

# IT'S ALL ABOUT NETWORKING! EMPIRICAL INVESTIGATION OF SOCIAL CAPITAL FORMATION ON SOCIAL NETWORK SITES

*Completed Research Paper*

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## **Abstract**

*As Social Network Sites (SNS) permeate our daily routines, the question whether participation results in value for SNS users becomes particularly acute. This study adopts a 'participation-source-outcome' perspective to explore how distinct uses of SNS generate various types of social capital benefits. Building on existing research, extensive qualitative findings and an empirical study with 253 Facebook users, we uncover the process of social capital formation on SNS. We find that even though active communication is an important prerequisite, it is the diversified network structure and the increased social connectedness that are responsible for the attainment of the four benefits of social capital on SNS: emotional support, networking value, horizon broadening and offline participation. Moreover, we propose and validate scales to measure social capital benefits in the novel context of SNS.*

**Keywords:** Social Capital Benefits, Sources, Measurement Scales, SNS

## Introduction

*Social Network Sites (SNS)* - platforms that enable users to create profiles and connect to others (Boyd and Ellison 2007) are changing the society we live in today: they influence the way we communicate with each other, develop relationships and spend our free time. Over 750 million users are currently active on Facebook (Facebook 2011) spending on average 30 minutes on the site daily (Alexa 2011). As SNSs are increasingly permeating our daily routines, policy-makers, parents, employers, scholars and even users are increasingly questioning: Does participation on SNS bring about any benefits or are users just wasting their time on these networks? If SNS have little to offer in terms of tangible benefits, then the privacy risks they incur (Hogben 2007) call for public measures aiming to reduce their use.

The impact of Internet use on *social capital* – a phenomenon referring to the value arising from individual's relationships with others – is a highly debated topic. In the early decade researchers evidenced declining amounts of social capital due to growing social disconnectedness, alienation and technocratization caused by Internet use (Putnam 1995). Recent studies also show that SNS use may cause depression or breed envy and jealousy (Muise et al. 2009; O'Keeffe 2011). However, other authors find evidence for the varying impact of the type of Internet use on social capital, where the negative effects are reversed if users are information- or communication oriented (Shah et al. 2001) – the goals people usually pursue on SNS (Joinson 2008). By allowing users to effectively maintain broad networks of geographically and socially dispersed acquaintances, SNS facilitate easy access to external resources of others (Ellison et al. 2007) and are even associated with reduced perceptions of loneliness (Burke et al. 2010). Until now, however, the role of SNS in the social capital formation process has not been fully uncovered.

Overall, even though existing studies provide a number of valuable insights, the questions of whether and how SNS facilitate formation of social capital remain unresolved. This is partly due to the absence of validated measurement instruments specifically developed to capture social capital outcomes in the novel context of SNS. Moreover, even if some authors provide evidence for social capital benefits resulting from general SNS use (e.g. Ellison et al. 2007), most neglect the process by which these benefits are gained. This is, however, very critical for the context of SNS, since not every type of use (e.g. Burke et al. 2010) and not any network (Granovetter 1973) possesses the same potential for value. Against this background, in our study we aim not only to develop the scales to measure social capital in the context of SNS, but also empirically validate the process by which social capital is formed. To accomplish our goals, this study is conducted in two steps. First, following the overview of existing literature, we present the result of our qualitative analysis – the conceptual model of social capital formation on SNS. In the second step, the constructs are operationalized and a survey with a representative sample of Facebook users is conducted. Subsequent empirical validation of the model results in an array of theoretical and practical findings.

## Theoretical Background

*Social capital* is a broader term used to refer to specific gains that can be obtained due to maintenance and development of relationships with others (Bourdieu 1985). Some authors (e.g. Portes 1998) stress the distinction between *outcomes* and *sources* of social capital. Typically explicit and often tangible *outcomes* of social capital refer to the productive utilization of the resources contained in the relationships with others, such as getting help or professional advice. In contrast, rather implicit and intangible *sources* reflect the ability to utilize the resources when needed, such as increased interconnectedness or a diversified network structure. In a circular model of socio-technical capital formation, Resnick (2001) makes this distinction clear: social capital outcomes, such as resource exchange or emotional support are viewed as side effects of previous activities, whereas communication paths, common knowledge, shared values, collective identity, obligations, norms and trust are the critical sources employed in this process.

Providing support for the source-outcome model of social capital formation, authors agree that *outcomes* of social capital largely depend on the underlying network structure (Williams 2006). More specifically, if the network is composed of a wide spectrum of weak ties or loose connections between individuals usually from different backgrounds, bridging social capital can be obtained – reflected in enhanced access to a broader set of material and informational resources, more opportunities and new perspectives (Granovetter 1973). If, however, the network consists mainly of strongly interconnected ties of the same type, individuals are likely to gain bonding social capital, or the benefits of social support (Williams 2006). Summarizing the necessary sources for social capital formation, Tsai and Ghostal (1998) point out the

following dimensions: (i) *structural*, relating to the structure of the network; (ii) *relational*, reflecting the assets contained in the relationships such as trust; and (iii) *cognitive*, referring to attributes of the relationships, such as shared knowledge. While structural dimension replicates the availability of resources, the cognitive and relational dimensions describe the ability of the individual to obtain them.

Concerning the impact of SNS use on social capital, Ellison et al. (2007) were the first to provide empirical evidence that the intensity of Facebook use is most positively associated with bridging, followed by maintained and then bonding social capital. Bridging role is rather attributed to SNS due to their enhanced capabilities and low costs of accumulating and maintaining weak ties (Donath and boyd 2004). Although Burke et al. 2010 find that the size of the individual network has a positive impact on bridging social capital, there is, in fact, a cap in the amount of friendships that can be effectively maintained on SNS (Tom Tong et al. 2008). In a later study, Ellison et al. (2011) prove the inverted u-shape relationship between the number of actual friends on SNS and social capital: the benefits diminish when networks go over 500 friends. Hence, a broad network structure alone is obviously not enough to generate the benefits of social capital on SNS.

Referring to bonding social capital, in the follow-up study Ellison et al. (2011) disprove that SNS use relates to the increases in this capital evidenced earlier. In fact, Vitak et al. (2011) show that although beneficial for bridging, network growth is detrimental for bonding social capital. The larger the network, the less are the users able to maintain the quality of relationships within it and thus are constrained in sharing their concerns – the main prerogative of bonding social capital. Bonding social capital gains are more context-specific: Tufekci (2008) evidences that female SNS users are prone to gain more in terms of that capital, whereas Ellisson et al. (2011) show that active communication and reciprocity are antecedent to obtaining emotional support on SNS. Taken together, more insights are needed to validate the process of social capital formation on SNS.

Determining the impact of distinct types of *activities* that can be carried out on SNS on social capital might prove useful. Ellisson et al. (2011) find that solely information-seeking behaviors are related to increases in bridging and bonding social capital, whereas strategies of initiating or maintaining relationships do not exert any significant impact on the benefits. Additionally, Burke et al. (2010) state that whereas active communication is associated with greater bonding social capital, increased passive consumption of content, in fact, reduces both types of social capital. Recognizing the importance in differentiating between forms of SNS use, we want to identify a full spectrum of activities that can be carried out on SNS and explore their distinct impact on the benefits of social capital.

Until now most authors operationalize social capital solely as bridging and bonding benefits (e.g. Ellison et al. 2007). This is mainly due to the fact that in order to measure social capital most authors use the scales developed by Williams (2006). We believe that that this distinction into bridging and bonding social capital may not be so critical in the context of SNS. As the networks of users usually include ties of different type, they can obtain emotional support also from less known people, or external resources (e.g. professional advice) – a traditional domain of weak ties – also from close friends. Against this background, in this study we distance ourselves from a traditional bridging/bonding classification and aim to identify the unique social capital *benefits* that can be gained on SNS as well as develop measurement scales for operationalization of this important construct.

