigate what factors influence individual's subjective vitality in the SNS use context.

Prior psychology literature conceptualized subjective vitality in two ways: individual difference level (Ryan & Frederick, 1997) and state level (Nix et al., 1999). In this paper, we have adopted the state level conceptualization of subjective vitality (i.e., the energy felt during SNS use). Consequently, we define subjective vitality as the subjective experience of being full of energy and alive during SNS use.

Although the concept of subjective vitality has never been explored in IS research, we argue that it can be linked to several IS constructs. In particular, we hold that examining the *antecedents* of subjective vitality such as design features of the IT artifact or user motivation would be meaningful for IS researchers.

#### Relationship attachment in SNSs

Psychology research has used attachment theory (Bowlby, 1969) as one of the leading theoretical frameworks for studying emotion regulation, personality development, and interpersonal relationships (Fraley et al., 2011). The attachment theory assumes that people construct mental representations (i.e. working models) of the self and significant others based on their interpersonal experiences (Bowlby,
Attachment and vitality in SNSs

If an individual is cared for in a responsive and consistent manner, he/she develops expectations that others will be available and supportive when needed (Ainsworth et al., 1978).

Attachment consists two dimensions: anxiety and avoidance (Mikulincer et al., 2003). Anxiety is defined as involving a fear of interpersonal rejection or abandonment, an excessive need for approval from others, and distress when one’s partner is unavailable or unresponsive (Wei et al., 2007). Avoidance is defined as involving fear of dependence and interpersonal intimacy, an excessive need for self-reliance, and reluctance to self-disclose (Wei et al., 2007). While both dimensions constitute the concept of relationship attachment, we argue that avoidance dimension is more meaningful to the SNS context. In fact, SNS has been found as a platform to present one’s self, maintain intimate relationship with others, and self-disclose (Munar, 2010). Consequently, we conceptualize relationship attachment with its avoidance dimension in this paper.

Prior psychology research found a number of consequences of relationship attachment. For example, relationship attachment has been found to be positively associated with self-efficacy and self-awareness (Mallinckrodt & Wei, 2005). Lack of relationship attachment has been found to be positively associated with negative mood (Wei et al., 2004) and depression (Zakalik & Wei, 2006).

SNSs are used to build and maintain interpersonal relationships through communication and social interaction. Thus, it is logical to assume that interactions with other people in SNSs play a role in constructing the working models of other SNS users. These working models in turn contribute to the way people subsequently regulate their attachment behavior to maintain their interpersonal relationships.

The concept of attachment has rarely been addressed in IS research (Kim, 2013). As SNSs and online communities have pervasive, it becomes important for IS researchers to explore what aspects of SNSs assist building and maintaining relationships. In this regard, relationship attachment can be regarded as the focal construct of interest for IS researchers. Possible research directions for IS researchers could be identifying different dimensions of relationship attachments, identifying antecedents and outcomes of relationship attachment.

Utilitarian value

SNSs are aggregations of different media (Smock et al. 2011) that offer a wide range of different features, such as instant messaging and content sharing. As a result, we assert that using SNSs offers both utilitarian and hedonic value to the user. With regard to utilitarian value, our reasoning builds upon the IS adoption literature that has viewed IS to provide instrumental value to the user (Davis, 1989; Venkatesh et al., 2012). Instrumentality implies that there is an objective external to the interaction between user and system, such as increasing task performance (Van der Heijden, 2004). From motivational perspective, utilitarian values are considered to represent extrinsic motivation. Extrinsic motivation is defined as the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself (Deci & Ryan, 1991).

Prior literature focused heavily on understanding extrinsic motives of IS use (Davis, 1989; Venkatesh et al., 2012). For example, the well-known concept of perceived usefulness, i.e. the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989) represents a form of extrinsic motivation.

Rather than improving one’s work performance, SNSs have been designed for private life to facilitate communication and interaction with other people as well as to establish and maintain interpersonal relationship. Consequently, we draw on Davis (1989) and conceptualize utilitarian value of SNSs to refer as the degree to which an individual believes that using a SNS would enhance his or her communication and interaction with friends.

