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THE NEGATIVE SIDE OF ICT-ENABLED COMMUNICATION: THE CASE OF SOCIAL INTERACTION OVERLOAD IN ONLINE SOCIAL NETWORKS

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Abstract

This research aims to explain the negative side of ICT-enabled communications. Therefore, the perception of users that social interactions on online social networks (OSN) are threatening is suggested as a new variable called social interaction overload. The paper theorizes that individual, OSN-specific, and OSN-specific communication characteristics manifest the extent to which social interaction overload is perceived and how users response to it in a psychological and behavioral manner. Results of an empirical survey with 246 OSN users validate the assumed effects, so that we identify age, number of friends, and communication content as contribution factors of social interaction overload, which in turn has a direct effect on the two outcome variables satisfaction and continuous usage intention. Moreover, results reveal that social interaction overload has higher effects on OSN users' satisfaction than perceived usefulness or perceived enjoyment.

Keywords: Facebook, Satisfaction, Continuous Usage Intention, Social Interactions, Perceived Enjoyment, Perceived Usefulness, Stress, Stressor, Age, Gender, Number of Friends, Extent of Usage.

1 Introduction

Research investigating the negative side of information and communication technology (ICT) enabled communication has a long tradition in IS research (e.g., Hair et al. 2007; Weiss 1983). For example, the increasing amount of e-mails written and sent every day (about 220 million per day) are widely regarded as a growing source for negative perceptions such as stress in individuals business and private lives (Barley et al. 2011). New ICT communication media provide individuals additional flexibility as they enable them to communicate from anywhere at any time, but also to be reachable anywhere at any time. Despite the comparable long history of email as a communication media new platforms for individual communication emerge during the last years. With Facebook or other online social networks (OSN) individuals are able to communicate and to network in new and different ways. OSN users can send private messages, post messages on private boards such as Facebook's timeline, or use the instant chat function of these platforms. For example, 1 billion messages were already sent per day via the chat function of Facebook in 2009 (Prio 2009). Hence, the communication frequency using OSN is even greater than the number of emails sent per day. Consequently, it is not surprising that users develop negative perceptions when frequently using the OSN Facebook (Maier et al. 2012a; 2012c).

With respect to communication in general social interaction overload has been identified as a negative perception in psychology research (Ljungberg and Sørensen 1998; 2000). It is argued that individuals, who interact with friends, acquaintances, and neighbors frequently, report negative feelings more often (e.g., McCarthy and Saegert 1978). Based on these negative perceptions it has been discussed that individuals are highly dissatisfied with this situation and change their behavior by leaving their home more seldom and hence withdraw from social life (e.g., Regoeczi 2003). Applying this to the context of OSN, we investigate OSN-mediated communication in terms of social interaction overload as a negative perception of ICT-mediated communication. Therefore, we firstly assume that this negative perception while using OSN is caused by several factors based on either the individual (demographic factors), OSN-specific (extent of usage, number of friends), or OSN-specific communication characteristics (e.g. content, media richness). We secondly theorize that too high numbers of social interactions, which nowadays take not solely place in the real world but also in OSN, cause negative psychological and behavioral consequences, so that users develop low levels of satisfied and rethink their usage behavior by reducing their OSN usage intensity or even deregister from OSN. Hence, our research questions are:

How do individual, OSN-specific, and OSN-specific communication characteristics manifest the perception of social interaction overload while using OSN?

How does social interaction overload influence OSN users' satisfaction and continuous usage intention?

In order to answer these research questions, the paper is structured as follows. We next provide an overview on relevant literature and introduce the concept of social interaction overload. Based on this, hypotheses are developed by either focusing on antecedents or on consequences of social interaction overload. Then we validate the proposed research model with an empirical study and eventually, our results are critically discussed.

2 Theoretical Background and Hypotheses Development

This section focuses on social interaction overload and theorizes antecedents and consequences of this negative perception while using OSN. Therefore, we first introduce the concept itself. Then, antecedents in terms of individual differences, OSN-specific, and OSN-specific communication characteristics are discussed as factors causing social interaction overload. Afterwards we discuss the effects of social interaction overload on satisfaction and continuous usage intention.

