



Understanding helping intention and its antecedents among instant messaging users

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Abstract

Purpose – Helping intention is an important value that holds the key to the continuous user growth of instant messaging (IM). The purpose of this study is to validate a research model that examines online helping intention from a perspective of online social capital.

Design/methodology/approach – Empirical testing of this model, through a survey of employees from seven large companies, confirms some theoretical expectations of this study. Two of the seven companies are from general service industries and the other five companies are from high-tech industries. Of the 500 questionnaires distributed to participants, 364 usable questionnaires were returned for an effective response rate of 72.8 per cent.

Findings – Helping intention is influenced by reciprocity, shared narratives, centrality, and network ties, whereas commitment and shared codes and language are not significantly related to helping intention.

Research limitations/implications – Based on the test results of this study, helping intention is affected by different social capital dimensions. In particular, low helping intention is attributed to a lack of online social capital, which can result from weak reciprocity, shared narratives, centrality, and network ties. This study has some limitations that relate to the measurement and interpretation of results. A major limitation is the possibility of a common method bias by using a single questionnaire to measure all constructs, which may inflate the strength of the relationships among these research constructs.

Practical implications – This study recommends that those who support the establishment of helping culture among instant messaging users place emphasis on relational, cognitive, and structural capital. Both IM service developers and users should be aware that helping intention can be discouraged if any single dimension of social capital is ignored.

Originality/value – This paper fulfils an identified need to study how online helping intention can be strengthened.

Keywords Helping intention, Relational capital, Cognitive capital, Structural capital, Online social capital, Digital communication systems, Internet

Paper type Research paper



Introduction

Instant messaging (IM) is a popular, real-time, mobile computer-mediated communication technology (Zaman *et al.*, 2010). IM users consist of a large linked and geographically distributed group of individuals engaged in a shared practice via

online social interactions, and who may not know each other nor necessarily expect to see each other face-to-face (Brown and Duguid, 2001). Although e-mail has been the dominant communication technology in computer networks, another widely diffused and mature innovation is IM, which is well-known for its interactive online communication (Li *et al.*, 2005). Millions of users use IM with their family and friends for online social communication (Li *et al.*, 2005). To date IM usage has been substantially extended to business settings (Shiu and Lenhart, 2004) such as communication among co-workers, sales promotions between buyers and sellers, and so on (Li *et al.*, 2005). Although individuals connected through IM may never know or meet each other in person, they are capable of providing online help to each other by sharing a great deal of knowledge (e.g. Brown and Duguid, 2000), suggesting the importance of understanding helping intention among IM users. Previous research reveals that IM and text messaging are both forms of technology-mediated communication, which provide an efficient tool with which people can communicate and provide social support to each another (e.g. helping intention) thus eventually helping to create and reinforce social ties and friendships (Boneva *et al.*, 2006; Bryant *et al.*, 2006).

The helping intention is an important aspect of the continuous user growth of IM. Despite the increasing importance of helping intention among IM users, little attention has been paid to it in the IM usage literature. Many contemporary research models have covered IM usage, including the theory of planned behaviour (Lin *et al.*, 2006; Lu *et al.*, 2009; Lin, 2011; Zhou, 2007), the motivational model (Lee *et al.*, 2007; Li *et al.*, 2005), the technology acceptance model (Lu *et al.*, 2009; Wang *et al.*, 2004), the model of innovation diffusion theory (Rouibah and Hamdy, 2009), and the unified theory of acceptance and use of technology (Lin and Bhattacharjee, 2008; Park *et al.*, 2007). Unfortunately these studies have all ignored the potential role of the helping intention among IM users. While positive helping intention may facilitate favourable social interactions among IM users and attract them to continuously use IM, negative intentions could damage the industry. Therefore understanding the formation of the helping intention becomes a critical issue of IM service for its users and providers.