Hedonic value

In addition to creating utilitarian value to the user, SNS use has been found to be hedonically driven (Turel & Serenko, 2012). Hedonic systems aim to provide self-fulfilling values such as fun, and pleasure to the users (Van der Heijden, 2004). Due to the advent of systems such as SNSs, virtual worlds and console games, to name a few, the intrinsic reflections such as perceived enjoyment have been gaining...
increasing foothold as the motivational drivers of IS use (Venkatesh, 2000; Van der Heijden, 2004; Turel & Serenko, 2012).

Intrinsic motivation refers to the activity spawned by the pleasure of action (Ryan & Frederick, 1997) and drives voluntary activity done for no apparent reinforcement other than the process of performing the activity per se (de Charms, 1968). The concept of intrinsic motivation has also been well recognized with respect to IS use (Davis et al., 1992; Venkatesh 2000). Van der Heijden (2004) has even found perceived enjoyment (i.e., an intrinsic motivation) as more important than perceived usefulness in predicting intention to use hedonic systems. It has also been found important predicting habit and engagement in SNS usage context (Turel & Serenko, 2012). Based on these findings, we employ perceived enjoyment as the proxy for hedonic value. Accordingly, we conceptualize perceived enjoyment as the extent to which the activity of using an SNS is perceived to be enjoyable in its own right (Davis et al., 1992).

**Hypotheses**

Prior research on self-determination theory (Ryan & Frederick, 1997) differentiated between autonomous and controlled motivations. An individual can be motivated to act in a particular way by external compulsion (i.e., controlled motivations) or out of inwardly endorsed motives such as personal interests or values (i.e., autonomous motivations). Intrinsic motivations have been regarded as autonomous by definition, which means that they are experienced as emanating from one’s self, whereas extrinsic motivations vary in the degree to which they are autonomous versus controlled (Deci & Ryan, 1991).

We argue that utilitarian and hedonic motivations are autonomous. Prior IS research also suggested enjoyment as an intrinsic motivation (Van der Heijden, 2004). Hence, it is autonomous by definition (Ryan & Frederick, 1997). We also argue that maintaining communication with friends in SNSs is also somewhat self-determined and hence it can be categorized as extrinsic autonomous motivation. When people are intrinsically motivated or autonomously extrinsically motivated, they will feel their energy enhanced (Nix et al., 1999). Consequently, it is logical to assume that utilitarian and hedonic values may enhance an individual’s subjective vitality. Based on this we propose the following two hypotheses.

H1. Utilitarian value positively influences subjective vitality

H2. Hedonic value positively influences subjective vitality

According to the attachment theory, supportive relationships are crucial for maintaining mental health and proper psychological functioning (Mikulincer & Shaver, 2013). Prior psychology literature has reported positive relationship between relationship attachment and well-being (e.g., Simpson, 1990; La Guardia et al., 2000). We assume that this relationship holds also in computer-mediated social interaction, such as SNSs and put forward the following hypothesis:

H3. Relationship attachment positively influences subjective vitality

SNSs provide an avenue to build and maintain relationships with the significant others. People share their thoughts, feelings, and behaviors with their friends and thus construct mental representation of self and significant others. The social bond theory (SBT) (Ren et al., 2007) suggests that communities provide fertile breeding grounds for relationship development among participants through frequent interaction.

As the utilitarian value of an SNS stems from its ability to facilitate social interaction, users who perceive higher levels of utilitarian value are more likely to experience higher levels of attachment to their SNS friends. The same applies to the relationship between hedonic value and relationship attachment. Since the content of SNSs is user-generated, much of the hedonic value of SNSs is dependent on the content posted by one’s network as well as the enjoyment derived from posting and reading content in the SNS. Whether the SNS use is driven by hedonic or utilitarian outcomes, they both have a positive influence on the interactions in the SNS. The interactions in turn contribute to building interpersonal relationships and feeling of attachment with one’s friends on the SNS. As a result, we assume that by both hedonic and utilitarian values provided by the SNSs contribute to relationship attachment and suggest the following hypotheses:

H4. Hedonic value positively influences relationship attachment

H5. Utilitarian value positively influences relationship attachment
The research model is presented in Fig. 1 below.