2.1 Social Interaction Overload

“[Social] interaction overload characterizes problems related to interaction among people” (Ljungberg and Sørensen 1998). The basic interaction challenge is that *“people want to be accessible constantly, but never for all kinds of communication”* (Ljungberg and Sørensen 2000), such that a misfit between the communicator, content and context based on an inappropriate choice of the communication mode occurs. Based on that problem social interaction overload is defined as *“the level of interaction which an individual needs to engage in exceeds her communicative and cooperative capacity”* (Ljungberg and Sørensen 1998). This interaction-based overload can be divided into two distinct challenges.

The first one is related to undesired interactions and describes situations in which the person is not interested in the conversation. People are not interested in all kinds of interactions. Users might have more than 400 friends in OSN (Manago et al. 2012), but they do not want to communicate with them. Whether a user desires an interaction or is interested in the topic depends on the following three characteristics: the communication partner, the content, and the context (Ljungberg and Sørensen 1998; 2000). For example, a user is not interested to communicate with all her/his friends because some are old or distant friends. Moreover, friendships on OSN are different from the relationship we know from real life. Everybody who has an OSN account knows that virtual friends can be people the user has been seen just once as well as people who are very close to the user (Brandtzæg et al. 2010). Even if the communication partner would be a close friend, it does not mean that the user wants to communicate at any time with him. Sometimes we are in a hurry and we are just checking the address of an event on OSN. In that situation, we do not even want to talk too good and well-known friends because of the lack of time. Furthermore, the content or the topic of the conversation is important whether the user is interested to chat or the user sees this particular conversation as an undesired interaction. In addition, OSN are used everywhere. People are using OSN via smart phones on the bus, between two appointments, or in the waiting room at a doctor’s office (Pempek et al. 2009). As a result, the place where the user is located determines whether the user desires to communicate or not. These examples show that there are plenty of situations where users interpret interaction as undesired or uninteresting, which leads to an overload of interactions based on a misfit of the communication partner, the content of the communication, and the context.

The second situation is related to desired communication via an undesired mode of communication (Ljungberg and Sørensen 1998; 2000). Interactions have specific characteristics; some are more intrusive or obtrusive and more ephemeral or persistent (Ljungberg and Sørensen 2000). How obstructive or instructive interactions are depends on how strictly it imposes obligations to notice and reaction. Persistent interactions leave behind an external trace, whereas ephemeral interactions leave no external traces. For example, the popup messages from the IM function are obtrusive and persistent. However, private messages or posts on the Newsfeed are examples of relatively unobtrusive and persistent modes of interaction (e.g., Ljungberg and Sørensen 1998; 2000). In other words, it is important to find the most suitable communication mode for each interaction. The perceptions of interaction can be differing between individuals and that is why people sometimes perceive the communication channel as inappropriate. For example, using an OSN to send out funeral invitations might be perceived as an inadequate communication channel. In addition, it could be viewed as undesired, when people share private information with a user and post theses on the newsfeed instead of using private messages. Consequently, an inappropriate choice of the communication mode leads to a social interaction overload by the user.

These different causes of social interaction overload while using OSN lead to two different situations user might react to avoid social interaction overload, but also strengthen the effect. One possible opportunity is that users switch off the used technology or communication channel such as the instant messenger (IM) in OSN. Consequently, appropriate and desired communication will not be received (Ljungberg and Sørensen 2000). Furthermore, if people want to contact somebody and the communication channel is busy or dead, they will find another way to reach the person. For instance,

if the IM is off, people are trying to reach her/his friend through other channels such as private messaging or postings on the Newsfeed because she/he is not able to contact the user via IM (e.g., Ljungberg and Sørensen 2000). An alternative effect of the communication issue is that users leave on the used technology and stay always connected. This situation causes the problem that people may receive inappropriate and undesired communication (Ljungberg and Sørensen 2000).

Summing up, social interaction overload is understood as the amount of interactions an individual has to engage with that exceeds her/his communicative and cooperative capacity. In the following sections antecedents and consequences of this phenomenon will be discussed.

2.2 Antecedents of Social Interaction Overload

The perception of social interaction overload as described in the previous section might be manifested by several different characteristics. Therefore, we theorize in this section the influence of individual, OSN-specific, and OSN-specific communication characteristics on the likelihood to perceive social interactions in OSN as threatening.

