



Mobile instant messaging use and social capital: Direct and indirect associations with employee outcomes



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ABSTRACT

This study explores how mobile instant messaging use, affordances, and social capital may directly and indirectly influence positive employee outcomes. A field survey of 245 Hong Kong real estate agents showed that their mobile instant messaging (MIM) use and affordances were positively associated with job performance, job satisfaction, and relational satisfaction, and with online bridging and bonding social capital. While bridging capital was not associated with any of the three outcomes, bonding social capital was positively related to the two satisfaction measures. However (with one small exception), neither type of social capital mediated relationships between MIM use and affordances, and employee outcomes.

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1. Introduction

With high adoption rates of the smartphone in many countries, individuals are now able to communicate with others, use a wide variety of applications, and access the Internet nearly any time and any place [48]. Smartphone adoption among US adults nearly doubled from 35% in 2011 to 64% in 2015 (85% among 18–29-year-olds) [73]. In particular, smartphone users can communicate with their network contacts easily via mobile instant messaging services (MIMs), a portable form of instant messaging (IM). A recent PEW national US survey shows that just over a third (36%) of smartphone owners and 29% of adult Internet users use messaging applications (apps) [21]. MIM adoption by smartphone users is much higher in most other countries [24].

These MIMs are changing [A1] the way people communicate both socially and professionally. Mediated communication with infrequent as well as close contacts can build bridging or bonding social capital, that is, different resources embedded in different kinds of social relationships [23]. These resources in turn can be used for personal and social gains, including improving employee outcomes.

Our recent search of multiple relevant research databases (e.g., ABI/INFORM Complete, Computers & Applied Sciences Complete, and PsycINFO) indicates that previous research has examined social media use and social capital, or new media use and employee outcomes. However, surprisingly, no study has empirically investigated the relationships among new media use (in particular, MIMs), social capital, and employee outcomes. Our study focuses on the extent to which MIMs are directly associated with social capital and employee outcomes, and indirectly with employee outcomes through social capital.

2. Review

2.1. Social capital

Generally, social capital refers to an individual's social relationships that provide access to resources embedded in those relationships to the individual [79], and possibly for the relevant social grouping as well. Wilken [85] briefly notes the origins and evolution of the concept of social capital. Some conceptualize social capital as primarily an individual resource [15]. Others emphasize social capital as the resources embedded in relationships (not individuals) and social structure, instead of collective assets such as norms and trust [45]. Lin assumed that individuals, motivated by personal gains, actively seek opportunities and resources by negotiating their social environments. Still others

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consider social capital as more of a “public good” although often quite local, created and shared within a network [61], as a by-product of other activities [85]. The central components of social capital are social relations and norms of reciprocity [61]. People can potentially use social capital for both instrumental benefits (e.g., information acquisition, financial gains, and job leads) and emotional support (e.g., empathetic learning and expression of sympathy) [14,36,61]. Social capital is associated with productivity and economic outcomes, as it fosters coordination and cooperation [85].

Putnam’s [61] two-dimensional model of social capital, bridging capital and bonding capital, guides much research. *Bridging capital* refers to resources embedded in social network ties that are irregular or seldom frequent, heterogeneous in backgrounds, and low in interpersonal closeness. The low expectation of relational commitments and responsibilities in such weak ties allows easy inclusion of a large number of people with different views, information, resources, and talents. More diverse personal networks are related to a wide range of benefits, including health, innovations, knowledge, and job information [66]. Bridging capital can provide individuals with new opportunities, quick dissemination of information, high diversity in content and relations, and exposure to new ideas [38,61]. Bridging capital, resulting from communicating with diverse, weak ties, affords an individual a broad horizon, new opportunities, and exposure to a variety of information sources.

By contrast, *bonding capital* lies in close, strong, and homogeneous ties in an individual’s social network. These close ties, including family members and close friends, feel a sense of relational obligation and thus reciprocate emotional and substantive support for one another [1,61]. Strong ties and associated bonding social capital provide learning resources and socialization, social influence, and contextual information. Bonding social capital involves greater trust, reciprocity, and obligations. However, bonding social capital may also exclude outsiders, encourage excessive claims and requests, limit individual choice, reduce openness to new ideas, and reinforce conformity [10,45,66,70,85].

Bridging links actors across divisions, whereas bonding reinforces identities. They are not, however, mutually exclusive; indeed, both are necessary [85]. These two types of capital, although different, can complement each other in contributing to an individual’s ability to gain personal benefits, that is, converting social capital to tangible gains. The concept of social capital is directly relevant to collectivistic cultures (including Chinese culture) due to the emphasis of social relationships in everyday interactions. For example, the young Chinese generation accumulates both bonding and bridging capital via social networking sites [13].

2.2. IM in the workplace: usage and affordances

Present-day organizations rely on Internet-based computer technologies and mobile phones, including IM. D’Urso and Pierce [18] observed that the growing availability of communication technologies such as IM is transforming communication practices in the modern organization, and the workforce has become tech-savvy. IM is becoming a mainstream means of communication for both work and social purposes [47]. MIMs provide easy, fast, convenient, and nonintrusive ways of connecting with people [62]. Employees regularly carry out a variety of tasks during and outside of work locations and hours via IM [74]. Such IM use is quite pervasive among working professionals in China [54]. The five general purposes of IM use are to (a) quickly communicate information, (b) obtain information during a communication with a third party, (c) reach people who may be unavailable through other media, (d) obtain information from multiple parties, and (e) obtain information quickly in order to complete a task [57]. Mobile

phones with MIMs offer a wide variety of types of usage and affordances.