Typically studies focus on estimating the influence of SNS use on social capital outcomes (e.g. Ellison et al. 2007) neglecting *sources* as an important intermediary stage of social capital formation. In line with Resnick (2001) in our study we differentiate between sources and benefits of social capital. We believe that the unique sources of social capital lie in the structure of the network and qualities of relationships between individuals in it. Focusing on the sources along with the benefits allows us to uncover the process by which social capital is gained on SNS. Building on the insights from previous studies, extensive findings from qualitative research and an empirical validation of the proposed conceptual model, in this paper we aim to answer the following three research questions:

- (i) *What types of social capital benefits can be gained on SNS?*
- (i) *What kind of participation patters lead to which benefits of social capital?*
- (iii) *Which sources mediate the relationship between participation and benefits?*

## Qualitative Study

### Methodology and Analysis

In order to gain an in-depth understanding of the process of social capital formation on SNS a qualitative study was conducted in three steps. To obtain initial insights, in Summer of 2009 two focus groups were carried out. As students were probed with such questions as: 'What value do you obtain from SNS?' they experienced difficulties in identifying the "real" benefits of their SNS use, but rather centered on the unique ability to maintain relationships through SNS. Even if the interviewees obtained any "real" benefits, it was hard for them to recall them. Thus, in Fall of 2009 we conducted 8 participant observations, whereby respondents were asked to log-in and use their Facebook accounts, while answering such questions as: 'What value does this information bring to you? Why would you add this person to your network?', etc. This increased the range of possible social-capital related benefits. Finally, in Winter of 2010 we conducted six follow-up interviews of 30 minutes each, with the aim to find out how the benefits are gained on SNS. All of the eight observations and the six interviews were recorded, transcribed, and subsequently used for analysis with the software tool atlas.ti. All interviewees were between 21-25 years of age, had network ranges of 50-500 friends and were quite active users of Facebook spending from 10 minutes to several hours on the site daily.

The absence of systematic research on the process of social capital formation on SNS, urged us to use *Grounded Theory* to analyze the collected data. This research methodology enables structured analysis of large amounts of qualitative data. Through identification of critical concepts and exploring the underlying relationships between them we formulate a conceptual model of social capital formation on SNS. In our analysis, we follow the "Straussian" line of Grounded Theory (Strauss and Corbin 1998), which allows for prior knowledge on the subject matter and emphasizes the usage of a paradigm for axial coding.

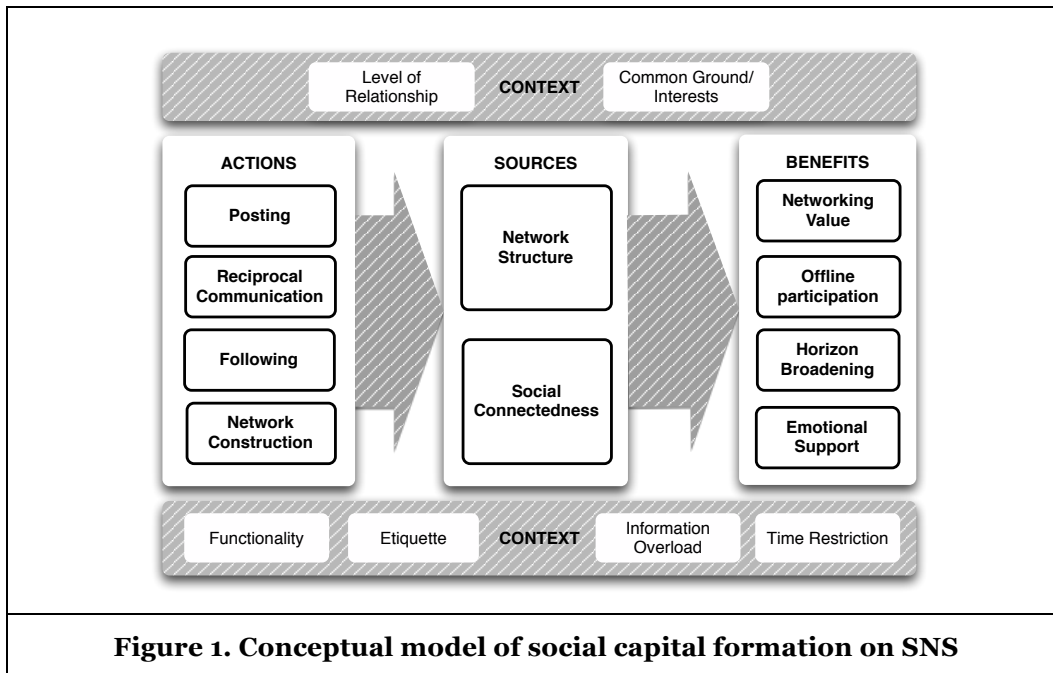
**Table 1. Results of Axial Coding**

	<b>Construct</b>	<b>Initial Codes</b>	<b>Freq.*</b>
<b>ACTIONS</b>	Following	<i>Checking Newsfeed; checking photos; checking profiles; selecting information to read; hiding posts from the Newsfeed</i>	50; 14
	Posting	<i>Sharing experiences; communicating personal news; sharing traditional information; sharing joys and sorrows; asking questions; managing information disclosure; blocking contacts</i>	61; 14
	Reciprocal Communication	<i>Direct: sending and receiving messages, using chat Indirect: commenting, liking, Wall, stream communication General: selective communication, reciprocity</i>	68; 14
	Network Construction	<i>Adding new contacts, reacting to friend requests, sending friend requests, adding people suggested by Facebook, deleting people</i>	37; 14
<b>SOURCES</b>	Network Structure	<i>Amount of friends, distance of friends, expanding network, diversifying network, satisfaction with the network</i>	61; 14
	Social Connectedness	<i>Connected: being connected, feeling close, being remembered, staying in touch, expectation of communication, increased communication Informational: current information, interest in information, keeping up to date with friends, learning more about friends</i>	198; 14
<b>BENEFITS</b>	Networking Value	<i>Tangible favors, intangible (informational) favors, getting advice, asking for help, putting in contact with someone</i>	41; 14
	Offline Participation	<i>Participating in more offline events, getting more invitations, diversified events, arranging offline meetings with friends, developing relationships, expectation of relationship</i>	50; 14
	Horizon Broadening	<i>Feeling informed, broadening horizons, learning new things, belonging to a broader group</i>	30; 14
	Emotional Support	<i>Feeling supported by friends, seeking emotional support, getting relief</i>	12; 14
<b>CON-TEXT</b>	Functionality	<i>Technical features, group communication, effortless communication</i>	29; 14
	Etiquette	<i>Ease of communication, ease of finding people, informal communication</i>	21; 14
	Level of relationship	<i>Quality of friendship, affection level, communication intensity, common friends, common ground, common interests</i>	63; 14
* <b>Freq. = Frequency</b> 1 <sup>st</sup> - the number of times this category was mentioned in all interviews/observations; 2 <sup>nd</sup> - the number of participants mentioning this category (out of 14)			

The total of 14 interviews and participant observations were analyzed in three steps: open, axial and selective coding. During open coding initial concepts and their corresponding properties and dimensions were identified in a search process for patterns in the data. During axial coding the initial concepts were consolidated to form the overarching categories, and these in, turn, into coding families (actions – sources – benefits – context). This can be traced in table 1: for each category the initial concepts that comprised it are listed. Application of the coding paradigm of Strauss and Corbin (1998) helped to uncover the relationships between the categories and thus formulate the conceptual model of social capital formation, depicted in Figure 1. The relative importance of each category in the overall conceptual model can be assessed by the number of times respondents mentioned the corresponding concepts presented in the frequency column of the table 1. In the process of selective coding most relevant categories were identified.

### Conceptual Model

Result of qualitative analysis - the conceptual model presented in figure 1 - describes the process of social capital formation on SNS. The phenomenon – social capital – is gained through performing certain actions on the network and the accumulation of the critical sources – network structure as the quantitative and social connectedness as the qualitative dimension. We confirm the structure of sources of social capital as proposed by Tsai and Ghosal (1998): network structure represents the structural, whereas social connectedness – the relational and possibly cognitive dimension of social capital. The causal relationships indicate the general flow of the model: actions on SNS allow to accumulate the sources, which, in turn, help to attain the benefits of social capital. This corroborates the model of Resnick (2001) and implies that the benefits of social capital are possible, but not the necessary outcomes of SNS participation. Sources are the necessary antecedents of social capital, but they also comprise the social capital itself by enabling the user to obtain certain benefits in the future. If we look at the frequency presented in Table 1, we notice that the model elements pertaining to the benefits were mentioned less frequently than the ones reflecting the sources of social capital, thus corroborating our proposition.