**Figure 1. The research model**

### Empirical research

**Instrument development**

Each item corresponding to the constructs was measured using five-point Likert scale, with answer choices ranging from “Strongly disagree (1)” to “Strongly agree (5)”. Most of these items were adapted from the prior literature with minor changes in wording to reflect the SNS context. The measures of relationship attachment were adapted from Fraley et al. (2011). The measures of hedonic value and utilitarian value were adapted from Davis et al. (1992) and Davis (1989) respectively. Finally, the measures of subjective vitality were adapted from Bostic et al. (2010). After the questionnaire was drafted, it was first sent to two senior scholars for a review. Based on their comments, some items were adjusted to make the wordings more precise. The final questionnaire items are shown in Table 1.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilitarian value</td>
<td>UV1: Using Facebook enables me to accomplish the tasks more quickly in my communication with friends.</td>
</tr>
<tr>
<td></td>
<td>UV2: Using Facebook improves my performance in my communication with friends.</td>
</tr>
<tr>
<td></td>
<td>UV3: Using Facebook improves my effectiveness in my communication with friends.</td>
</tr>
<tr>
<td></td>
<td>UV4: Using Facebook makes it easier for me to interact with friends.</td>
</tr>
<tr>
<td></td>
<td>UV5: I find Facebook useful for my interaction with friends.</td>
</tr>
<tr>
<td>Subjective vitality</td>
<td>SV1: When I use Facebook, I feel alive</td>
</tr>
<tr>
<td></td>
<td>SV2: When I use Facebook, sometimes I feel so alive I just want to burst</td>
</tr>
<tr>
<td></td>
<td>SV3: When I use Facebook, I have energy and spirit</td>
</tr>
<tr>
<td>Hedonic value</td>
<td>HED1: Using Facebook is enjoyable</td>
</tr>
<tr>
<td></td>
<td>HED2: Using Facebook is pleasurable</td>
</tr>
<tr>
<td></td>
<td>HED3: Using Facebook is fun</td>
</tr>
<tr>
<td></td>
<td>HED4: Using Facebook is exciting</td>
</tr>
<tr>
<td></td>
<td>HED5: Using Facebook is interesting</td>
</tr>
<tr>
<td>Attachment</td>
<td>ATT1: I feel I can trust my friends on Facebook</td>
</tr>
<tr>
<td></td>
<td>ATT2: I feel close to my friends on Facebook</td>
</tr>
<tr>
<td></td>
<td>ATT3: I usually discuss my problems and concerns with friends on Facebook.</td>
</tr>
<tr>
<td></td>
<td>ATT4: I talk things over with my friends on Facebook.</td>
</tr>
<tr>
<td></td>
<td>ATT5: I find it easy to depend on my friends on Facebook.</td>
</tr>
</tbody>
</table>

**Table 1. Measurement items**

### Data collection

The data was collected with an online survey from the members of a Facebook group. A link to the survey was posted in a Facebook group named HigherStudyAbroad™ Bangladesh Chapter that had 57,130 members. The group is dedicated to help Bangladeshi students find higher study opportunities abroad. A
A snapshot of the Facebook group is shown in Fig. 2. The survey was opened 329 times. Altogether, 150 usable responses were received.

We employed the partial least squares (PLS) approach with SmartPLS software (Ringle et al., 2005) to analyse the data. We evaluated the convergent validity by examining item loadings, composite reliabilities and average variance extracted (AVE) values. With respect to item loadings, Fornell & Larcker (1981) have recommended values at least 0.7 to be acceptable. As can be seen from Table 2, this criterion for convergent validity was met for all items except ATT1. As the loading of ATT1 was close to 0.7, we decided to keep this item. Furthermore, the composite reliabilities above 0.8 and AVE values exceeding 0.5 (see Table 3) further support that the convergent validity was satisfactory (Fornell & Larcker, 1981).