2.2.1. Usage

Prior work has identified at least four kinds of MIM usage relevant to this study: usage, services, features, and contacts. *Overall MIM usage* pertains to cumulative or total use of various capacities of MIMs. Some of the often-examined indicators of overall usages include years of using MIMs, total hours spent on MIMs daily or weekly, number of people cumulated on the contact list, and total number of people contracted daily (see the studies by Flanagin [25] and Sheer [69]).

Various MIM services are available for use on smartphones. The default messaging service associated with the phone number is installed by the mobile service provider. Users can easily receive and send text messages through such MIMs [6]. In addition, users can install free MIMs provided by social media. MIM apps grew nearly three times as fast as all mobile apps in 2014 [24]. The most frequently downloaded MIM apps in 2013 were Snapchat, Facebook Messenger, Kik Messenger, and Skype.

MIMs share some common *features*. The most basic feature is texting, or transmitting mobile-to-mobile text-based messages and emoticons. These MIMs allow users to express emotions via both verbal and nonverbal channels [40]. Other common features include instant transmission of images, and video and audio files [41,88]. Users can not only communicate with others one on one but also create mobile chat rooms to engage in mediated group discussions with multiple users (e.g., see Chinese user behavior in the study by Song and Wang [75]).

Mobile work contacts refer to people on an employee’s mobile contact lists with whom he/she communicates about work- or business-related matters. Employees increasingly use IM at work to communicate with colleagues [26]. For example, Cavazotte et al. [9] discuss lawyers’ use of mobile devices provided by their company. The lawyers appreciated the device because it facilitated efficient communication with clients and colleagues, regardless of time and place, and increased their accessibility. Matusik and Mickel [50] interviewed employees from different occupational settings and described similar findings. These employees explained that communication technology devices helped them save time, stay connected, and rapidly respond to business partners.

2.2.2. Affordances

Based on Gibson’s [27] general concept of affordances, media affordances are the kinds of uses or purposes to which users can put a particular medium. Media affordances are constituted through relationships between the actors, their uses of the medium, and the features of that medium [80]. Thus, while different media have more or less identifiable features or technological capabilities/constraints, affordances depend on how an actor perceives and uses the medium. In turn, different outcomes may be associated with a particular medium depending on which affordances emerge via which actors. Mobile phones may provide a wide array of (overlapping and not well-explicated) affordances (see Refs. [7,11,12,19,29,32,49,51,54,64]). One affordance constraint particularly relevant to this study is that mobile phone users usually need to know the other person’s phone number. Thus, texting or IM is especially related to interactions with specific individuals, and not to groups, organizations, or places [8].

2.3. New media and social capital

Social capital is an important construct for understanding the uses and implications of new media [23,43]. Researchers have been

interested in influences on and outcomes from social capital embedded in online and mediated networks (e.g., [38,59,65,83]). For example, studies have focused on social capital as an outcome from different social network/media sites (e.g., Facebook or Myspace) [23], intensity of Internet use [77,84], user characteristics (e.g., size and heterogeneity) of online networks [38], and differences between online and offline networks [82].

Communication with social contacts through the Internet, especially social media, can generate social capital (e.g., [13,20,23,43,59,67,84,87]). Internet users, compared to nonusers, tend to have a larger network of contacts, from whom the users could seek help [92]. Spending time using the Internet for networking and expanding network size is similar to investing in accumulating social capital [43]. Active participation in such networks helps gather resources that individuals can use for future needs [82]. One ongoing debate is whether online media (from Internet to mobile phones) favor the creation of bridging or bonding social capital.

2.3.1. Bonding social capital increases

Most people using mobile phones, and especially IM, typically maintain contact with a small number of close ties [11,30,37,46]. Media affordances of persistence and awareness may favor bonding over bridging social capital, by decreasing intransitivity among network relations, and therefore reducing diversity [29]. Thus, “. . . individuals who use technologies that afford persistence and awareness within a specific foci of activity, such as an organization [22,80], are most likely to experience increased access to resources” Hampton [29], p. 116).

2.3.2. Bridging social capital increases

Conversely, Internet use may contribute primarily to bridging capital because the Internet enables users to quickly build up a large number of contacts, but it simultaneously allows very little time to spend on each contact [23]. Others suggest that because they are individually owned, portable, and generally involve known contacts, mobile phones are highly individuating: their use may reduce broader involvement in society (e.g., bridging ties) [8]. Mobile phone use is not likely to increase network heterogeneity (and thus bridging social capital) because of users' intimate and local networks and shorter messages [91]. While various new media (Internet, blogging, sharing photos, social media) have differing relationships to network diversity, IM had no direct or indirect influence in Hampton et al. [30] study. Karikoski and Kilkki [35] (p. 115) concluded that “both SMSs and voice calls are used for bonding and bridging social capital, but SMSs are used more for bonding purposes than [are] voice calls.”

2.3.3. Both increase

Other studies and reviews find, however, limited support for perspectives that mobile communication constrains diverse, weak, and new tie contact [7]. Facebook features help users to form and maintain both strong ties (e.g., families and close friends) and weak ties (e.g., acquaintances and schoolmates), which contribute to both kinds of social capital [81]. Strong ties may be maintained or increased, without reduction in weak ties. Wilken [85] review reinforced that conclusion, but it also suggested that newer location-, content-, event-, or indirect link-based mobile phone apps help create bridging social capital among people who do not know each other.