Techno-stress related research has investigated the influence of *individual characteristics* in terms of age and gender on negative perceptions like social interaction overload (e.g., Ragu-Nathan et al. 2008). Thereby, findings reveal that men and elderly people perceive negative perceptions such as stress to higher extents. We adopt this argumentation and assume that men experience social interaction overload to higher extents than women and older OSN users feel more frequently overloaded by social interaction than younger ones. Consequently, we hypothesizes that:

H1a: Men experience social interaction overload to a higher extent than women.

H1b: The older an individual, the lower social interaction overload.

While focusing on *OSN-specific characteristics*, recent research identifies that the extent of OSN usage influences perceptual beliefs of OSN users (Maier et al. 2012b). This indicates that the perception of whether or not an individual experiences the stressor social interaction overload also depends on the extent to which OSN are used. In more detail, individuals being invaded by OSN (Maier et al. 2012a; Turel and Serenko 2012) are confronted with interactions while using OSN more frequently. Hence, high usage extensity represents one particular cause for experiencing social interaction overload. Consequently, we assume

H2a: The higher the extent of an individual's usage of OSN, the higher the social interaction overload.

In addition to that, OSN users differ concerning the number of friends embedded in ones online social network (Manago et al. 2012). However, an increasing number of friends also increase the probability of interactions, so that OSN users experience social interaction overload more frequently. As a consequence of this, we assume that:

H2b: The higher an individual's number of friends, the higher the social interaction overload.

Moreover, while focusing on *OSN-specific communication characteristics* it becomes obvious that individuals use OSN in order to interact with virtual friends about a wide range of contents. Among others, OSN are used as interaction medium for coordinating private events (Khan and Jarvenpaa 2010), for interacting about private topics, such as diseases and family matters (Greene et al. 2011), or for interacting about irrelevancies. However, the content or topic of interactions might be a specific cause of whether or not individuals experience social interaction overload when using OSN, whereby particularly contents described as irrelevancies induces such perceptions when OSN conversations focus mainly on irrelevant or less interesting contents. Hence, we assume

H3a: The more interesting the content of interactions, the lower the social interaction overload.

Moreover, OSN have a wide range of interaction channels, such as chat or private communication (Koroleva et al. 2011), whereby each has its own media richness (e.g., Trevino et al. 1987). However, individuals characterizing interaction channels of OSN as a rich communication medium will perceive negative perceptions less frequently while interacting through OSN as others. Based on that, we assume that:

H3b: The higher the perceived media richness of OSN-specific communication channels, the lower the social interaction overload.

Beside these factors which might manifest this negative perception the following section theorizes potential consequences social interaction overload might lead to.

2.3 Consequences of Social Interaction Overload

When discussing consequences of social interaction overload, we aim to investigate whether or not this negative perception causes psychological or behavioral reactions. Concerning behavioral reactions, we examine the influence of social interaction overload on continuous usage intention. This enables to identify whether an individual intends to reduce usage behaviors or takes deregistration into account. Next to behavioral outcomes, we also focus on psychological consequences. Therefore we discuss the effect on satisfaction so that we can state whether or not social interaction overload influences users' levels of satisfactions.

For hypothesizing the influence of social interaction overload on *satisfaction*, we base our approach on work-related research, identifying that individuals decrease levels of job satisfaction when perceiving information technology negatively (Ragu-Nathan et al. 2008; Tarafdar et al. 2010, Maier et al. in press). When applying this to the context individuals using OSN, we argue that decreasing levels of satisfactions are psychological responses to negative perceptions of the technology. We theorize that social interaction overload induces low levels of satisfactions even when OSN might be perceived as useful or fulfill the purpose of pleasure, because negative feelings are more heavily weighted in the brain compared to positive outcomes (Ito et al. 1998; Maier et al. in press). Hence, we assume in the context of OSN that low levels of satisfaction with OSN are a psychological response of social interaction overload:

H4: The higher users' social interaction overload, the lower their satisfaction.

Moreover, work-related research has also identified that individuals' response to negative perceptions in a behavioral manner. Here, it is suggested that individuals develop high turnover intentions and hence rethink their current behavior (Podsakoff et al. 2007, Maier et al. in press). By applying this to the context of OSN, changing behaviors – as a consequence of feeling OSN as threatening – might range from decreasing usage behavior to deregistration (Maier et al. 2012c). Hence the behavioral response is a kind of social withdrawal from virtual life, induced by negative feelings like social interaction overload. Since this behavioral response is in a first instance noticed in users intentions (Ajzen 1985), we theorize that OSN users have low intentions to continue using OSN when experiencing social interaction overload.