We evaluated the discriminant validity by comparing the square roots of AVE values to the inter-construct correlations (Fornell & Larcker, 1981). Table 3 shows the correlation matrix with the square root of AVE values presented diagonally. As can be seen from the table, the square root of the AVE values for the variables are consistently greater than the off-diagonal correlation values, suggesting discriminant validity between the variables. The “item to latent variable correlation” values obtained from the confirmatory factor analysis are shown in Table 2. It shows that all items have cross-loadings coefficients lower than the...
factor loading on their respective assigned latent variable, suggesting that discriminant validity on the item level is met for all the constructs (Gefen & Straub, 2005).

<table>
<thead>
<tr>
<th>Item</th>
<th>Hedonic value</th>
<th>Utilitarian value</th>
<th>Relationship attachment</th>
<th>Subjective vitality</th>
</tr>
</thead>
<tbody>
<tr>
<td>HED1</td>
<td>0.91</td>
<td>0.60</td>
<td>0.42</td>
<td>0.32</td>
</tr>
<tr>
<td>HED2</td>
<td>0.94</td>
<td>0.61</td>
<td>0.48</td>
<td>0.38</td>
</tr>
<tr>
<td>HED3</td>
<td>0.89</td>
<td>0.58</td>
<td>0.37</td>
<td>0.32</td>
</tr>
<tr>
<td>HED4</td>
<td>0.88</td>
<td>0.63</td>
<td>0.48</td>
<td>0.51</td>
</tr>
<tr>
<td>HED5</td>
<td>0.91</td>
<td>0.63</td>
<td>0.42</td>
<td>0.40</td>
</tr>
<tr>
<td>UV1</td>
<td>0.59</td>
<td>0.82</td>
<td>0.28</td>
<td>0.30</td>
</tr>
<tr>
<td>UV2</td>
<td>0.58</td>
<td>0.90</td>
<td>0.41</td>
<td>0.37</td>
</tr>
<tr>
<td>UV3</td>
<td>0.56</td>
<td>0.89</td>
<td>0.46</td>
<td>0.46</td>
</tr>
<tr>
<td>UV4</td>
<td>0.59</td>
<td>0.84</td>
<td>0.29</td>
<td>0.32</td>
</tr>
<tr>
<td>UV5</td>
<td>0.57</td>
<td>0.81</td>
<td>0.24</td>
<td>0.33</td>
</tr>
<tr>
<td>ATT1</td>
<td>0.31</td>
<td>0.20</td>
<td>0.67</td>
<td>0.19</td>
</tr>
<tr>
<td>ATT2</td>
<td>0.50</td>
<td>0.37</td>
<td>0.74</td>
<td>0.37</td>
</tr>
<tr>
<td>ATT3</td>
<td>0.39</td>
<td>0.32</td>
<td>0.81</td>
<td>0.32</td>
</tr>
<tr>
<td>ATT4</td>
<td>0.34</td>
<td>0.31</td>
<td>0.76</td>
<td>0.25</td>
</tr>
<tr>
<td>ATT5</td>
<td>0.23</td>
<td>0.30</td>
<td>0.80</td>
<td>0.33</td>
</tr>
<tr>
<td>SV1</td>
<td>0.33</td>
<td>0.34</td>
<td>0.27</td>
<td>0.83</td>
</tr>
<tr>
<td>SV2</td>
<td>0.25</td>
<td>0.26</td>
<td>0.34</td>
<td>0.80</td>
</tr>
<tr>
<td>SV3</td>
<td>0.49</td>
<td>0.45</td>
<td>0.40</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Table 2. Item loadings and cross-loadings