2.4. The research context: real estate agents and MIM in Hong Kong

2.4.1. Real estate agents

A real estate agent's job typically includes searching, providing, and exchanging information with business partners and clients,

and communicating with them, for buying and selling real properties, while frequently on the move. Thus, they seek and exchange resources through close as well as temporary contacts. According to the National Association of Realtors in the US [52], 92% of real estate agents use smartphones for contacting clients making business referrals, and 80% of them access social media for real estate businesses. Real estate agents in the US use smartphones not only for personal daily use but for also for conducting businesses to enhance responsiveness and efficiency [16]. In addition to direct collaboration with colleagues and outside agents via mobile phones, real estate agents use mobile social network messaging to create and develop contacts for potential business [63]. Their work requires access to both dense trusted networks and diverse and changing networks. Thus, smartphone messaging not only helps real estate agents accomplish their work tasks (e.g., transmitting real estate information) but also provides opportunities to agents to conveniently network with, and develop new, contacts. Given these information and communication needs, for both performance and relationships, MIMs would seem particularly useful for real estate agents.

2.4.2. Hong Kong: media and real estate agents

In 2013, Hong Kong boasted the second highest smartphone penetration rate in the world at 87% among adults aged 15–64 years [48]. The continued increase in smartphone ownership triggered the rise of mobile Internet use (in particular, social networking and web search) in Hong Kong, where 76% of smartphone users engaged in mobile social networking [53]. With higher smartphone penetration rate than in the US [53], business-related use of smartphone among real estate agents in Hong Kong is likely to be more prevalent as well.

To examine MIM use and social capital among Hong Kong realtors, we first reviewed related literature, browsed real estate blogs, and interviewed realtors about the issues arising from the literature. These sources refer to many of the MIM *usage types* and *affordances* noted above. Cumulative, *overall usage* indicators provide information about the general MIM use patterns of real estate agents. Real estate agents can use their favored MIM *service* to communicate with their contacts for work collaboration with colleagues, do business with clients, and generate leads via informal social interactions with contacts [52]. In Hong Kong, the most frequently downloaded free MIMs included Facebook and WhatsApp, followed by Line and WeChat [33]. MIM *features* enable real estate agents to organize meetings, schedule appointments, send home listings and documents, and conduct other day-to-day activities in an efficient and timely manner [16]. Mobile *work contacts* for realtors entail colleagues (including coworkers and superiors), outside agents, clients, and other job-related contacts (e.g., attorneys and government officials). In addition to collaborating with colleagues and outside agents via mobile phones, real estate agents reportedly use mobile social network messaging to create and develop contacts for potential business [63]. These kinds of uses indicate that smartphones facilitate real estate work through a variety of *affordances*. Among others, these include scheduling and managing timing of interactions (including reducing interruptions), communicating and exchanging information with others across locations and time periods, accomplishing multiple overlapping tasks, and looking up relevant and time-sensitive real estate and financial information.

With a foundation of traditional Chinese values and the influence of the British colonial rule, Hong Kong is a fusion of Eastern and Western culture. Largely collectivistic in interpersonal relationships and task collaboration (particularly among in-group members), the working people in Hong Kong are accustomed to modern rational management practices [71]. In Hong Kong, one of the freest economies in the world, people are expected and

motivated to work hard for financial gains; fast pace, overtime work, long hours, and high levels of stress characterize the workplace [4]. The real estate workforces reflect the stressful, fast-paced, collectivistic work culture in Hong Kong.

This research context, reflecting both real estate professional culture and Hong Kong Chinese culture, is unlikely to differ drastically from real estate practices in Western countries. In their study of intercultural business negotiations, Sheer and Chen [72] concluded that professional culture tended to exert a much greater influence than national culture on business practices. Further, Hong Kong, a former British colony, has assimilated business practices heavily from Western traditions rather than “indigenous” Chinese traditions.

3. Model, hypotheses, and research questions

This review indicates that mediated communication interaction, in particular MIM use and affordances, creates and sustains social relationships that constitute social capital. By definition, social capital provides resources that might be convertible to outcomes – in this study, employee outcomes. Fig. 1 portrays our model of these relationships. MIM use and affordances are associated directly with selected employee outcomes and with social capital (although differentially for bridging and bonding), and indirectly with employee outcomes through the mediation of social capital. The following sections provide conceptual and empirical justifications, and related hypotheses, for these relationships. For relationships with insufficient prior theoretical or empirical bases for directional hypotheses, we raise associated research questions.

3.1. MIM affordances and use, employee outcomes, and social capital

3.1.1. Employee outcomes

Workplace IM use has been linked to a variety of employee outcomes, including job performance, job satisfaction, and relational satisfaction.