H5: The higher users' social interaction overload, the lower their continuous usage intention.

Next to these newly developed hypotheses, we align with the research of Bhattacharjee (2001) who suggests the level of satisfaction as the major influencing factor for using a technology continuously or not. Applying this to OSN, users with high levels of satisfaction develop high intentions of continue using OSN.

H6: The higher users' satisfaction, the higher their continuous usage intentions.

2.4 Control Variables: The influence of Perceived Usefulness and Enjoyment

Beside these newly proposed effects of social interaction overload on satisfaction and continuous intention also several well-established perceptions might influence these variables as well. In order to control for these effects this section introduces several control variables.

Recent research emphasizes that OSN are used particularly, because they provide pleasure to its users and because they are useful to them (Maier et al. 2012a; Turel and Serenko 2012; Xu et al. 2012). As a consequence for that, we consider the influence of two control variables in our research model. In more detail, we align with prior research hypothesizing that users perceiving the usage of OSN as useful or enjoyable will also report both higher degrees of satisfaction and higher extents of using OSN continuously (e.g., Maier et al. 2012a), so that we hypothesize that:

H7: The higher the perceived usefulness, the higher a) the satisfaction and b) the continuous usage intention.

H8: The higher the perceived enjoyment, the higher a) the satisfaction and b) the continuous usage intention.

Using these hypotheses we will provide an answer to the research questions raised in the opening remarks. To test the hypotheses we conducted a survey which will be described in the following. The research model and the results of the empirical validation are illustrated by Figure 1.

3 Empirical Evidence

3.1 Research Methodology

For validating the hypotheses a survey was performed. Therefore, we designed an online survey to reach a high number of individuals using Facebook as an example of OSN. We sent out 800 e-mail invitations. The e-mail addresses were collected over the last years on two different ways. First, some individuals allowed us during prior studies to contact them for subsequent studies and therefore specified their e-mail addresses after they took part in recent surveys. Second, individuals had the possibility to enter their e-mail address into an online list that can be used for upcoming surveys.

Although, we received 451 responses as a consequence of the 800 invitations, we base our research on the answers of 246 individuals because they answered the survey completely without missing values and due to the fact that all of them are users of the OSN Facebook. We solely focus on OSN users because we are not interested in the effect of negative perceptions on initial usage such that we use the data of those individuals who already used OSN for a while. According to our research questions the usage of the OSN Facebook is a precondition to investigate whether social interaction overloads influences OSN users' levels of satisfaction and continuous usage intention. The demographic characteristics and the extent of their OSN usage are included in Table 1. The used measurement model is introduced in the following section.

Demographics			Characteristics of OSNs Usage				
Gender	Men	44.3%	Frequency of Usage		Number of Friends	>351	14.6%
	Women	55.7%	hourly	7.8%		301-350	13.7%
Age	<19	10.3%	several times a day	58.0%		251-300	8.5%
	19-24	43.6%	once a day	11.8%		201-250	18.1%
	25-34	36.6%	several times a week	11.4%		151-200	14.2%
	35-44	5.0%	once a week	4.1%		101-150	10.2%
	45-54	2.9%	several times a month	3.3%		51-100	11.8%
	>54	1.6%	once a month	3.7%		0-50	8.8%

Table 1: Demographics and Characteristics of 246 OSN Users

3.2 Measures

The following items have been used in the survey to capture individuals' perceptions about the different variables of our research model.

Social Interaction Overload was measured with a newly developed scale. We first review articles focusing on social interaction or interaction overload published in IS or related disciplines, (e.g., social-psychological) journals. Based on the identified conceptual research (e.g., Jones et al. 2004), we developed the new scale in several steps. First, we created a set of initial items based on the described understanding of social interaction overload (see section 2.2). In a second step they were revised after interviewing and discussing them with twelve individuals. In a third step, we assessed the reliability and construct validity of the remaining items. Therefore, we asked 58 individuals to assign each newly developed item to one specific stressor (e.g., techno-stress (e.g., Ragu-Nathan et al. 2008)). This procedure has been used in prior research (Landis and Koch 1977; Nahm et al. 2002), whereby it is suggested that solely items who are assigned correctly by at least 61 percent should be included in the final scale. Hence, we rejected all items which were assigned correctly by less than 61 percent. Results are included Table 3 and indicate that our new scale consists of five items.