### Actions

There is a myriad of actions users can perform on SNS. Our qualitative analysis allowed us to differentiate four major groups of SNS activities: (i) *posting* some information; (ii) actively reacting to what others post in various *communication forms*; (iii) passively *following* what others post; and (iv) proactively constructing the *network* of friends. The concepts that were used to build these overarching categories can be easily traced in table 1.

## Sources

**Network Structure** is a quantitative source of social capital, the expansion of which occurs as a result of intensive SNS use: *“My network has increased immensely, and people who I know somehow happened to know that I'm on Facebook, so they want to keep in touch, they want to find out how I'm doing”* (Interview Quotation (Q)). Closely connected with the increases in size, the diversity of the network – possibility to connect with people from different backgrounds, various ages or social groups – is evident: *“The variety of people in my network has increased, for example there are so many family friends I know...and they might not always be my age...”* (Q). SNS functionality – the intervening condition in our model – allows users to effectively maintain these broad networks and thus gain benefits of social capital: *“I just have all these people in my network, and maybe one day I would need to contact them...”* (Q), corroborating the importance of network structure for social capital recognized in by Vitak et al. (2011). As both weak and strong ties can be maintained on SNS, gains in both bridging and bonding social capital can be achieved: *“Yeah, we're not that close, but I had her on my Facebook, and it was easy tell her: ‘Could you help me with that?’”(Q).*

**Social Connectedness** is the qualitative source of social capital, that necessary fabric to activate the connections between individuals, keep relationships alive and thus enhance social capital: *“You don't chat with them that much, you don't comment and vice-versa. But you know that when you want something from them, you can reach them through Facebook easily. So you don't delete them”* (Q). The phenomenon of social connectedness is closely related to the concepts of social presence and staying in touch (Ijsselsteijn et al. 2003): social presence refers to the awareness of another person in the mediated environment, whereas a sense of connectedness, or the feeling of being in touch is rather an emotional experience of being connected with a person. On SNS, social presence can be established by just having someone in the contact list, as in the previous example, whereas a feeling of social connectedness can be generated through communication: *“I see when they communicate, and I can also take part if I wanted to. It's a way to stay in contact more, and somehow feel closer...”* (Q). Shared information plays a critical role in the development of the sense of connectedness: *“I really like to learn what other people do: if they go on a trip, I like watching pictures... because I have a lot of friends in a really lot of places, and it's just that in this way I feel a bit closer to them”* (Q). Köbler et al. (2010) find that the amount of information shared results in increased social connectedness on SNS.

## Benefits

**Horizon broadening** – referring to increased range of things that someone knows about, has experienced or is able to do – emerged as an important outcome of SNS participation. Being connected to a broader range of people on SNS (network structure) may result in the benefits of horizon broadening: *“It expands my outlook, especially due to the people whom one meets during vacations, who have different interests or live elsewhere and every person from another region with a different background deepens your knowledge about the people in particular and the world in general”* (Q). Shared information is another important source that can give impulse to new ideas, trying out new things or learning from others related to all facets of life: *“For example, someone who's listening to music has a Facebook plug-in, and I can see he's hearing a new band, so let me take a try...”* (Q).

**Networking Value** is defined as the tangible value that the individuals can obtain from the access to the resources contained in the networks of others. These external resources usually refer to getting some specific information or asking for favors, such as accommodation during travel, putting in contact with someone or helping with finding a job. By allowing users to maintain relationships with a broad range of individuals (network structure) SNS provide users with easy access to the resources of others: *“I would say Facebook in a way helps you to build even your professional connections, like if I foresee somebody as a potential network in terms of business or professional, I would surely keep in touch with that person”* (Q). Networking benefits can generally be obtained from anyone in the contact list without any prerequisites of high familiarity or intensive communication: *“If I need something banal, like accommodation in a different city, I would write to all of my friends on Facebook”* (Q).

**Emotional Support** refers to the emotional comfort by people in one's network. Intense interpersonal interactions may lead to instrumental, emotional and possibly informational components of emotional support (Feldman and Cohen 2000): *“If I need to talk to someone, I would post it on Facebook, because*

*say its 10pm, so I wouldn't disturb my friends, and I'm too tired to go out..." (Q). In traditional contexts emotional support is usually provided by stronger ties (Williams 2006), requiring a certain relationship level. However, the feeling of connectedness between users on SNS may abolish this prerequisite: "I was unhappy because of my boyfriend and when many people wrote to me it made me feel much better, and I was surprised that support came also from people who were my distant acquaintances or the ones who I know just on Facebook..." (Q). The fact that on SNS any type of benefit can be obtained from anyone in the network makes a distinction into bridging and bonding social capital less critical for SNS context.*

**Offline Participation.** Another major finding of our qualitative study is that SNS use leads to increased participation and involvement in offline social activities. Contrary to the findings of Putnam (1995) that Internet leads to a decline in offline engagement, we find that participation on SNS can trigger offline activities. Due to the easiness to make an arrangement through SNS, users tend to take part in more offline events with friends: *"With those people you usually communicate everyday, and when there is a party going on, you simply send an invitation to all those people, or just to do something together, watch a movie" (Q). Moreover, being in touch with a broad network of friends can help diversify social life and engage in a broader range of activities: "He was from our school and when I saw him in the library, I added him on Facebook. And then, I got a thread, an invitation for going to an exhibition I did not know about along with a lot of people" (Q).*

The social capital benefits identified in our qualitative study to some extent resemble the dimensions of the bridging and bonding social capital benefits outlined by Williams (2006). For example, horizon broadening is one of the dimensions of the bridging social capital, whereas emotional support – of the bonding social capital initially recognized by Williams (2006). At the same time, other dimensions singled out by Williams (2006) emerged as less relevant for the SNS context: for example, ability to mobilize solidarity or out-group antagonism. This is due to the fact that Williams (2006) was developing scales to measure social capital resulting from Internet use that is multi-purposeful. The advantage of our framework is that the identified dimensions of social capital benefits are tailored to the specifics of SNS context and are the most salient ones elicited directly from SNS users. Moreover, Williams (2006) does not differentiate between sources and benefits of social capital: his bridging scale includes both contact to a broader range of people and the benefit of linkage to external assets. Our model shows that the network structure is, in fact, an antecedent of such social capital outcomes as horizon broadening, networking value, emotional support and offline participation.

## Context

As social capital is rooted in the relationships between users, the model recognizes that level of relationship and common ground/interests are the context in which the accumulation of individual social capital takes place. Moreover, the process can be accelerated or constrained by certain intervening conditions – describing the broader structural context in which social capital is formed. The intervening conditions of the model are either such general structural factors as time restriction and perception of information overload; or specifically relating to peculiarities of SNS as communication medium: functionality and etiquette. These, however, are not extensively elaborated upon due to space limitations. The contextual factors presented in figure 2 are solely the examples of possible conditions.

## Empirical Study

### *Towards the empirical model*

We empirically test the proposed conceptual model of social capital formation on SNS. In line with former studies (Ellison et al. 2007; Vitak et al. 2011), we aim to explore the direct impact of SNS participation on social capital benefits. We differentiate between various types of SNS participation, as social capital benefits are contingent on the activities users perform on SNS (Burke et al. 2010; Ellison et al. 2011). Thus, in the first step of the empirical study (depicted in figure 2a) we examine the links between various forms of SNS participation, and respective outcomes of social capital – offline participation, networking value, horizon broadening and emotional support – recognized in our qualitative study.

Second, we validate the mediating role of the sources of social capital - network structure and social connectedness – that has vividly emerged in our qualitative analysis and is captured in the 3-tier conceptual model in figure 1. Indeed, a broader and more diversified network structure has been found to be beneficial for both: emotional support as well as networking value (Ellison et al. 2011). Moreover, previous theoretical findings suggest that social connectedness is important for social relationships and thus aids in obtaining social capital on SNS (Köbler et al. 2010). Against this background, in the next step of our empirical study (as depicted in Figure 2b) we aim to explore the role of network structure and social connectedness as mediators of the relationship between the identified forms of participation and the respective outcomes of social capital.