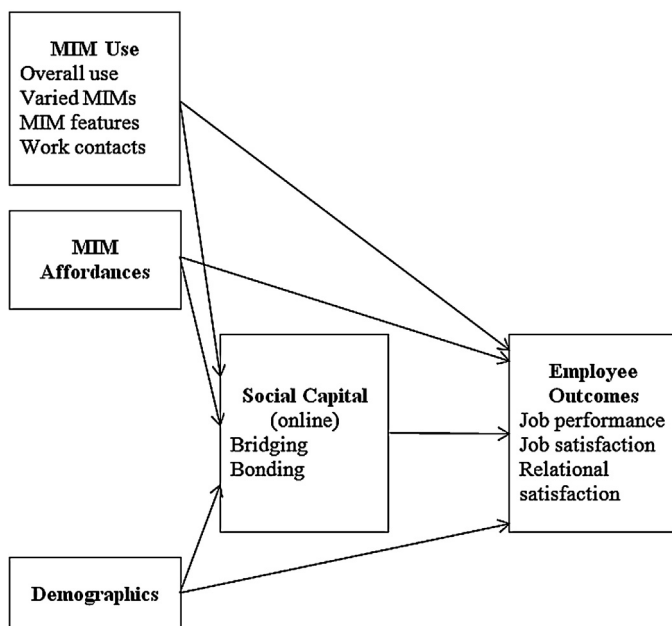


Fig. 1. Model of relationships of MIM use and affordances, and demographics, with online social capital and employee outcomes.

3.1.1.1. Job performance. IM has gained popularity in and outside the workplace due to its convenience and efficiency [17,68]. IM provides an efficient means of obtaining task-relevant information with minimal disruption, allows an employee to ask for clarifications without having to engage in a longer conversation, and facilitates low-intensity collaboration [26]. IM is also used for internal work collaboration, external collaboration with business partners, internal coworker relationship maintenance, and external relationship building with business partners [89]. Employees enjoy the convenience and efficiency of IMs for communicating work-relevant matters [17,90]. Further, one advantage of smartphone apps for MIMs is that usage is not charged against a phone’s short messaging service or data limits.

Task-relevant information transmitted in a timely way through IM can enhance low-intensity collaboration among employees and influence work outcomes [26]. Communication with coworkers via IMs can improve perceptions of greater individual and team productivities [68]. IM can support collaborative tasks and multitasking. Employees from three IT organizations in Pazos et al. [57], study provided examples, such as “(a) obtaining additional information about a project/task on which they were simultaneously working, (b) responding to queries about one project/task while simultaneously working on another project/task, and (c) being engaged in a low-intensity task (one that does not require intensive focus) and completing small, unrelated tasks simultaneously” (p. 77).

In one study of three organizations, IM use was associated with reductions in e-mail, voice mail, telephone, teleconference, pager, and face-to-face (ftf) communication, seen as an improvement in communication efficiency and effectiveness [49]. Ou and Davison [54] concluded from their study of working professionals in China that “IM can significantly contribute to communication performance in the workplace, where the benefits overwhelm the negative effects associated with work interruption” (p. 61). IM showed the strongest (positive) effect of all CMC tools on communication quality. Others (e.g., Goveia and Ou et al. [28,55] have also asserted that IM use can boost employee *job performance*.

One intriguing use of IM with both positive and negative implications is “invisible whispering” (similar to “backchannel”) – use during ftf or teleconferencing meetings, with others in the meeting or elsewhere [19]. This alters the meeting’s social and spatial boundaries, affecting the dynamics of collaborative decision making; allowing meeting direction, task support, clarification seeking, subgroup participation, and social support; and managing extra-meeting activities. This invisible whispering improved both meeting outcomes and individual performance relating to efficiency, effectiveness, participation, satisfaction, team relationships, and individual attention. However, it could also have mixed implications, such as overload, attention, and early decision closure.

3.1.1.2. Job satisfaction. Yet IM use in the workplace is not limited to tasks and explicit performance, because organizational members engage in both work and social communication [47]. Causal modeling of IM influences, use, and outcomes by Pi et al. [60] showed that IM use by employees in 15 companies was positively associated with satisfaction with both the formal and informal communication of an organization (although much stronger for the former). IM use in the workplace is said to positively affect organizational life [86], which enhances *job satisfaction*. However, the interruptions (and thus imposed multitasking) that also come with IM use seem to reduce process satisfaction (though only for monochronic, not polychronic, users) [44].

3.1.1.3. Relationship satisfaction. Employees with working relationships share task accomplishment goals, but they must first reduce uncertainty about work and social expectations, through communication, observations, and documents. They need frequent as well as spontaneous contact with each other so that they can discuss emerging issues whenever necessary and maintain mutual understanding about their projects [39]. IM supports a range of informal workplace communication activities [51]. IM can achieve synchronous, iterative communication, as well as provide asynchronicity for more thoughtful request or responses, provision of additional attached material, and continuation of the work context over time and place [12,49].

The contributions of IM to building relationships is by and large due to its easy-to-use rich media applications that provide a more social experience than e-mail communication (e.g., [40,58,86]). IM can help develop and maintain these relationships, within and across departments and organizations [12]. Text messaging can also maintain and strengthen personal relationships through increased flexibility of micro-coordinating and asynchronous contacting, instead of depending on prearranged times and places [11,85]. Employees use IMs not only to communicate with coworkers but also to maintain external relationships (e.g., business partners) [89]. For example, IM use in one Korean organization was associated with reported improvements in working relationships within and across departments, and across organizations [12]. Thus, IM use can increase *relationship satisfaction*.

H1: MIM use is positively associated with (a) job performance, (b) job satisfaction, and (c) relationship satisfaction.

RQ1: How are MIM affordances associated with employee outcomes of (a) job performance, (b) job satisfaction, and (c) relationship satisfaction?