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>AVE</th>
<th>Relationship attachment</th>
<th>Subjective vitality</th>
<th>Utilitarian value</th>
<th>Hedonic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship attachment</td>
<td>0.87</td>
<td>0.57</td>
<td>0.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective vitality</td>
<td>0.85</td>
<td>0.60</td>
<td>0.39</td>
<td>0.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilitarian value</td>
<td>0.93</td>
<td>0.73</td>
<td>0.40</td>
<td>0.42</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Hedonic value</td>
<td>0.96</td>
<td>0.83</td>
<td>0.48</td>
<td>0.43</td>
<td>0.67</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Table 3. Composite reliabilities, AVEs and inter-construct correlations

Results and Discussion

**Key Results**

The test of the structural model includes estimates of the path coefficients, which indicate the strengths of the relationships between the dependent and independent variables, and the R-square values, which represent the amount of variance explained by the independent variables. Fig. 3 shows the results of the hypothesized structural model.

As hypothesized, hedonic value (β=0.19, p<0.05), utilitarian value (β=0.21, p<0.05) and relationship attachment (β=0.23, p<0.01) had significant effect on subjective vitality. The explained amount variance of subjective vitality by its predictors was 29 per cent.

Hedonic value (β=0.37, p<0.001) had significant influence relationship attachment. Interestingly, utilitarian value (β=0.14, ns) had no-significant influence on relationship attachment. Taken together, the determinants explained 25 per cent of the variance in relationship attachment.
Implications

The study has two theoretical and one practical implication. First, we found that relationship attachment significantly influences subjective vitality also in the SNS context. In addition, we found that the influence of relationship attachment on subjective vitality is stronger than that of the hedonic and utilitarian value. This contrasts with Nix et al. (1999) who have suggested that autonomous motivations (hedonic and utilitarian value) are the main predictors of subjective vitality. As a result, incorporating the concept of relationship attachment with the self-determination theory is a meaningful way to better understand the predictors of subjective vitality.

Second, contrary to our hypothesis, we found that utilitarian value does not predict relationship attachment. This suggests that communication with friends in SNS does not help building attached relationships. This finding is insightful from both research and practical perspectives. First, with respect to theory, it contrasts with prior literature stating that individuals’ communication in online communities is deterministic to the extent to which they build relationships with one another (McKenna et al., 2002; Kim, 2013). However, as can be seen from Table 3, the correlation between utilitarian value and hedonic value was 0.67. This suggests that hedonic value would be a mediator between utilitarian value and relationship attachment. As a result, our study contributes to the understanding of how interpersonal relationships are formed in an SNS context.

With respect to the implication for practice, the observation that relationship attachment stems primarily from enjoyable experiences in the SNS offers insights for user experience designers. Based on this study, it appears that to foster attached relationships between SNS users facilitating enjoyable experiences with other users is more important than the communication abilities of the service. In addition, if a user enjoys his/her engagement in a SNS, his/her positive feelings are likely to be reflected in the interactions with other users. Thus, SNS operators should pay increasing attention to promoting a social atmosphere that evokes enjoyable interactions.

Limitations and future research

Like any other, this study is not without limitations. We present three main limitations together with suggestion for future research. First, the research was cross-sectional. The beliefs of the users regarding a system will change as the users gain experience of a target system but such changes cannot be captured with the type of cross-sectional study undertaken. Thus, longitudinal research is necessary to overcome the issue.

Second, we only examined the utilitarian and hedonic value. To better understand value creation in SNSs, we propose further research examining additional dimensions of value, for example social enhancement value, purposive value, and self-discovery value (Dholakia et al., 2004).

Finally, we conceptualized relationship attachment with its avoidance dimension. Other conceptualizations of relationship attachment as presented by Kim (2013) might shed further light on the
phenomenon of SNS attachment. In practice, Kim (2013) distinguished between three types of attachments: identity-based, bond-based, and comparison-based attachments. Future studies can be conducted on how these types of attachments influence subjective vitality.

REFERENCES