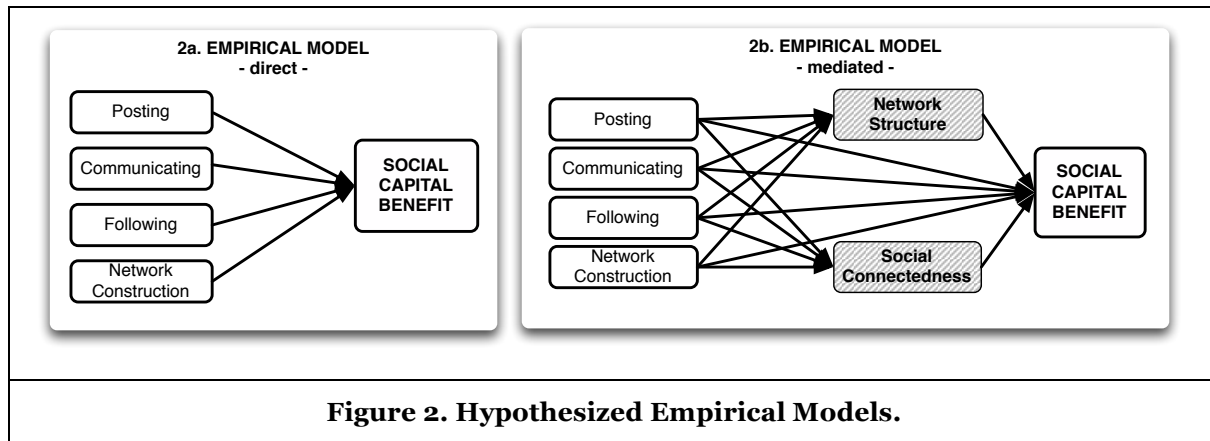


Figure 2. Hypothesized Empirical Models.

### Survey Design and Sampling

The survey was distributed through student and alumni mailing lists of several universities. In total, 350 people completed the survey. After removing incomplete and unusable answers, 253 observations were left for analysis. Our sample consists of 45% male and 55% female respondents. Most respondents - 70% of the sample - reported having a college degree, and only 25% are students. Both mean and median age of the respondents is 25, with the spread of 21 – 44 years. Considering that 70% of Facebook users are between 18 and 44 years of age (insidefacebook.com 2010a) and 55.60% of Facebook users are female (insidefacebook.com 2010b), our sample is representative for a significant part of Facebook population. The mean/median size of a friend list of our respondents constitutes 259/200 friends respectively, which is higher than an average of 130 reported by Facebook (2011). 65% of the respondents have been using Facebook for more than 2 years and 80% of the respondents spend more than 30 min on Facebook daily. All in all, the sample represents the largest group of Facebook users – mature active users.

### Development of Measurement Scales

All constructs in the study involved multiple items and were modeled reflectively. In developing the items we relied on pretested scales, where possible. Items relating to the benefits of social capital were adopted from Williams (2006), emotional support extended with items of Procidano and Heller (1983), social connectedness was operationalized in line with Ijsselstein et al. (2009). Items related to actions were for the most part self-developed. Results of the qualitative study including exact wording of the interviewees were often used as a basis for construct operationalization. The initial survey items were tested during two one-on-one sessions, where respondent was filling out the survey in the presence of the interviewer and was encouraged to evaluate the understandability of the survey items. After these sessions, survey items were slightly modified. The final survey items are presented in tables 1 and 3. All action-related constructs were anchored on a five-point Likert scale (1= almost never; 5= almost every day): 4 items in the posting dimension (P1-P4), 5 items in the communication (C1-C5), 4 items in following (F1-F4) and 5 items in the network construction dimension (N1-N5) (see Table 2). All other constructs were measured on a seven-point Likert scale.



## Exploratory Factor Analysis

### Actions

In the first step, an Exploratory Factor Analysis (EFA) was employed to examine whether the structure of the four participation types identified in the qualitative study would also hold in the factor groups identified by EFA. A principal components method with a varimax rotation was performed on the collected data using SPSS 18.0. Varimax rotation was chosen due to its ability to render interpretable results. Taking into account the possible correlations between the analysed factors, we have also crosschecked our results using a direct oblimin rotation, which yielded equivalent factor structure. As a solution, 5 factors with eigenvalues higher than 1 were extracted. The results are presented in table 2. All factor loadings exceeding the threshold of 0.4 were considered meaningful (Hair et al. 1998). Contrary to expectations, more factors than initially hypothesized were extracted and some of the items did not load on the anticipated factors. As a result, new dimensions have emerged and the typology of the recognized participation patterns had to be adjusted. All items in the newly identified factors fulfilled the narrow definition of “factor purity” suggested by Saucier (1994). Based on this criterion, C3 was removed, as it loaded highly on two factors and it was hard to meaningfully discern it from any of them.

Item	Active Participation	Passive Following	Social Browsing	Social Searching	Private Comm.
<b>P1:</b> Post something	<b>.863</b>	.183	.039	.062	.066
<b>P2:</b> Share thoughts and feelings	<b>.844</b>	.119	.080	.065	.065
<b>P3:</b> Share something you are interested in	<b>.860</b>	.084	.070	.103	-.028
<b>P4:</b> Share your impressions with your friends	<b>.842</b>	.133	.155	.031	.083
<b>C1:</b> React to what friends post	<b>.695</b>	.318	.104	.031	.278
<b>C2:</b> Comment on what friends post	<b>.730</b>	.353	.004	.091	.340
<b>C3:</b> Like what friends post *	<b>.597</b>	<b>.423</b>	.109	.037	.309
<b>C4:</b> Send private messages *	.090	.277	.148	-0.39	<b>.709</b>
<b>C5:</b> Chat *	.233	-0.025	.039	.089	<b>.805</b>
<b>F1:</b> Follow the news of your friends	.298	<b>.719</b>	.124	.090	.145
<b>F2:</b> Look through the Newsfeed	.219	<b>.821</b>	-.070	-.012	-.007
<b>F4:</b> Click on the content shared by friends	.186	<b>.730</b>	.165	.092	.124
<b>F3:</b> Browse the profiles of your friends	.159	.360	<b>.635</b>	-.012	.193
<b>N3:</b> Browse through friends of your friends	.106	-.036	<b>.855</b>	.217	.037
<b>N4:</b> Look at profiles of people not in the list	.084	.045	<b>.843</b>	.180	.042
<b>N1:</b> Search for people to add	-.054	-.007	.341	<b>.775</b>	.025
<b>N2:</b> Send friendship requests	.131	.122	.104	<b>.738</b>	.152
<b>N5:</b> Add people suggested by Facebook	.123	.024	.014	<b>.792</b>	-.094
<b>Cronbach's Alpha</b>	<b>.92</b>	<b>.77</b>	<b>.76</b>	<b>.7</b>	<b>.5</b>

*Items marked with \* were removed after the EFA*

The first factor – *active participation* – combines most items that belonged to the categories posting and communication. It appears that users do not distinguish between posting and communicating, as active participation in essence includes both of these activities. The second factor – *passive following* – relates to the activities of simply following content posted by others. The third factor – *social browsing* – refers to more targeted search of information through browsing the profiles of others. Contrary to expectations, SNS users make a distinction between passively consuming certain information and proactively searching for it. The latter factor, in fact, resembles the social browsing identified by Lampe (2006) or the information-seeking behaviours in the study of Ellison et al. (2011). The fourth factor – *social searching* – is directed at proactive construction of ones’ network. The fifth factor refers to private communication.

This factor was not considered for analysis, as its Cronbach's alpha was too low (0.5) and thus the corresponding items C4 and C5 were removed from the final scale.

**Benefits and Sources of Social Capital**

In addition, we also conducted EFA for the survey items relating to benefits and sources of social capital in order to test whether these represent distinct factors as the qualitative study proposed. Again, a principal components method with a varimax rotation was performed to check if the category structure was also reflected in the extracted factor groups. Taking into account the possible correlations between the analysed factors, we have also crosschecked our results using a Direct Oblimin rotation, which yielded equivalent factor structure. The results are presented in table 3. As expected, 6 factors with eigenvalues higher than 1 were extracted with all indicators loading well on the latent constructs they were supposed to measure – four relating to social capital benefits and two to sources.