Gender and **Age** are specified by the participants while capturing their demographic data. **Number of Friends** and **Extent of Usage** are captured while asking participants "Approximately how many friends are on your Facebook Friends List?" and "On average, approximately how many minutes per day do you spend on Facebook?". These questions base on Ross et al. (2009). **Content** and **Media Richness** are both measured with the help of two items based on Trevino et al. (1987). **Satisfaction** and **Continuous Usage Intention** were measured using a scale based on Bhattacharjee (2001). With the help of four items for satisfaction and three items for continuous usage intention, we measure the extent to which a user is satisfied on the one hand, and intends to use OSN continuously on the other hand. **Perceived Usefulness** and **Perceived Enjoyment** were measured with the scales proposed by Brown and Venkatesh (2005).

Construct	Items
Content	I am interested in most of the communications topics when interacting with others on Facebook.
	The content of communications in Facebook are not of interest for me. (reverse)
Media Richness	The communication conditions in Facebook help us to communicate quickly.
	The communication conditions in Facebook help us to better understand each other.
Social Interaction Overload	I receive more messages (chat, private messages), notifications and announcements (pinboard, news-feed) on Facebook than I can respond to.
	I am overextended from the messages (chat, private messages), notifications and announcements (pinboard, news-feed) I receive on Facebook.
	The amount of trivial communication on Facebook is too high.
	I forget to respond to messages (chat, private messages), notifications and announcements (pinboard, news-feed) on Facebook.
	I receive too many messages (chat, private messages), notifications and announcements (pinboard, news-feed) on Facebook.
Satisfaction	Using Facebook is absolutely pleased.
	Using Facebook is very delighted
	Overall, I am satisfied with using Facebook.

Continuous Usage Intention	I intend to continue using Facebook rather than discontinue its use.
	My intentions are to continue using Facebook than use any alternative online social network.
	If I could, I would like to discontinue my use of OSN. (reverse)
Perceived Usefulness	Using Facebook is useful to stay in contact with friends.
	Using Facebook is useful to communicate with friends.
	Overall, using Facebook is useful.
Perceived Enjoyment	Facebook includes a wide range of applications, which fulfill the purpose of pleasure.
	Overall, I enjoy using Facebook.

Table 2: Measurement Items

4 Research Results

The following research results are based on the described empirical survey with 246 OSN users. The proposed model is validated by transferring hypotheses into a structural equation model and SmartPLS (Ringle et al. 2005) is used for data analysis.

4.1 Common Method Bias

Perceived and subjective measures are used to capture individuals' responses to a certain situation. A potential issue with subjective measures is common method bias (CMB) (Podsakoff et al. 2003). In order to evaluate the extent of CMB, Williams et al. (2003) provide an approach to determine the extent of CMB when using PLS. Therefore an additional CMB factor is entered into the model, which contains each indicator of the origin model. In addition, all remaining factors are transformed in single-item constructs. Finally the ratio of R^2 and path coefficients with CMB factor to AVE without CMB factor are compared. Here, the method factor explains a delta of R^2 of 0.006 so that a ratio of 1:105 is received. When comparing this ratio with the ratio of prior research using this procedure, we can state that no signs of CMB influence are observed.

4.2 Measurement Model

The constructs are measured by reflective indicators, so that the four aspects content validity, indicator reliability, construct reliability, and discriminant validity have to be validated (Bagozzi 1979).

Content Validity. Section 3.2 explains that we utilized measures that have been used in prior research. These validated and robust measures are applied to the context of OSN. The new measure for social interaction overload is developed as described above.

Indicator Reliability. Indicator reliability reflects the relation of the variance of one indicator that is based on the corresponding latent variables. Therefore, values should be more than 0.707 (Carmines and Zeller 2008) in order to explain more than 50 percent of the variance. Table 3 shows that this condition is fulfilled. Moreover, a bootstrap method with 5,000 samples is performed and show significant levels of all loadings of at least 0.001.