3.1.2. Social capital

As communication and interaction function to create, maintain, and strengthen social networks [23] and social relationships [67], we would expect that uses of MIMs should influence bridging and bonding social capital, although possibly in different ways across media and across social capital types. The Chinese phenomena of *guanxi*, interpersonal relationships based on favor/social obligation exchange [42], directly pertains to the concept of social capital. For instance, Chinese working professionals use mobile devices to gain swift online *guanxi* that build trust and provided mutual benefits [56]. As noted previously, mobile phones in general and texting in particular reinforce bonding social capital, due to the need to know the other person's messaging account. However, professional information needs may also foster bridging social capital, from diverse sources and contacts. Similarly, Sun and Shang [78] analysis of responses from 281 Chinese users of intraorganizational microblogs showed that structural social capital mediated the relationship between social use of social media and work-related usage.

H2: MIM use is positively associated with (a) bridging and bonding social capital.

RQ2: How are MIM affordances associated with (a) bridging and (b) bonding social capital?

3.1.3. Social capital and employee outcomes

By definition, social capital should help foster instrumental as well as emotional benefits and other positive outcomes [5,61]. A pertinent question is whether social capital is positively associated with employee outcomes (e.g., whether real estate agents can convert their mediated social capital from business relationships to positive outcomes). Depending on the nature of one's work, job performance and job satisfaction may be affected by both bridging and bonding social capital. We might expect that relational

satisfaction would be most likely related to bonding social capital, as it explicitly emphasizes close social aspects.

H3: Bridging and bonding social capital are positively associated with (a) job performance, (b) job satisfaction, and (c) relationship satisfaction.

3.1.4. Social capital as mediator between MIMs and outcomes

At the conclusion of his review, Campbell [7] called for inclusion of mediators and moderators in the study of mobile phones and network effects, which may help make results more consistent. Thus, the final question of this study is whether MIM usage and characteristics affect employee outcomes directly, and/or indirectly, through their associations with social capital. In other words,

H4: (a) Bridging and (b) bonding social capital mediate the relationships between MIM usage and affordances, and employee outcomes.

4. Methods

4.1. Sample and procedures

Based on cultural equivalence, a back-and-forth translation between English, Chinese, and English was used to resolve discrepancies and create a Chinese version and an English version of the questionnaire. We use the Chinese version in the survey, but the English version for reporting purposes.

Two research assistants visited real estate offices in shopping malls in different parts of Hong Kong and conducted a field survey with real estate agents. These offices staffed an average of 12.5 agents, with a minimum of five and a maximum of 25 people. The two research assistants approached a total of 277 real estate agents; 250 of them completed written questionnaires, generating a response rate of 90.3%. All respondents reported using smartphones for daily communication. Of the 250 questionnaires, five from top-level managers who did not have commission-based clients and did not work as agents were not included, resulting in a final sample size of 245 real estate agents.

4.2. Measures

Principal components analysis (tables available from the authors) and Cronbach's alpha reliability provided the basis for mean scales.

4.2.1. MIM use

4.2.1.1. Overall use. Respondents wrote their best estimated answer to four questions about years using MIMs on their smartphone, average hours a day spent communicating with people via smartphone messaging, average number of people they communicated with daily via smartphone messaging, and the total number of people on one's smartphone contact list.

4.2.1.2. Varied MIMs. Respondents indicated, on a 1 (rarely) to 7 (frequently) scale, how often they used each of the following MIMs: default messaging provided by the telecom service provider, WhatsApp, Line, WeChat, Facebook, and other (specify; none mentioned).

4.2.1.3. MIM features. Respondents indicated, on a 1 (rarely) to 7 (frequently) scale, how often they used each of the following MIM features: text messaging, group chat, video, image/photo, audio, file attachment, and other (specify; none mentioned).

4.2.1.4. Work contacts. Respondents also answered, using a 1 (rarely) to 7 (frequently) scale, "How often do you use an MIM to

Table 1
Item and scale descriptives.