Theories of collective action in the previous literature help clarify why individuals voluntarily contribute their time, effort, and knowledge to help others online, and suggest that individuals develop the helping intention due to the influence of social capital (e.g. Cheung and Chan, 2008; Coleman, 1990; Putnam, 1993, 1995). Social capital refers to important resources embedded in a social structure that are accessed and/or mobilised in purposive action (Lin, 2001; Tye and Williams, 2009). Social capital has been used for explaining a variety of pro-social behaviours (such as helping others, sharing information and experiences with others) that the other forms of capital (such as human or financial capital) are unable to explain (Coleman, 1990; Flavin and Radcliff, 2009). Whereas other forms of capital are based on assets or individuals, social capital resides in the fabric or relationships between individuals (Putnam, 1995). The key difference between social capital and other forms of capital is that social capital is embedded in the social realm (Wasko and Faraj, 2005).

Social capital can be highly developed in a society characterised by a shared history, high interdependence, frequent interaction, and closed structures (Wasko and Faraj, 2005; Nahapiet and Ghoshal, 1998), though it may not be transferred to the practice of online social networks that are not designed for frequent social interactions (Wasko

and Faraj, 2005). However with the advances in internet infrastructures, there is increasing evidence that people use information technology (IT, e.g. the internet) for frequent social interactions, comparable to the interactions in face-to-face settings (Walther and Boyd, 2002), leading to an important role of online social capital.

The social capital of individuals develops in social relationships within their social circles, which result in sharing important information in the circles (Watson and Papamarcos, 2002). The social capital concepts of such sharing naturally foster online help among individuals, implying the positive influence of social capital on their helping intention. Hence, the purpose of this study is to explore helping intention that is caused by a variety of social capital factors.

This research differs from previous studies regarding helping intention in two important ways. First, while helping intention is established from a perspective of social interactions in social theory (Lin, 2006), social capital also has deep roots in social theory (Chalupníček and Dvorák, 2009; Messner and Baumer, 2004; Nahapiet and Ghoshal, 1998). However, little attention has been paid to the relationship between social capital and helping intention. Thus this study is one of the earliest that assesses helping intention based on social capital theory. Second, this study is one of the first that tries to deconstruct social capital into six specific constructs – i.e. commitment, reciprocity, shared codes and language, shared narratives, centrality, and network ties – that can help IM service developers and users to learn about appropriate approaches to foster online helping intention among users.

Social capital theory

Social capital theory, considering social cohesion a powerful asset to social societies, views communication as a way for people to determine who to help and cooperate with in order to engage in productive reciprocal social networks (Radin, 2006). Social capital complements medium theory as it explains what conditions are essential in order for individuals to help each other, voluntarily, to an extensive degree (Radin, 2006).

The social capital discussed by Nahapiet and Ghoshal (1998) can be used for understanding helping intention. For example, their research findings imply that individuals in social circles can help others by creating knowledge over open settings such as online markets since the social circles provide an institutional environment conducive to the development of social capital (Nahapiet and Ghoshal, 1998; Wasko and Faraj, 2005). Specifically the helping intention is hypothetically strengthened by social capital, which contains three dimensions:

- (1) structural capital – structural links or connections between individuals;
- (2) cognitive capital – individuals' cognitive capability that helps them to understand others' feelings; and
- (3) relational capital – social relationships that have strong positive characteristics.

These three dimensions of social capital and their specific influence on helping intention are discussed as follows.

Online relational capital

Helping intention is associated with the affective nature of the interpersonal relationships within social circles referred to as relational capital and characterised by

commitment and reciprocity (e.g. Nahapiet and Ghoshal, 1998). Commitment is a duty or obligation to engage in future social action and arises from frequent interaction (Coleman, 1990). Online commitment represents a perception of responsibility to help others within the collective social circles (Wasko and Faraj, 2005). Reciprocity considers the expectations that an individual's collective efforts will be reciprocated (Wasko and Faraj, 2005). Given that a basic norm of reciprocity is a perception of interpersonal indebtedness, individuals generally reciprocate the online help they receive from others, ensuring ongoing helping exchanges (e.g. Shumaker and Brownell, 1984).

Online relational capital specifically develops when individuals have a strong identification with (commitment) and trust in others who would repay (reciprocity) (Lewicki and Bunker, 1996; Putnam, 1995), strengthening individuals' helping intentions. Collectively the above phenomenon implies a positive relationship between online relational capital and helping intention, and the following hypotheses are thus derived:

- H1.* Individuals' commitment is positively associated with their helping intention.
- H2.* Individuals' reciprocity is positively associated with their helping intention.