<b>Table 3. Rotated Component Matrix of EFA Social Capital Benefits and Sources</b>						
	<b>Emotional Support</b>	<b>Offline Participation</b>	<b>Social Connectedness</b>	<b>Network Structure</b>	<b>Networking Value</b>	<b>Horizon Broadening</b>
<b>ES1</b> I have a feeling of being supported by my friends on Facebook	<b>.803</b>	.198	.162	.117	.229	.110
<b>ES2</b> My Facebook friends provide me with emotional support	<b>.832</b>	.126	.119	.144	.187	.126
<b>ES3</b> I have a feeling that my Facebook friends are there for me	<b>.854</b>	.056	.153	.112	.233	.069
<b>ES4</b> I can count on my Facebook friends when things go wrong	<b>.798</b>	.152	.111	.096	.272	.086
<b>ES5</b> When I have a bad day, I turn to my friends on Facebook	<b>.775</b>	.192	.099	.156	.091	.090
<b>Now that I use Facebook,</b>						
<b>OP1</b> I take part in more social events (parties, concerts, etc.)	.135	<b>.799</b>	.121	.139	.091	.254
<b>OP2</b> My social activities became more diverse	.203	<b>.759</b>	.043	.155	.134	.302
<b>OP3</b> I participate in events that I would not do otherwise	.107	<b>.761</b>	-.004	.146	.122	.161
<b>OP4</b> I feel like going to parties more often	.184	<b>.740</b>	.077	.085	.059	.286
<b>OP5</b> ... I have a chance to see my friends more often in person	.146	<b>.616</b>	<b>.442</b>	.096	.126	-.058
<b>OP6</b> ... I arrange to meet my friends more frequently	.067	<b>.635</b>	<b>.486</b>	.103	.183	-.113
<b>NV1</b> My Facebook friends provide me with useful advice	.331	.115	.165	.184	<b>.633</b>	.313
<b>NV2</b> I turn to my Facebook friends when I need some information	.228	.127	.150	.080	<b>.669</b>	.180
<b>NV3</b> I do not hesitate to ask people in my list to do smth. for me	.313	.191	.112	.159	<b>.731</b>	.052
<b>NV4</b> I can easily ask people in my contact list for a small favor	.206	.140	.192	.056	<b>.782</b>	.080
<b>NV5</b> I can easily ask my friends to put me in contact with someone	.084	.028	.167	.107	<b>.720</b>	.190
<b>Interacting with people on Facebook,</b>						
<b>HB1</b> ... makes me want to try new things	.202	.351	.142	.225	.127	<b>.702</b>
<b>HB2</b> ... makes me curious about other places in the world	.017	.201	.219	.159	.183	<b>.690</b>
<b>HB3</b> ... expands my outlook	.152	.224	.254	.232	.118	<b>.651</b>
<b>HB4</b> ... keeps me current with new trends (e.g. in music, movies)	.130	.064	.208	.205	.169	<b>.645</b>
<b>HB5</b> ... I learn new things	.062	.155	.198	.231	.188	<b>.625</b>
<b>On Facebook, I ...</b>						
<b>SC1</b> ... feel close to the people in my contact list	<b>.415</b>	.091	<b>.553</b>	.139	.055	.130
<b>SC2</b> ... have a feeling of being connected to others	.158	-.004	<b>.702</b>	.169	.074	.269
<b>SC3</b> ... am updated about my friends	.104	-.020	<b>.652</b>	.189	.049	.276
<b>SC4</b> ... stay in touch with my friends	.062	.208	<b>.693</b>	.129	.324	.176
<b>SC5</b> ... keep contact with the people in my friend list	.100	.210	<b>.665</b>	.106	.346	.154
<b>SC6</b> ... interact with my friends more	.131	.277	<b>.604</b>	.166	.202	.207
<b>Through Facebook, I ...</b>						
<b>NS1</b> ... expand my circle of friends	.239	.186	.139	<b>.691</b>	.036	.207
<b>NS2</b> ... communicate with a broader range of people	.114	.110	.274	<b>.729</b>	.119	.133
<b>NS3</b> ... diversify my circle of acquaintances	.066	.218	.107	<b>.811</b>	.140	.152
<b>NS4</b> ... interact with a wider variety of people than offline	.118	-.002	.222	<b>.770</b>	.138	.185
<b>NS5</b> ... come in contact with people different from myself	.132	.137	.038	<b>.779</b>	.089	.238

As is evident from table 3, all factor loadings exceeded the threshold level of 0.4 (Hair et al. 1998). All items but three fulfilled the narrow definition of “factor purity” suggested by Saucier (1994), specifically: item SC1 loaded high on both social connectedness (.553) and emotional support (.415), as well as OP5 and OP6 loaded on both offline participation (.616; .635) and social connectedness (.442; .486) respectively. Considering that the extracted factors should be interpreted in the light of theory and not by arbitrary cutoff levels (Hair et al. 1998), these indicators were integrated as items of the constructs they were initially intended to measure. Moreover, as sources represent a component of the broader phenomenon of social capital, moderate correlation between items pertaining to sources and benefits was expected.

**Confirmatory Factor Analysis**

Considering the lack of scales specifically designed to reflect the particularities of social capital benefits on SNS, providing researchers with a validated instrument to measure this multi-dimensional construct was an important goal of our study. To do so, social capital benefits modelled as consisting of four separate first order factors – horizon broadening, offline participation, networking value and emotional support – was additionally validated using a Confirmatory Factor Analysis (CFA) with AMOS 19. In the analysis, all items pertaining to benefits of social capital were included and restricted to load on the respective constructs they were supposed to measure. The constructs themselves were allowed to correlate with each other. Maximum Likelihood estimation was used to assess the model. Even though the initial model already exhibited satisfactory fit measures, we still checked modification indices to further improve the model fit. As a result of this procedure, errors of HB4 and HB5 as well as OP5 and OP6 items were correlated. These marginal adjustments are acceptable taking into account that many self-developed scales were used (Byrne 2001). All subsequent evaluations have been done with the adjusted model. Specifically, the quality of our model was assessed via absolute (GFI, AGFI) and incremental (CFI, RMSEA, IFI TLI) fit indices. In addition, the Chi-square test suggested by Bentler (1989) was evaluated. Overall, all cut-off levels are met for all indices, shown in Table 4, providing evidence for an excellent model fit.

<b>GIF Measure</b>	<b>Recommended Cut-off Criterion</b>	<b>CFA Results</b>
$\chi^2/df$	< 2.00 (Carmines and McIver, 1981)	1,642
GFI	> 0.90 (Jöreskog and Sörborm, 1989)	0,899
AGFI	> 0.80 (Jöreskog and Sörborm, 1989)	0,872
RMSEA	< 0.08 (Browne and Cudeck 1993)	0,050
CFI	> 0.95 (Hu and Bentler, 1999)	0,964
IFI	> 0.95 (Hu and Bentler, 1999)	0,964
TLI	> 0.95 (Hu and Bentler, 1999)	0,958

In the next step, the measurement properties of the included first order factors (constructs) were evaluated. To do so *internal consistency*, *convergent* and *discriminant* validity were assessed as summarized in Table 5. Internal consistency, measuring the reliability of the construct measurement scales, is evaluated with Cronbach’s Alpha (CA), which for all factors surpassed the recommended value of 0.7 (Nunnally 1978) as shown in Table 5. *Convergent validity* is typically accessed via three criteria: indicator reliability (for each indicator), composite reliability and Average Variance Extracted (for each latent variable). To ensure indicator reliability, factor loadings should, in the best case, exceed the level of 0.7 (Hulland 1999). Other authors recommend a threshold of 0.5, as an acceptable level (Bagozzi and Yi 1988; Hair et al. 1998). With respect to these criteria, indicator reliability was assured and can be traced in Table 5 (column: ‘Standardized Regression Weights’). In addition to factor loadings, squared multiple correlation of an indicator reflects the proportion of the variance that is accounted for by its predictors (Arbuckle 2005). Even though the squared multiple correlations of indicators do not represent direct reliability estimates, they do reflect a lower bound of the corresponding reliability (Arbuckle 2005). For example, 79,3% of the variance of the variable NV1 is explained by Networking Value construct, meaning that the reliability of NV1 item is at least 0.793. In the next step, the *composite reliability* – a measure of construct reliability – was calculated. In our study all values exceed by far the minimum required threshold of 0.6 (Ringle 2004) as shown in Table 5. Finally, Average Variance Extracted (AVE) reflects the average variance shared between a construct and its respective indicators (Hulland 1999). In our case, the AVE-values for all factors are bigger than the required threshold of 0.5 (Fornell and Larcker 1981). Taken together, convergent validity is fulfilled.