Construct Reliability. The construct reliability reflects criteria to determine the quality at the construct level. Therefore, composite reliability (CR) should be higher than 0.7 and average variance extracted (AVE) should be higher than 0.5 (Fornell and Larcker 1981). Table 3 indicates that both criteria are fulfilled.

Discriminant Validity. Discriminant validity describes the extent to which measurement items differ from each other (Campbell and Fiske 1959). Table 3 contains the square root of AVE on the diagonal of latent variable correlation. It has to be greater than the corresponding construct correlations (Fornell and Larcker 1981). As this is also fulfilled, the entire measurement model is valid.

Construct	Label	Social Interaction Overload	Other Stressor	Construct	Loadings	AVE	CR	1	2	3	4	5	6	7	8	9	10	11	
				1	Age	1.000	1.00	1.00	1.000										
	2	Gender	1.000	1.00	1.00	-0.02	1.000												
	3	Extent of Usage	1.000	1.00	1.00	0.31	0.07	1.000											
Social Interaction Overload	SIntO-1	82.5%	17.5%	4	Number of Friends	1.000	1.00	1.00	-0.45	-0.02	-0.45	1.000							
	SIntO-2	64.9%	35.1%	5	Content	0.824-0.875	0.72	0.40	-0.15	-0.15	-0.30	0.12	0.850						
	SIntO-3	61.4%	38.6%	6	Media Richness	0.772-0.821	0.64	0.78	-0.23	0.09	-0.32	-0.27	-0.28	0.800					
	SIntO-4	56.1%	43.9%	7	Social Interaction Overload	0.820-0.929	0.78	0.95	0.11	0.12	0.14	0.02	0.50	-0.18	0.884				
	SIntO-5	63.2%	36.8%	8	Satisfaction	0.739-0.843	0.65	0.85	-0.17	-0.10	-0.33	-0.27	-0.54	0.43	-0.46	0.806			
	SIntO-6	50.9%	49.1%	9	Continuous Usage Intention	0.811-0.892	0.74	0.89	-0.13	-0.12	-0.29	-0.19	-0.51	0.15	-0.45	0.56	0.860		
	SIntO-7	73.7%	26.3%	10	Perceived Usefulness	0.879-0.922	0.81	0.93	-0.19	-0.08	-0.42	-0.33	-0.38	0.58	-0.14	-0.52	-0.37	0.900	
				11	Perceived Enjoyment	0.781-0.958	0.76	0.87	0.01	-0.18	-0.43	-0.27	-0.35	0.46	-0.14	-0.54	-0.33	0.56	0.874

Note: All loadings are significant at p<0.001; Square root of AVE is listed on the diagonal by Latent Variables Correlation

Table 3: Validation of the Social Interaction Overload Scale (left) and PLS Model (right)

4.3 Structural Model

The structural model is evaluated by focusing on coefficient of determination (R^2) and significance levels of the path coefficients (Chin 1998). Within our research model, age, gender, extent of usage, number of friends, communication content, and media richness explain 26.3 percent of social interaction overload. In addition, social interaction overload, perceived usefulness, and perceived enjoyment explain 50.2 percent of satisfaction and 37.3 percent of continuous usage intention. Concerning the path coefficients, eight significant path coefficients are identified. In more detail, the influence of age, number of friends, and communication content on social interaction overload, the effect of social interaction overload on satisfaction and continuous usage intention, the influence of satisfaction on continuous usage intention, and the impact of perceived usefulness and enjoyment on satisfaction are significant. In summary, findings confirm hypotheses H1b, H2b, H3a, H4, H5, H6, H7a and H8a as illustrated by Figure 1.