Online cognitive capital

Reflected largely by shared codes/language and narratives, online cognitive capital includes the online resources that make possible shared meanings, connotations and stories among IM users. In other words engaging in a meaningful sharing of useful information and sincere advice, such as online help to others, requires some level of shared understanding between individuals, including shared codes/language and narratives (Nahapiet and Ghoshal, 1998; Wasko and Faraj, 2005). As shared codes/language and narratives jointly provide a frame of reference for interpreting the social environment (Wasko and Faraj, 2005) in which individuals' help occurs, online cognitive capital represents an important means for facilitating individuals' helping intention.

Helping intention can be strengthened through narratives told over time, because the narratives, which are sometimes called war stories or workarounds, provide insights into what individuals can do to help others face and resolve difficulties in life (e.g. Brown and Duguid, 1991). Collectively individuals with higher levels of understanding of shared codes/language and narratives are more likely to have helping intentions, leading to the following hypotheses:

- H3.* Individuals' shared codes and language are positively associated with their helping intention.
- H4.* Individuals' shared narratives are positively associated with their helping intention.

Online structural capital

Structural capital in social capital theory indicates that both the social centrality and the network ties created through the interpersonal interactions in social circles are critical determinants of collective action (Putnam, 1995). Thus helping others is a type of collective action. More specifically individuals' collective actions such as helping,

collaboration, and contributions to others in online social circles can be achieved as long as online social circles are considered part of their centrality. To put it differently, the more deeply the centrality is perceived by individuals, the stronger their intention to help others in need online. In addition to centrality individuals' network ties that also reflect online structural capital to a certain degree are relevant for examining individuals' helping intention within online social circles. In other words the stronger the relationships people have online with each other, the stronger their intention to help others online due to great affection towards their social network.

Given that both centrality and network ties are highly correlated with each other and jointly have important influence on helping intention, the following hypotheses are thus derived based on online structural capital:

- H5.* Individuals' centrality is positively associated with their helping intention.
- H6.* Individuals' network ties are positively associated with their helping intention.

Method

Measures

The research hypotheses described above were empirically tested using a survey of instant messaging technology usage among employees in Taiwan (Lin, 2011). IM is a technology that allows users to communicate using text or video messages in real time over the internet. IM was chosen for this study because it is an advanced interactive IT that lends itself particularly well to a virtual world in which individuals can effectively help others. A recent Pew Internet Project study reported that 53 million US adults (42 per cent of Americans online) use IM on a regular basis, 24 per cent use IM more frequently than e-mail, 13 million instant messages are sent every day, and 11 million use IM at work to contact co-workers, share documents, and track workflow (Shiu and Lenhart, 2004). This growing prevalence of IM usage in social networking is indicative of its relevance for this study. It is important to note that IM has been very popular, particularly for knowledge workers in high-tech industries (Cameron and Webster, 2005; de Vos *et al.*, 2004; Quan-Haase *et al.*, 2005). For example, the research indicates that the use of such hyperconnectivity technology as IM varies by industry, from 9 per cent of respondents in health care to 21 per cent in finance and 25 per cent in high-tech industries (Storey, 2008).

A manager in a consulting company assisted by providing participants randomly drawn from seven large companies among the company's clients. Two of the seven companies are from general service industries, while the other five companies are from high-tech industries (related to both service and manufacturing). Of the 500 questionnaires distributed to participants during the northern summer of 2009, 364 usable questionnaires were returned for an effective response rate of 72.8 per cent. Table I lists the sample's characteristics.

The constructs in this study were measured using five-point Likert scales drawn and modified from the previous literature. Four major steps were employed to refine the measurement items and are described below.