**Table 5. Quality Criteria of Benefit Constructs**

Factor	Item	SRW	SMC	Item	SRW	SMC	AVE	CR	CA
<b>Emotional Support</b>	ES1	0,881	0,776	ES4	0,850	0,723	0,72	0,93	0,93
	ES2	0,861	0,741	ES5	0,749	0,561			
	ES3	0,893	0,797						
<b>Networking Value</b>	NV1	0,793	0,629	NV4	0,762	0,581	0,55	0,86	0,86
	NV2	0,702	0,493	NV5	0,643	0,413			
	NV3	0,803	0,645						
<b>Horizon Broadening</b>	HB1	0,880	0,774	HB4	0,542	0,294	0,51	0,83	0,85
	HB2	0,737	0,543	HB5	0,578	0,334			
	HB3	0,777	0,604						
<b>Offline Participation</b>	OP1	0,868	0,753	OP4	0,787	0,619	0,54	0,87	0,88
	OP2	0,837	0,701	OP5	0,560	0,314			
	OP3	0,745	0,555	OP6	0,565	0,319			

**SRW** - Standardized Regression Weights; **SMC** - Squared Multiple Correlation, **CA** – Cronbach’s Alpha

In the last step, *discriminant validity* was verified. As can be seen in table 6, for each latent variable, the square root of AVE is higher than the correlation between this latent variable and any other variable, providing evidence that even though constructs are related they reflect distinct dimensions of social capital benefits (Fornell and Larcker 1981). Taken together, our results provide evidence that the model is well-measured and has a good fit.

**Table 6. Square Root of AVE (diagonal elements) and Correlation between Latent Variables (off-diagonal elements)**

	ES	NV	HB	OP
Emotional Support (ES)	0,849			
Networking Value (NV)	0,627	0,742		
Horizon Broadening (HB)	0,433	0,541	0,714	
Offline Participation (OP)	0,426	0,460	0,644	0,735

**Empirical Model Evaluation**

The empirical validation of the proposed conceptual model depicted in figure 2 comprised two steps. First, the direct effect of all actions on the benefits of social capital: (i) offline participation, (ii) networking value, (iii) horizon broadening, and (iv) emotional support was tested in four separate models (as in the Figure 2a). Second, the mediating effect of the sources of social capital - network structure and social connectedness – was tested for the relationship between actions and respective benefits (as in the figure Figure 2b). Logically, only the actions that exerted a significant impact on the benefits in the direct models were included into the mediation models. In total, 8 models were tested.

Partial Least Squares (PLS) approach was used to evaluate the models. Indeed, PLS is particularly suited for testing and validating exploratory models such as the proposed conceptual model of social capital formation (Henseler et al. 2009; Fornell and Bookstein 1982). As suggested by Chin (1998) and Ringle (2004), first the measurement and then the structural model was evaluated for all 8 models. Due to space limitations, the results of evaluations for all measurement models are presented together. Since all constructs were modeled as reflective, only reflective measurement evaluations were used. Further, evaluations of the structural model are presented for each benefit of social capital separately. All calculations were carried out using SmartPLS 2.0 (Ringle et al. 2005).

**Evaluation of the Measurement Models**

In order to evaluate our measurement models, as with CFA internal consistency, convergent and discriminant validity of the measured constructs were assessed. Due to space limitations as well as because the quality indicators did not differ a lot across the 8 tested models, Table 7 summarizes results only for

the direct effect and mediated models separately (differences across different benefit models were minimal). As we can see from the table 7, all of the measured indicators meet their required criteria. *Internal consistency* is assured (Nunnally 1978), as Cronbach’s Alpha for all latent constructs is above 0.7. As with CFA, convergent validity can be assessed by exploring *indicator reliability*, composite reliability, and average variance extracted. Most indicators in in all of our 8 tested models meet the required cut-off level of 0.7 (Hulland 1999), except for: items N3 and N4 in the direct networking value model with indicator loadings of 0.69 and 0.65 respectively. Moreover, in most of the mediated models, SC1 and SC3 have loadings in the range 0.67-0.68. As only indicators with factor loadings less than 0.4 should be eliminated (Homburg and Giering 1996), no indicator was excluded from any model and we can say that indicator reliability is assured. Second, *composite reliability* (CR) of all latent constructs in all 8 tested models is above 0.8, which exceeds the minimum required threshold of 0.6 (Ringle 2004; Homburg and Baumgartner 1995). *Average Variance Extracted* (AVE) of all latent variables in all 8 tested models is bigger than 0.5 (Fornell and Larcker 1981). Taken together, convergent validity can be assumed.

	AVE		Composite Reliability		Cronbach’s Alpha
	Mediated	Direct	Mediated	Direct	
Active Participation	0.73	0.73	0.94	0.94	0.93
Passive Following	0.69	0.69	0.87-0.89	0.87	0.78
Social Searching	0.63	0.62-0.63	0.84	0.83-0.84	0.71
Social Browsing	n.e.	0.61-0.66	n.e.	0.82-0.86	0.76
Social Connectedness	0.57	n.e.	0.89	n.e.	0.85
Network Structure	0.68	n.e.	0.91	n.e.	0.88
Horizon Broadening	0.62	0.62	0.89	0.89	0.85
Offline Participation	0.62	0.63	0.91	0.91	0.88
Networking Value	0.69	0.69	0.9	0.9	0.85
Emotional Support	0.78	0.78	0.94	0.94	0.93
<i>n.e. – not estimated in this model</i>					

Discriminant validity was assessed by ensuring that the square root of the AVE for any latent variable is bigger than the correlation between this variable with all other latent variables in the model, as recommended by Fornell and Larcker (1981). This criterion has been calculated for all latent variables in 8 tested models and no correlation between two variables was close to the square root of the AVE. Hence, discriminant validity can be assumed. Table 8 provides example of the results of our assessment for the mediated model of emotional support. We see that the correlation between sources (social connectedness, network structure) and emotional support is moderate and meets the discriminant validity criterion.

	ES	SC	NS	AP	SS
Emotional Support (ES)	0.88				
Social Connectedness (SC)	0.46	0.76			
Network Structure (NS)	0.39	0.5	0.83		
Active Participation (AP)	0.52	0.51	0.36	0.86	
Social Searching (SS)	0.25	0.16	0.36	0.19	0.79

**Evaluation of the Structural Models**

Since PLS does not generate an overall goodness of fit index, model validity is assessed by examining the structural paths and R<sup>2</sup> values. R<sup>2</sup> measures the share of the variance of the latent endogenous variable which is explained by the latent exogenous variables in the model. The endogenous variable in all models is the respective social capital benefit, whereas the exogenous ones are the actions and, in the mediated models, the sources. For the purposes of explorative research, R<sup>2</sup> is considered sufficient, when it is above .33, although accepted are also R<sup>2</sup> of over .19 (Hansman and Ringle 2005).