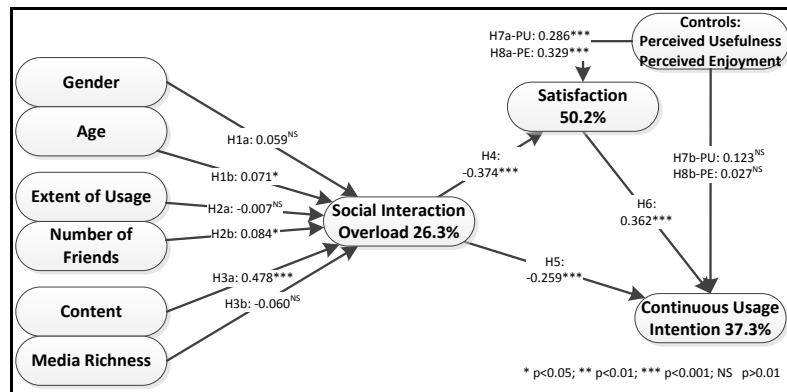


Figure 1: Results of the PLS model

4.4 Strength of Effect

For determining the strength of effect of social interaction overload on satisfaction and continuous usage intention, f^2 values are calculated (Cohen 1988). Findings indicate that the strengths of effect of perceived usefulness ($f^2 = 0.10$) and perceived enjoyment ($f^2 = 0.14$) on satisfaction are both weak. In contrast to that, the effect of social interaction overload on satisfaction is strong ($f^2 = 0.39$). For the dependent variable continuous usage intention, perceived usefulness and enjoyment have no effect ($f^2 < 0.02$), whereby social interaction overload ($f^2 = 0.03$) and satisfaction ($f^2 = 0.10$) have weak effects.

5 Discussion, Implications, and Future Research

This research aims to introduce the concept social interaction overload and provide an understanding of its antecedents and consequences. The results have several implications for IS related research in the fields of stress-, OSN-, and technology usage-research, which are discussed in the following.

First of all, recent research has called for an investigation of negative perceptions such as stressors in different contexts (Song et al. 2011). These perceptions are understood as routinized challenges of daily livings. The presented research concentrates on the perception of social interaction overload while using OSN which can be characterized by communication overflow and communication deficiency (Ljungberg and Sørensen 1998; 2000). Based on our results we can conclude that these two kinds of unintended interactions induce low levels of satisfaction and continuous usage intention and are examples of the claimed investigation of negative perceptions. In addition to that, findings of our analysis reveal that social interaction overload has higher effects on satisfaction than perceived usefulness or enjoyment, which have both been identified as main reasons for using OSN (e.g., Maier et al. 2012a; Turel and Serenko 2012; Xu et al. 2012). Hence, we contribute to research discussing behaviors in OSN by providing evidence that social interaction overload has an influence on users' feelings, so that future research in this field has to consider the effects of social interaction overload when discussing OSN satisfaction or continuous usage intentions.

In order to provide a better understanding of social interaction overload, we also focus on its antecedents. Here, findings show that age has a significant impact on whether or not an OSN user experiences social interaction overload, whereby this is particularly the case for elderly people. Besides, an increasing number of OSN friends also increase the probability of experiencing this negative perception. Eventually, OSN users consider the content of interactions as cause for experiencing social interaction overload, so that uninterested content is a contributing factor. Based on these findings, we extend current research focusing on negative perceptions such as stress in the field of IS (e.g., Ragu-Nathan et al. 2008; Tarafdar et al. 2010) by determining that individual characteristics in terms of age, ICT-specific characteristics in terms of number of friends and communication content are contributing factors for whether or not an individual experiences negative perceptions which manifest psychology stress variables such as satisfaction (Ayyagari et al. 2011). Moreover, our results also reveal perceived usefulness and perceived enjoyment as significant contributing factor for satisfaction, but not for continuous usage intention. Based on these insights, future research might investigate whether the effect on continuous usage intention is mediated through satisfaction and if this can be generalized. The assumption is that social interaction overload has a direct effect on psychological and behavioral consequences (e.g., satisfaction and continuous intention) and attitudinal beliefs in terms of perceived usefulness and enjoyment have solely a direct effect on psychology ones (e.g., satisfaction) and an indirect one on behavioral consequences as the impact of negative perceptions is stronger than those of positive ones. However, based on our results we can only verify this assumption to a certain extent such that more research is necessary to generalize this assumption.

The presented research results are limited by some issues. First of all, we just focus on one particular OSN. Therefore, Facebook as the largest OSN is selected. It is imaginable that the results differ when another OSN with different interaction channels is focused. Besides, all participants of the empirical survey have the same cultural background and hence we do not consider that individuals of other cultures might have another communication culture. In addition, we do not include additional factors such as disconfirmation, which might have an effect on continuous usage intention (Bhattacharjee 2001) or other negative perceptions (Maier et al. 2012a; 2012c).

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