First, items from the existing literature were modified and translated into Chinese. Second, a university professor and several graduate students familiar with online behaviour were invited to provide assistance in evaluating the appropriateness of the

Characteristics	<i>n</i>	Per cent	Understanding helping intention in IM
<i>Gender</i>			
Male	228	62.64	
Female	136	37.36	
<i>Age</i>			
20-29 years old	140	38.46	
30-39	164	45.06	
40 or above	60	16.48	
<i>Education</i>			
Secondary school graduates	40	10.99	
University graduates	210	57.69	
Postgraduates	114	31.32	
<i>Experience</i> ^a			
Less than one year	38	10.44	
1-2 years	136	37.37	
More than two years	190	52.19	
<i>Position level</i>			
Management	151	41.48	
Non-management	213	58.52	
<i>Marital status</i>			
Not married	123	33.79	
Married	199	54.67	
Other (e.g. divorced, separated, etc.)	42	11.54	
<i>Monthly income</i> ^b			
Less than \$US1,500	76	20.88	
\$US1,500-2,500	150	41.21	
More than \$US2,500	138	37.91	

Notes: *n* = 364. ^aExperience represents the participants' prior experience in using IM. ^bMonthly income is approximate, because the income was originally measured with NT dollars and then transformed to US dollars by an approximate exchange rate

Table I.
Sample characteristics

Chinese version of the scale. Third, the measurements were trialled in a pilot test and inappropriate ones were then examined and refined thoroughly. The pilot test with 50 student participants was conducted to refine the measurement scales (i.e. improve item readability and clarity) before the actual survey. Pilot test respondents were excluded in the subsequent survey. They were asked to fill out the survey questionnaire and comment on any confusing items in the questionnaire. The pilot test data were subjected to exploratory factor analysis and reliability analysis to identify items that loaded poorly on their hypothesised scales, which were then re-worded. This process of instrument refinement led to considerable improvement in content validity and scale reliability. Fourth, the suggestions regarding back-translation suggested by Reynolds *et al.* (1993) were used in composing an English version of the questionnaire and a Chinese one. A high degree of correspondence between the two questionnaires gave assurance that the translation process did not substantially introduce artificial translation biases in the Chinese version of our questionnaire.

The three items of helping intention were modified from the study by Lin (2006). They include: "I like using IM to help people with depression" and "I like using IM to give personal recommendations to people who are having difficulties". The three commitment items were modified from those of Wasko and Faraj (2005). These items include: "I would feel a loss if IM was no longer available for interacting with my friends (and/or relatives)" and "I care about future developments of IM regarding the communication efficiency between me and my friends (and/or relatives)". The three reciprocity items are also modified from Wasko and Faraj (2005). These include: "When using IM I think that my friends (and/or relatives) and I should trust each other" and "When using IM I think that my friends (and/or relatives) and I should maintain relationships with each other".

As there were no suitable scale items for shared codes/language and narratives in the existing research, three items for shared codes and language and another three items for shared narratives were developed by this study based on the definition of cognitive capital in the previous literature (Nahapiet and Ghoshal, 1998; Wasko and Faraj, 2005) through a focus group. Examples of shared codes and language items are: "When using IM my friends (and/or relatives) and I understand each other when using online jargon" and "When using IM, my friends (and/or relatives) and I follow similar codes or rules". The shared narrative items include: "My friends (and/or relatives) and I share interesting narratives through our IM usage" and "My friends (and/or relatives) and I enjoy pleasant dialogue through our IM usage".

The three centrality items were modified from Obst and White (2005). The items include: "I often think of talking with my friends (and/or relatives) via IM" and "I think that using IM to contact my friends (and/or relatives) reflects a central part of my life". Finally, four items for network ties were also drawn and modified from Obst and White (2005). These items include: "I have a lot of interests in common with my friends (and/or relatives) who use IM" and "I feel strong interpersonal ties with my friends (and/or relatives) who use IM". Collectively these constructs were modified from the previous literature by embedded them with features related to IM usage.

Confirmatory factor analysis

The final survey data with a sample size of 364 responses were analysed via two stages using SAS software. In the first stage confirmatory factor analysis (CFA) was performed on all data collected to assess scale reliability and validity. In the second stage construct relationships and significance in the proposed hypotheses were examined by hierarchical regressions. The empirical results from each stage of analysis are presented next.

CFA analysis was done on all items corresponding to the seven constructs measured in Likert-type scales. The goodness-of-fit of the CFA model was assessed using a variety of fit metrics, as shown in Table II. Although the normed fit index (NFI) is slightly lower than the recommended value of 0.9, the normalised chi-square (chi-square/degrees of freedom) of the CFA model was smaller than the recommended value of 3.0, the root mean square residual (RMR) was smaller than 0.05, the root mean square error of approximation (RMSEA) was smaller than 0.08, while the comparative fit index (CFI), non-normed fit index (NNFI), and goodness of fit index (GFI) all exceeded 0.90. These figures suggest that the hypothesised CFA model in this study fits well with the empirical data (Bentler and Bonett, 1980).