Survey Items and Scales	M	SD
MIM Usage		
Overall MIM usage		
Years of Using MIMs	3.7	2.12
Hours on MIMs Daily	5.0	2.47
People Contacted MIM Daily (values 1–4: 1–9 16.3%, 10–13 33.9%, 14–20, 32.2%, 21–100 17.6%) ^a	2.5	0.97
Total MIM Contacts (values 1–6: 1–50 4.5%, 51–100 11.0%, 101–280 33.5%, 281–500 38.0%, 501–700 8.2%, 701–1500 4.9%) ^a	3.5	1.1
Use of varied MIMs (frequency)	4.27	1.06
Default Messenger	3.1	1.88
WhatsApp	6.7	0.60
Line	3.4	2.27
WeChat	4.2	2.23
Facebook	4.0	2.17
Use of MIM features (frequency)		
Texting	6.3	1.31
Group Chat	5.6	1.75
Video	3.1	1.54
Image	5.8	1.19
Audio	3.1	1.71
File Attachment	3.3	2.07
Work contacts messaged (frequency) ($\alpha = 0.77$)	5.41	0.99
Coworkers	6.4	1.09
Superiors	5.2	1.74
Clients	6.1	1.15
Real estate agents outside company	4.3	1.56
Other business-related	5.1	1.49
MIM Affordances		
Control timing	5.5	1.28
Reduce interruptions	5.1	1.52
Increase communication	5.7	1.28
Timely communication	6.1	1.00
Monitor whether the other party is online	4.8	1.54
Connect people in different regions and time zones	5.9	1.04
Help with multitasking	5.9	1.11
Share information	6.0	0.95
Keep records	5.4	1.28
Enhance privacy (e.g., not to be heard by others)	5.0	1.46
Replace other channels (e.g., fax and telephone)	5.6	1.35
Social Capital		
Bridging social capital ($\alpha = 0.77$)	5.08	1.05
Interacting with people on my smartphone contact list makes me interested in things that happen outside of my town.	5.2	1.51
Interacting with people on my smartphone contact list makes me want to try new things.	4.8	1.46
Interacting with people on my smartphone contact list reminds me that everyone in the world is connected.	5.4	1.25
Talking with people on my smartphone contact list makes me curious about other places in the world.	4.9	1.57
Interacting with people on my smartphone contact list makes me feel connected to the bigger picture.	5.3	1.47
Bonding social capital ($\alpha = 0.71$)	4.48	1.00
If I needed an emergency loan of HK\$5000 I know someone on my smartphone contact list I can turn to.	3.2	1.81
The people I interact with on my smartphone contact list would be good job references for me.	5.1	1.24
There are several people on my smartphone contact list I trust to help solve problems.	5.4	1.25
There is no one on my smart phone contact list that I feel comfortable talking to about intimate personal problems. (reversed)	4.9	1.39
The people I interact with on my smart phone contact list will put their reputation on the line for me.	3.8	1.58
Employee Outcomes		
Job performance ($\alpha = 0.82$)	4.42	1.21
Income compared to others	4.3	1.44
Overall performance	4.5	1.19
Job satisfaction ($\alpha = 0.87$)	4.44	1.28
Satisfaction with income	4.4	1.41
Satisfaction with position	4.5	1.32
Relationship satisfaction ($\alpha = 0.84$)	5.06	1.09
Satisfaction with supervisor	5.1	1.19
Satisfaction with coworkers	5.0	1.15
Demographics		
Years of experience as agent	4.8	3.64
Years in company	3.5	2.67
Position (0, 1: management 15.1%, agent 84.9%)	0.85	0.36
Income Source (0, 1: salary & commission 13.1%, commission 86.9%)	0.87	0.34
Sex (0, 1: male 71.4%, female 28.6%)	0.29	0.45
Age (1–5: <20 4.5%, 21–29 31.0%, 30–39 38.4%, 40–49 16.7%, 50–59 9.4%)	3.0	1.02
Education (1–4: jr high diploma 5.7%, sr high diploma 79.6%, college/masters/PhD 14.7%)	3.1	0.44
Employees in company (values 1–4: 1–15 7.8%, 16–500 26.1%, 501–2000 53.5%, 2500 12.7%) ^a	2.7	0.79
Employees in office	12.5	7.13

^a Because of skewness, which standard transformations did not resolve, these three measures were recategorized into the approximately normally distributed categories shown.

communicate with the following people respectively?” for each of the following categories: coworkers, superiors, clients, real estate agents outside the company, and other business-related contacts. The scale was computed as the mean of the five items loading on one component.

4.2.2. MIM affordances

Respondents noted, on a scale from 1 (very little) to 7 (a great deal), “To what degree does MIM use help you gain the following advantages?” The 11 items included control timing, reduce interruptions, increase communication, have timely communication, monitor whether the other party is online, connect people in different regions and time zones, help with multitasking, share information, keep records, enhance privacy (e.g., not to be heard by another), and replace other channels (e.g., fax and telephone). These particular affordances were derived from the pilot review and interviews noted above. No consistent component emerged, so we use each affordance separately.

4.2.3. Social capital

The social capital measures were adapted from William [87]. Internet Social Capital Scale (ISCS), which consists of two subscales, bridging capital and bonding capital, for each of the online and offline contexts. We are concerned only with the two online subscales. With 10 items for each, Williams’ online bridging capital scale had a Cronbach’s α of 0.84, and the bonding capital scale had an α of 0.90. Because the reality of field surveys limits survey time, we created a short version from the original scales based on the statistics of the ISCS reported in two studies [76,87]. Five items of online bridging capital and five items of online bonding capital were selected based on the highest overlapping factor loadings reported in both studies (as no item-total correlations were reported in either study). The rating scale ranged from 1 (not at all) to 7 (very much so). Two mean scales were created from the two sets of unidimensional items.

4.2.4. Employee outcomes

These measured respondents’ reports of their job performance, job satisfaction, and relationship satisfaction. To ensure that the measures were efficient for the field survey and still showed interval-scale-like properties, two items were adapted from earlier works (e.g., [34,71] for each of the three outcomes. *Job performance* consisted of the mean of annual income compared to others (a highly relevant measure for real estate agents), and estimated overall performance, with response values ranging from 1 (extremely poor) to 7 (extremely good). *Job satisfaction* was the mean of satisfaction with annual income and position. *Relationship satisfaction* was the mean of satisfaction with relationship to one’s supervisor and to one’s coworkers. Respondents rated the four satisfaction items from 1 (highly dissatisfied) to 7 (highly satisfied).

4.2.5. Controls

These included gender (m/f), age, education, income source (salary and commission/commission), position (manager/agent), real estate agent experience (years), number of employees in the company, and number in the respondent’s office. Without providing a review, these controls are appropriate because of possible relations between women and relational satisfaction and social capital, age and performance (experience) and satisfaction (youthful valuation), education and performance (experience), income source (stable or fluctuating based on commissions) and relational satisfaction (an emphasis on sales), agent position and relationships (value of contacts), and more organizational and office employees and performance and social capital (access to resources and competition).