In the next step, the significance of the path coefficients based on a bootstrapping procedure was evaluated. Considering explorative nature of our research, significance level of 10% is acceptable (Wimmer

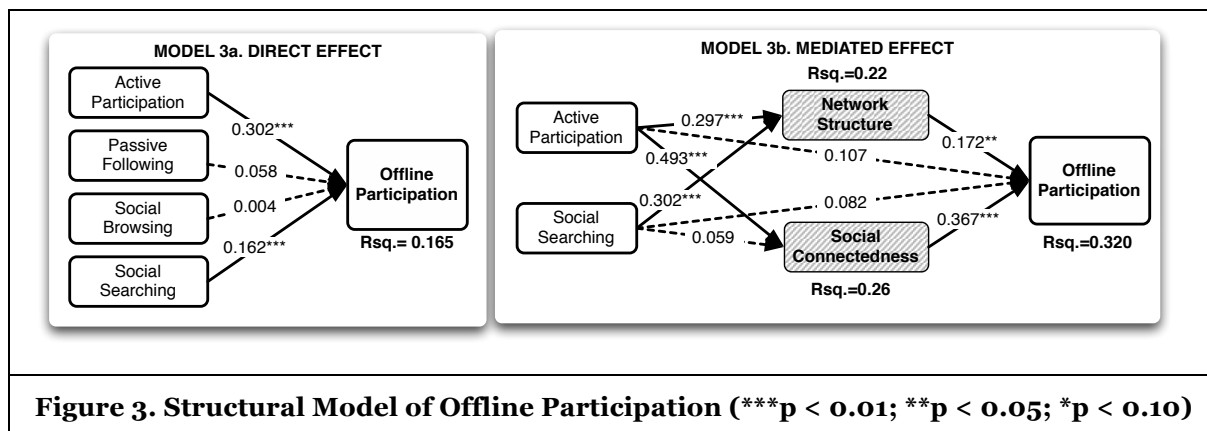
and Dominick 2006). As mentioned above, first, the direct impact of various actions on the benefits was tested. Only the actions that exerted a significant impact on the benefits were included into the second step, in which the mediation effect of network structure and social connectedness was assessed. The mediation was present in the relationship between an action and a benefit if the two links were significant: (i) between an action and a respective mediator; and (ii) between a mediator and a respective benefit. Once these criteria were fulfilled, mediation was additionally evaluated via the Sobel (1982) test, as recommended by Baron and Kenny (1986). The results of the Sobel test for all significant mediators in all of the models are presented in Table 9 (in the table, “-“ represents that the mediator did not fulfil one of the mediation conditions formulated above).

Additionally, we evaluate the effect size to determine the impact of the mediators on the overall explanatory power of the model. The effect size is calculated by comparing the R<sup>2</sup> of the dependent variable with and without the presence of each independent variable (Chin 1998), whereby effect size of over 0.02 is considered small and over 0.15 – medium (Cohen 1988). The results of effect size calculations are presented in Table 8 below.

Table 9. Effect sizes and Sobel Test statistics for model mediators				
Model	Mediator	Effect Size	Predictor	Sobel Test p-values (two-tailed)
Offline Participation	Social Connectedness	0.125	Active participation	.000***
			Social searching	-
	Network Structure	0.022	Active participation	0.026**
			Social searching	0.024**
Networking Value	Social Connectedness	0.158	Active participation	.000***
			Passive following	.000***
	Network Structure	0.028	Active participation	.03**
			Passive following	-
Horizon Broadening	Social Connectedness	0.130	Active participation	0.000***
			Passive following	0.000***
	Network Structure	0.190	Active participation	0.000***
			Passive following	-
Emotional Support	Social Connectedness	0.018	Active participation	0.001***
			Social searching	-
	Network Structure	0.037	Active participation	0.09*
			Social searching	0.09*

**Offline Participation**

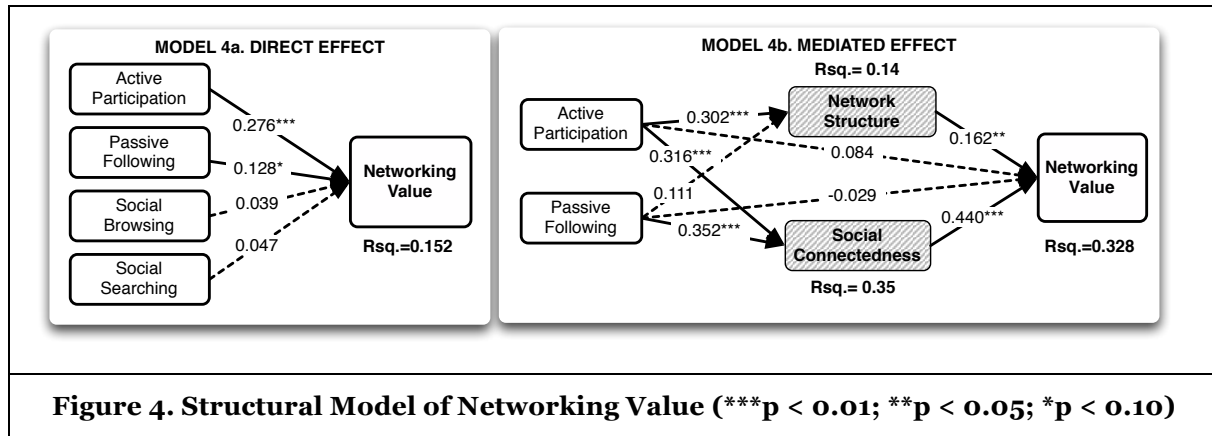
First, a direct structural model was evaluated. As shown in Figure 3 (model 3a), only two path coefficients from active participation (0.302\*\*\*) and social searching (0.162\*\*\*) were significant in predicting offline participation. Hence, only these actions were integrated into the mediated model in figure 3b. The R<sup>2</sup> is 0.165, indicating minimal explanatory power of the model (Falk and Miller 1992).



In the second step, a mediated model was tested as shown in Figure 3 (model 3b). The variance of offline participation explained in the model is now much higher ( $R^2 = 0.320$ ). Furthermore, we notice that the direct links from active participation (0.107) and social searching (0.082) to offline participation become insignificant once social connectedness and network structure are included. Combined with the results of the Sobel (1982) test presented in Table 4, our results clearly demonstrate that network structure and social connectedness are full mediators in this model. The calculated effect sizes (Table 4) hint that social connectedness is especially important when predicting offline participation.

### Networking Value

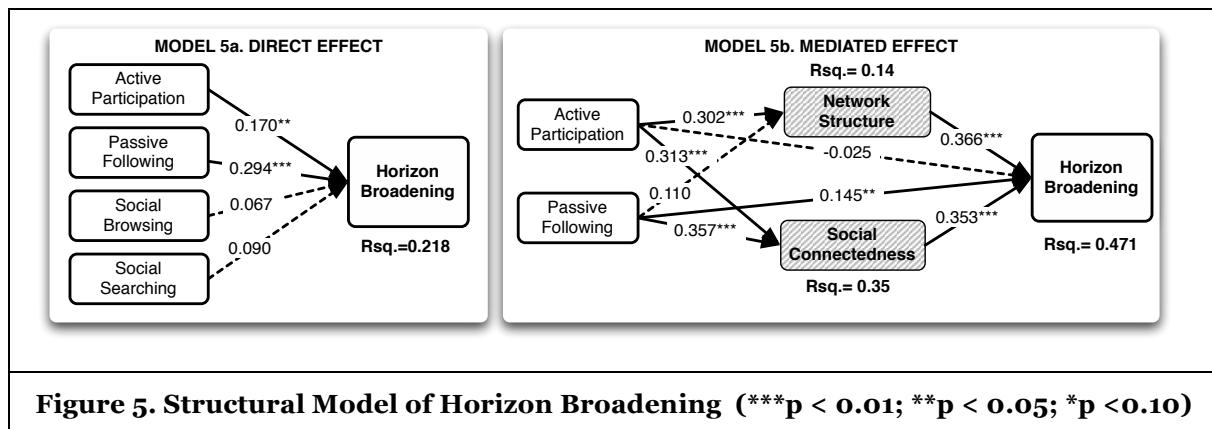
First, a direct structural model was evaluated. As shown in Figure 4 (model 4a), only two path coefficients from active participation (0.276<sup>\*\*\*</sup>) and passive following (0.128<sup>\*</sup>) are significant in predicting networking value in a direct model. As a result, only these actions were integrated into the mediated model 4b in figure 4. The  $R^2$  of the direct model constituted just 0.152, indicating minimal explanatory power.



Second, a mediated model was tested as shown in Figure 4 (model 4b). The variance of networking value explained in this model is now much higher ( $R^2 = 0.328$ ). Furthermore, we notice that the direct links from active participation (0.084) and passive following (-0.029) to networking value become insignificant once social connectedness and network structure are added. Combined with the results of the Sobel (1982) test as presented in Table 4, our results clearly demonstrate that network structure and social connectedness are full mediators in this model. The calculated effect sizes (as of Table 4) hint that social connectedness is especially important when predicting networking value.