Construct	Indicators ^a	Standardised loading		AVE	Cronbach's α
Commitment	CO1	0.81	(<i>t</i> = 15.75)	0.50	0.73
	CO2	0.64	(<i>t</i> = 12.11)		
	CO3	0.66	(<i>t</i> = 12.58)		
Reciprocity	RE1	0.77	(<i>t</i> = 14.45)	0.50	0.74
	RE2	0.71	(<i>t</i> = 13.38)		
	RE3	0.63	(<i>t</i> = 11.64)		
Shared codes and language	SC1	0.76	(<i>t</i> = 14.70)	0.52	0.76
	SC2	0.71	(<i>t</i> = 13.50)		
	SC3	0.69	(<i>t</i> = 13.06)		
Shared narratives	SN1	0.94	(<i>t</i> = 20.69)	0.56	0.81
	SN2	0.85	(<i>t</i> = 18.19)		
	SN3	0.56	(<i>t</i> = 11.00)		
Centrality	CE1	0.70	(<i>t</i> = 13.45)	0.49	0.74
	CE2	0.68	(<i>t</i> = 12.93)		
	CE3	0.71	(<i>t</i> = 13.68)		
Network ties	NT1	0.80	(<i>t</i> = 15.85)	0.53	0.77
	NT2	0.71	(<i>t</i> = 13.78)		
	NT3	0.67	(<i>t</i> = 12.81)		
Helping intention	HI1	0.90	(<i>t</i> = 17.96)	0.52	0.73
	HI2	0.56	(<i>t</i> = 10.53)		
	HI3	0.67	(<i>t</i> = 13.03)		

Notes: Goodness-of-fit indices (*n* = 364): $\chi^2_{168} = 306.33$ (*p*-value < 0.001); NNFI = 0.93; NFI = 0.89; CFI = 0.95; GFI = 0.93; AGFI = 0.90; RMR = 0.02; RMSEA = 0.05. ^aIndicators remaining after CFA. Two indicators (one from network ties and one from reciprocity) were excluded from this measurement model due to their insignificance

Table II.
Standardised loadings
and reliabilities

Convergent validity was examined and evaluated using three criteria suggested by Fornell and Larcker (1981). To begin with all the factor loadings shown in Table II were statistically significant at *p* < 0.001 to ensure convergent validity of the constructs (Anderson and Gerbing, 1988). Moreover, the average variance extracted (AVE) for all constructs exceeds 0.50 except for one construct (outcome expectations) at slightly lower than 0.5, indicating that the overall hypothesised items capture sufficient variance in the underlying construct than that attributable to measurement error (Fornell and Larcker, 1981). Furthermore the reliability of each construct exceeded 0.70 (see the Cronbach's α column in Table II), satisfying the general requirement of reliability for research instruments. Overall the empirical data collected by this study met all three criteria required to ensure convergent validity.

Discriminant validity was assessed by chi-square difference tests between an unconstrained model, in which all constructs in the CFA model were allowed to co-vary freely, and a constrained model, in which covariance between each pair of constructs is fixed at one (Hatcher, 1994). The advantage of chi-square difference tests is their simultaneous pair-wise comparisons for the constructs, based on the Bonferroni method. Controlling for the experiment error rate by setting the overall significance

level at 0.01, the Bonferroni method indicated that the critical value of the chi-square difference should be 12.21. The chi-square difference statistics for all pairs of constructs in Table III exceeded this value, thus assuring discriminant validity for the data of this study. Consequently the above test results suggest that the instruments used for measuring the constructs of interest in this study were statistically adequate.

Hierarchical regression models

Based on the above CFA model we performed a hierarchical regression analysis in the second stage of this study to reflect the proposed associations in our hypotheses. Table IV presents the results of this analysis.