5. Results

5.1. Descriptives

Table 1 provides the descriptive statistics for all items and scales. (Correlation tables are available.)

5.1.1. Sample

Respondents averaged 4.8 (ranging from 0.5 to 20) years of experience as real estate agents and had been with their current company for an average of 3.5 years, with 15.1% upper- or lower-level managers and 84.9% frontline real estate agents. Furthermore, 13.1% received a basic salary or salary plus sales commission and 86.9% relied mostly on sales commission. Of the respondents, 28.6% were female. In addition, 4.5% of respondents were 20 years old or younger, 31% were between 21 and 29 years old, 38.4% between 30 and 39 years old, 16.7% between 40 and 49 years old, and 9.4% between 50 and 59. Of the total number of respondents, 5.7% graduated from junior high school, 79.6% from high school, and 15.7% from college or graduate school. Over two-thirds (68.2%) worked in large companies (>500 employees), and the mean number of employees in the office was 12.5.

5.1.2. MIM use

5.1.2.1. *Overall use.* Respondents on average had used MIMs for 3.7 years, spent 5 h a day using MIMs, messaged 17.2 people per day, and registered 321.3 total contacts (see note to Table 1 for skewness transformations).

5.1.2.2. *Varied MIMs.* WhatsApp was the most frequently used MIMs ($M=6.7$), followed by WeChat, Facebook, Line, and the default SMS messaging. WhatsApp was the only service used by everyone, with a minimum value of 4 (all of the others had a minimum of 1), and no combination of services represented a unidimensional scale. Thus, we used a simple mean index ($M=4.27$) of the five services in the multivariate analyses.

5.1.2.3. *MIM features.* The most frequently used MIM feature was texting ($M=6.3$), followed by image sharing (likely property photographs and maps) and group chat (as each possible deal involves multiple parties), with low use of file attachment, video, and audio ($M=3.1$).

5.1.2.4. *Work contacts.* Consistent with the literature on the prevalence of IM use in the workplace (e.g., [17,18], real estate agents communicated with coworkers most frequently, followed by clients and supervisors, and the least with external agents. The average frequency of communicating via MIMs with the five kinds of contacts was 5.41.

5.1.3. MIM affordances

The most important affordances were timely communication ($M=6.1$) and share information ($M=6.0$), with a smooth decline to the two least (but still) important, enhance privacy ($M=5.0$) and monitor whether the other party is online ($M=4.8$).

5.1.4. Social capital

Both *online bridging* ($M=5.08$) and *bonding* ($M=4.48$) social capital were significantly higher than the midpoint (4) of the response scale (one-sample t -tests, $t(244)=16.1$ and 7.5, respectively, both $p < 0.001$). Bridging was significantly greater than bonding social capital (paired t -test, $t(244)=9.28$; $p < 0.001$), and were positively correlated ($r=0.51$, $p < 0.001$).

5.1.5. Employee outcomes

Job performance ($M=4.42$), job satisfaction ($M=4.44$), and relationship satisfaction ($M=5.06$) were significantly greater than the midpoint (4, neutral) of the response scale (one-sample t -tests, $t(244)=5.4, 5.4, \text{ and } 15.2$, respectively; all $p < 0.001$).

5.2. Hypotheses and research questions

For H1, RQ1, H2, and RQ2, we use hierarchical linear regression, with separate blocks for each of the MIM use concepts, affordances, and demographics. We also use stepwise entry within blocks with more than one variable.

5.2.1. MIM use and affordances and employee outcomes (H1a, b, and c; RQ1a, b, and c)

Thirty-nine percent of the variance in performance was explained by several MIM use variables – daily hours, mean MIM services frequency, and mean number of work contacts – and by less use of MIMs for record keeping, but not by any MIM features. Demographic influences included greater number of years as an agent, higher education, and working for an

organization with fewer overall employees. Forty percent of job satisfaction was similarly explained by more daily hours of MIM use, mean MIM service frequency, and mean number of work contacts, and by less use of MIMs for timely communication, but not by any MIM features. The only demographic influence was working for an organization with fewer overall employees. Finally, 43% of relational satisfaction was explained by no overall MIM use measure, and by lower MIMs services frequency, less use of image but more of audio features, and more work contacts. Significant affordance influences were further reduction of interruptions, but less privacy enhancement. Demographic influences included more years as an agent, being an agent as opposed to having at least some managerial responsibilities, and being female and younger. Table 2 presents the results for H1–RQ1.

5.2.2. MIM use and affordances and social capital (H2a and b; RQ2a and b)

More significant influences were noted on online bridging (61% of variance explained) and bonding (44%) social capital, especially more of MIM features and affordances, but not simple hours used. For bridging social capital, significant usage influences included a

Table 2
Hierarchical regressions on employee outcomes and social capital.