### Horizon Broadening

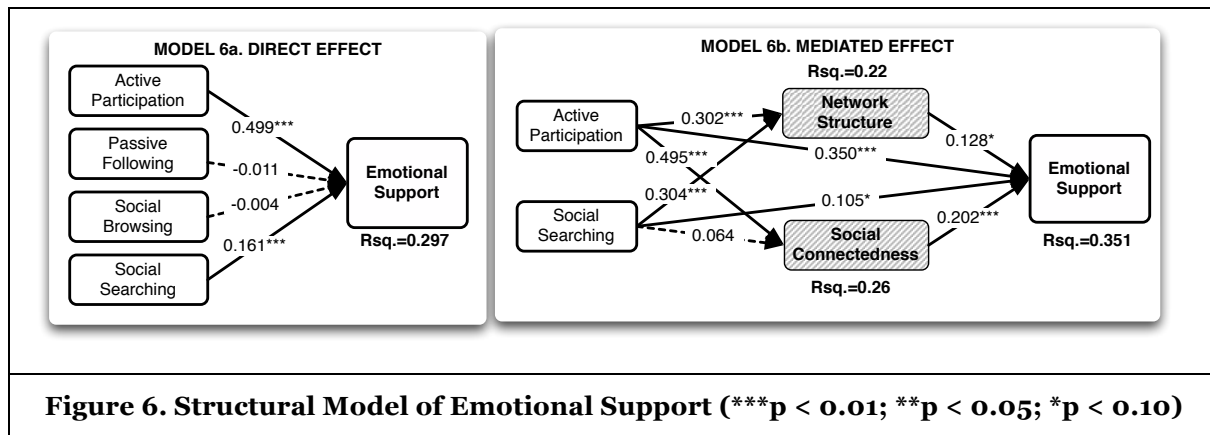
First, a direct structural model was evaluated. As shown in Figure 5 (model 5a), only two path coefficients from active participation (0.170<sup>\*\*</sup>) and passive following (0.294<sup>\*\*\*</sup>) are significant in predicting horizon broadening in the direct model. The  $R^2$  of this model is just 0.218 which is considered weak (Chin 1998).



Once the mediating variables - network structure and social connectedness - are added to the model as depicted in Figure 5 (model 5b), the variance explained in the mediated model increases to  $R^2 = 0.471$ . Furthermore, when the mediating variables are added, the path coefficient between active participation and horizon broadening becomes insignificant (-0.025), whereas the path coefficient between passive following and horizon broadening, though still significant, decreases to 0.145\*\*. Combined with the outcomes of the Sobel (1982) test presented in Table 4, these results demonstrate the presence of partial mediation in the horizon broadening model. In addition, the calculated effect sizes (judging by Table 4) underscore the importance of social connectedness and network structure for horizon broadening.

### Emotional Support

First, a direct structural model was evaluated. As shown in Figure 6 (model 6a), only two path coefficients from active participation (0.499\*\*\*) as well as social searching (0.161\*\*\*) are significant in predicting emotional support in the direct model. The  $R^2$  is 0.297, which is close to the ‘moderate’ benchmark of 0.33 suggested by Chin (1998).



**Figure 6. Structural Model of Emotional Support (\*\*\*)  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ )**

Once the mediating variables - network structure and social connectedness - are added to the model as depicted in Figure 6 (model 6b), the variance explained in the mediated model increases to  $R^2 = 0.351$ . Moreover, the path coefficient between social searching and emotional support becomes lower and is just significant at 10%-level (0.105\*). The path coefficient between active participation and emotional support, though still significant, drops to 0.350\*\*\*. Combined with the outcomes of the Sobel (1982) test presented in Table 4, these results demonstrate the presence of partial mediation in the emotional support model. At the same time, however, the calculated effect sizes in Table 4 hint that social connectedness and networking value are not very important predictors of emotional support.

### Discussion and Managerial Implications

Our study provides an array of theoretical, methodological and practical contributions. On the theoretical side, we identified the four unique types of social capital benefits for the context of SNS. Empirical validation of the developed measurement scales for these constructs through exploratory and confirmatory factor analyses represents an important methodological contribution of our study. Indeed, in the past authors (e.g. Ellison et al. 2007) have mainly relied on the bridging and bonding scales proposed by Williams (2006), which were developed for the general Internet context. Some of the items in our proposed scale are similar to Williams (2006), but bear the advantage of being tailored to the specifics of SNS context. For example, increased offline participation is recognized as a specific benefit resulting from SNS use. Moreover, our scales depart from the usual bridging-bonding categorization as well as focus solely on tangible outcomes of social capital, while treating sources as a separate antecedent construct. Taken together, the developed framework and accompanied measurement scales are likely to provide significant support for future scholars studying social capital formation on SNS.

Furthermore, our study provides a validated categorization of participation patterns on SNS. Previously authors focused only on one segment of SNS participation, distinguishing between active vs. passive uses or between social searching vs. social browsing (Lampe et al. 2006; Ellison et al. 2011). Closing this gap,



our categorization accounts for all possible activities on SNS, and provides validated scales for the measurement of distinct SNS activities. Our study shows that whereas active participation is beneficial for all types of social capital, social searching and passive following are important only for specific benefits. Surprisingly, in our study social browsing does not lead to any social capital benefits, whereas Ellison et al. (2011) recognize it as the most important means to obtain social capital. We explain this by the fact that social information gained in the process of browsing may lead users to experience envy (Muise et al. 2009) or frustration (Koroleva et al. 2010) and thus potential to extract social capital can get lost.

The most interesting finding of our study is that actions alone are not enough to explain the process of social capital formation on SNS. By introducing social connectedness and network structure as mediators into the tested models, we show the critical role of these sources in the process of social capital formation. It appears that, while certain actions allow users to expand and diversify their network and lead to greater social connectedness, these sources, in turn, are mainly responsible for the attainment of the benefits of social capital. Thus we confirm the model of Resnick (2001) for the case of SNS: social capital benefits are indeed only side effects of participation, whereas the broader social capital is centered around the qualitative and quantitative properties of the individual network. This can be illustrated with a simple example: if a user has never obtained any tangible help from others in her network, does it mean she has no social capital? The answer is no, because if she possesses the necessary sources, tangible help can be obtained anytime. Even though network structure has been recognized as important prerequisite of social capital gains in previous studies (Ellison et al. 2011), our study is the first one to show that a diversified network structure is beneficial for any type of benefit – horizon broadening, networking value, or even emotional support. Thus, the usual distinction into bonding and bridging social capital is not as critical for the context of SNS.

On the practical side, our study uncovers the specific process of social capital formation for each of the identified social capital benefits (see figures 3-6). This can be of use to SNS users, policy-makers or network providers to better understand how SNS function. For example, to obtain networking value, users should invest more into maintaining relationships in their network, whereas for horizon broadening, a diversified network structure is more important. Furthermore, to gain emotional support active participation is of essence. Indeed, by passively viewing the information posted by others, one is more likely to feel irritated rather than supported by friends (Sachoff 2011). Emotional comfort requires reciprocity – and already several messages may be enough to generate the feeling of emotional support. Finally, in contrast to grim perspectives outlined by Putnam (1995), our study confirms the possibility of SNS to increase offline participation. The combination of proactive network construction and shared information urges users to arrange to meet their friends more often and take part in more events than they would do otherwise. As a result, SNS appear not only to help develop relationships, but also enhance the diversity of individual social life.

When it comes to managerial implications, results of our study suggest that SNS providers should urge users to communicate more actively and invest into optimizing their friend lists. These strategies will allow users to gain more benefits and, hence, experience more satisfaction with their SNS activities. Moreover, network providers can optimize information filtering algorithms to provide users with the necessary and relevant information at all times to promote the development of the sense of connectedness and avoid information overload, which can be detrimental to social capital.

## Conclusion

Coming back to the research questions, in the paper we identified four types of social capital benefits that can be gained as a result of SNS participation. Furthermore, we determined which participation patterns lead to which benefits, as well as empirically proved the importance of the sources of social capital in the process of social capital formation. We showed that the structure and qualities of the individual social network are the most crucial determinants of social capital benefits. That is, if individuals want to gain from SNS usage, they have to concentrate their efforts on constructing a broad and diversified network as well as invest time into maintaining their relationships with others.

The limitation of our study is the sample size mainly consisting of active Facebook users. Considering that Facebook gains popularity across other population segments, authors aim to validate the survey instrument with a more representative sample. Additionally, cluster analyses may be performed in order to identify specific user groups and the dynamics of their social capital formation.

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