Table IV shows that the statistical analysis in Step 1 includes seven control variables such as gender, age, etc. in a regression model for the purpose of reducing experimental errors and avoiding making unfounded inferences. The model in this step reveals only 1 per cent of the explained variance in helping intention. The statistical analysis in Step 2 adds commitment and reciprocity into a regression model, revealing 14 per cent of the explained variance in helping intention. The substantial difference in the explained variances between Steps 1 and 2 implies that social capital theory substantially helps to explain helping intention. The test results in Step 2 also show that both commitment and reciprocity are positively and significantly related to helping intention. The statistical analysis in Step 3 further adds shared codes/language and narratives into the previous model, revealing 22 per cent of the explained variance in helping intention. The test results in this step show that shared narratives rather than shared codes and language are positively and significantly related to helping intention.

Construct pair	χ^2_{169}	$\chi^2_{168} = 306.33$ (unconstrained model)	χ^2 difference ^a
(Commitment, Reciprocity)	444.85		138.52
(Commitment, Shared codes and language)	440.51		134.18
(Commitment, Shared narratives)	527.86		221.53
(Commitment, Centrality)	412.50		106.17
(Commitment, Network ties)	467.91		161.58
(Commitment, Helping intention)	492.93		186.60
(Reciprocity, Shared codes and language)	468.56		162.23
(Reciprocity, Shared narratives)	535.68		229.35
(Reciprocity, Centrality)	448.40		142.07
(Reciprocity, Network ties)	508.99		202.66
(Reciprocity, Helping intention)	493.45		187.12
(Shared codes and language, Shared narratives)	540.48		234.15
(Shared codes and language, Centrality)	446.16		139.83
(Shared codes and language, Network ties)	538.76		232.43
(Shared codes and language, Helping intention)	514.04		207.71
(Shared narratives, Centrality)	503.15		196.82
(Shared narratives, Network ties)	539.92		233.59
(Shared narratives, Helping intention)	520.22		213.89
(Centrality, Network ties)	413.35		107.02
(Centrality, Helping intention)	431.94		125.61
(Network ties, Helping intention)	449.74		143.41

Table III.
Chi-square difference tests for examining discriminant validity

Note: ^aAll significant at the 0.01 overall significance level using the Bonferroni method

	Helping intention							
	β	t	β	t	β	t	β	t
<i>Step 1</i>								
Gender	0.04	0.82	0.02	0.42	0.01	0.05	-0.02	-0.35
Age	0.01	0.75	-0.01	-0.08	0.01	0.08	0.01	0.16
Education								
Secondary school	0.09	0.96	0.05	0.62	0.06	0.71	0.07	0.86
University	-0.07	-1.15	-0.03	-0.49	0.01	0.08	-0.01	-0.01
Postgraduate	-	-	-	-	-	-	-	-
Experience								
Less than one year	0.17*	2.04	0.14	1.75	0.21**	2.69	0.15*	1.98
1-2 years	0.15*	2.19	0.11	1.66	0.11	1.77	0.08	1.32
More than two years	-	-	-	-	-	-	-	-
Position								
Management level	0.10	1.46	0.09	1.37	0.11	1.65	0.10	1.59
Non-management level	-	-	-	-	-	-	-	-
Marital status								
Married	-0.03	-0.34	0.02	0.23	-0.01	-0.06	-0.01	-0.16
Not married	0.04	0.44	0.09	1.09	0.08	1.10	0.09	1.22
Other	-	-	-	-	-	-	-	-
Monthly income								
Less than \$US1,500	-0.08	-0.88	-0.06	-0.73	-0.06	-0.72	-0.03	-0.42
\$US1,500-2,500	-0.02	-0.32	-0.03	-0.56	-0.03	-0.57	-0.05	-0.91
More than \$US2,500	-	-	-	-	-	-	-	-
<i>Step 2</i>								
Commitment			0.22**	4.19	0.14*	2.53	0.04	0.82
Reciprocity			0.23**	4.15	0.18**	3.30	0.13*	2.46
<i>Step 3</i>								
Shared codes and language					0.11	1.84	0.07	1.17
Shared narratives					0.29**	5.48	0.19**	3.59
<i>Step 4</i>								
Centrality							0.15**	2.92
Network ties							0.23**	4.53
Adjusted R^2	0.01	0.14	0.22	0.30				

Notes: Education, experience, position, marriage, and monthly income are included as control variables with a technique of dummy variables * $p < 0.05$; ** $p < 0.01$. “-” for the third level of the variable represents an omission from the regression equations because our specifying two dummy variables in this study automatically specifies the third one

Table IV. Coefficients and t values based on hierarchical regression models

Finally the statistical analysis in Step 4 adds centrality and network ties, suggesting 30 per cent of the explained variance in helping intention. It is surprising that, while centrality and network ties are positively and significantly related to helping intention, the relationship between commitment and helping intention changes from a significant level (in Steps 1 and 2) to an insignificant one (in Step 3). This empirical result suggests that structural capital will more strongly influence helping intention than relational capital by eliminating the effect of commitment (a form of relational capital). In summary reciprocity, shared narratives, centrality, and network ties are significantly related to helping intention, indicating that $H2$, $H4$, $H5$, and $H6$ are supported.

The unsupported *H1* and *H3* suggest that not all online social capital elements affect helping intention. Although commitment and reciprocity are both important and affect different aspects of online social functioning, reciprocity is more salient than commitment for helping intention given that reciprocity represents mutual interests that firmly connect IM users and ultimately facilitates the generation of helping intention. However the unexpected results for the unsupported hypotheses may warrant further study in order to explain them.

Discussion

This study explores online helping intention among IM users by applying social capital theory as the key theoretical foundation for our research model. Our empirical research into social capital and helping intention emphasises the social utility of developing and maintaining social relationships. This is a critical but often ignored aspect of IM applications (Li *et al.*, 2005). The test results of this study show that helping intention is positively affected by different social capital dimensions. More specifically, low helping intention is attributed to a lack of online social capital, which can result from weak reciprocity, shared narratives, centrality, and network ties. The findings of this study reveal that IM service developers and users who want to promote helping intention in their online social circles should provide technological functions (e.g. SlideShare.net particularly for IM users) and education (e.g. e-learning video clips) that facilitate the establishment of online social capital. These are both discussed in depth below.

To begin with, the significant association between reciprocity and helping intention indicates that IM service developers should focus on interactive IM features such as video conferencing and information sharing, which help foster reciprocal interaction among IM users in order to strengthen helping intention. In addition IM practices related to virtual trust and social identification (e.g. IM user ratings) can be embedded into online social activities so that IM users can learn appropriate online etiquette for interacting with others.

Second, the significant relationship between shared narratives and helping intention suggests that cognitive exchanges are important in boosting helping intention. In other words, a useful interchange of ideas and stories among IM users is likely to drive their helping intention, because of their shared experiences. IM service developers can create a variety of channels (e.g. online diary sharing) through which IM users can express and share their good or bad times with one another.

Third, the significant influence of centrality and network ties on helping intention indicates that structural capital is an indispensable social capital dimension that deeply affects helping intention. This finding suggests that structural bonds that tie people together to form close-knit social networks and strengthen people's sense of belonging in their social circles are likely to drive people's intention to help others. IM service developers can invent such social activities as online reunions that help people expand or maintain their social network ties in order that helping intention is increased among IM users. They can also develop IT functions that link people's daily events to online systems. For example people can be periodically reminded to send greeting or birthday cards to their online friends so that helping based on gradually cultivated structural capital can be fostered in the long run.

In summary this study recommends that those who support the establishment of helping culture among IM service developers and users emphasise relational, cognitive, and structural capital. Both IM service developers and users should realise that helping intention can be discouraged if any single dimension of social capital is ignored.

This study has some limitations that relate to the measurement and interpretation of results. The first limitation is the possibility of a common method bias by using a single questionnaire to measure all constructs, which may inflate the strength of the relationships among these constructs. Future researchers may apply different instruments than questionnaires to obtain their survey. The second limitation is that, in regard to helping others, this study has measured participants' intentions rather than their actual helping behaviour. However intentions are not necessarily good predictors of behaviour (Roozen *et al.*, 2001). The third limitation is the cross-sectional design employed in this study. Longitudinal studies in future research can provide complementary support to the inferences made in this study. For that reason the model developed and validated herein could benefit from being tested longitudinally. Future studies can try to improve the above shortcomings by directly observing the participants' actual helping behaviours over time. The genuine relationships between helping others and their antecedents among IM users may then be further revealed.

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