Explanatory variables	H1a, b, c; RQ1			H2a, b; RQ2	
	Performance	Job satisfaction	Relational satisfaction	Bridging social capital	Bonding social capital
MIM Use					
Overall use					
Years of Using MIMs	–	–	–	–	0.28***
Hours on MIMs Daily	0.52***	0.52***	–	–	–
People Contacted MIM Daily	–	–	–	–	–
Total MIM Contacts	–	–	–	0.12**	0.27**
Varied MIMs					
Mean 5 MIMs	0.23***	0.10*	–0.13*	0.12**	0.14**
MIM features					
Texting	–	–	–	–	–0.18***
Image	–	–	–0.24***	–	–
Group Chat	–	–	–	0.21***	0.10*
File Attachment	–	–	–	–	–
Video	–	–	–	0.11*	–
Audio	–	–	0.20***	0.20***	–
Work contacts	0.13*	0.24***	0.37***	0.10*	0.23***
MIM Affordances					
Control timing	–	–	–	–	–0.20***
Reduce interruptions	–	–	0.25***	0.20***	–
Increase communication	–	–	–	0.14**	0.42***
Timely communication	–	–0.21***	–	–	–0.23***
Monitor whether the other party is online	–	–	–	0.23***	–
Connect people in different regions and time zones	–	–	–	–	–
Help with multitasking	–	–	–	–	0.15**
Share information	–	–	–	–	–
Keep records	–0.12*	–	–	–	0.14*
Enhance privacy (e.g., not to be heard by others)	–	–	–0.17**	–	–
Replace other channels (e.g., fax and telephone)	–	–	–	–	–
Demographics					
Years experience as agent	0.17**	–	0.45***	–	–
Years in company	–	–	–	0.34***	–
Position	–	–	0.15*	0.16**	0.11*
Income source	–	–	–	–	–
Sex	–	–	0.17**	0.21***	–
Age	–	–	–0.25***	–	–
Education	0.12*	–	–	0.11*	–
Organizational employees	–0.13**	–0.12**	–	–	–
Office employees	–	–	–	–	–
Final adj R ²	0.39	0.40	0.43	0.61	0.44
Final F	(7, 239) = 23.1***	(5, 239) = 33.6***	(10, 234) = 19.2***	(13, 231) = 30.8***	(12, 232) = 16.8***

Note: values are standardized beta coefficients.
N = 245.

Variables within each concept entered stepwise.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

longer contact list; more frequent use of MIM services; use of the video-, audio-, and file-sending features; and greater extent of the affordances of reducing interruptions, increasing communication, and monitoring whether the other party is online. Demographic influences included greater tenure with the agent's company, being an agent without managerial responsibilities, being female, and having higher education.

Online *bonding social capital* had a wide array of influences, in some cases the reverse of bridging capital influence. Usage variables included more years using MIMs, a longer contact list, greater frequency of MIM services, not using texting but using group chat, and communicating with more work contacts. Influential affordances included less control of timing and less timely communication, but increased communication, help with multitasking, and privacy enhancement. The only significant demographic association was being an agent with less managerial responsibilities.

5.2.3. Social capital and employee outcomes (H3a, b, and c)

Here we, use linear regression with the two social capital explanatory variables force-entered in the first block. Online

bridging social capital was not significantly associated with performance ($\beta = -0.01$), job satisfaction ($\beta = -0.06$), or relational satisfaction ($\beta = 0.06$). Online bonding social capital was not significantly associated with performance ($\beta = 0.06$), but with job satisfaction ($\beta = 0.16, p < 0.01$) and relational satisfaction ($\beta = 0.14, p < 0.05$). Only 4% of the variance in performance was explained by the overall regression, but 9% for job satisfaction, and 15% for relational satisfaction.

5.2.4. Negative associations

Several of the hypothesized and research question relationships were significantly negative in the final regressions (Table 3). The mean use of the five MIM services ($\beta = -0.21, p < 0.001$) and sending audio files ($\beta = -0.11, ns$) were associated with less bonding social capital. Developing trust and support among close ties requires time and ongoing interactions; emphasizing speed and scheduling does not seem to accomplish bonding capital. Taking advantage of the affordance of record keeping via MIMs was related to lower performance ($\beta = -0.12, p < 0.05$), and taking advantage of more timely communication is associated with less job satisfaction ($\beta = -0.20, p < 0.001$). The first may be due to the

Table 3
Hierarchical regressions of employee outcomes, with social capital as mediator.

Explanatory variables	H3a, b, c; H4 a, b		
	Performance	Job satisfaction	Relational satisfaction
Social Capital			
Bridging	-0.01	-0.06	0.02
Bonding	0.06	0.16**	0.16**
R ² change	0.04	0.09	0.14
F change	(2, 242) = 4.8**	(2, 242) = 11.9***	(2, 242) = 20.8***
MIM Use			
Overall use			
Hours on MIMs Daily	0.52***	0.51***	-
Varied MIMs			
Mean 5 MIMs	0.22***	0.07 ns	-0.21***
MIM features			
Image	-	-	0.07
Group Chat	-	-	-
Audio	-	-	-0.11 + ns
Work contacts	0.12***	0.21***	0.34***
R ² change	0.29	0.31	0.13
F change	(3, 239) = 34.8***	(3, 239) = 40.2***	(4, 238) = 10.2***
MIM Affordances			
Reduce interruptions	-	-	0.21***
Timely communication	-	-0.20***	-
Keep records	-0.12*	-	-
Enhance privacy	-	-	-0.08 ns
R ² change	0.02	0.02	0.04
F change	(1, 238) = 6.7**	(1, 238) = 9.6**	(2, 236) = 6.9***
Demographics			
Years experience as agent	0.17**	-	0.43***
Position	-	-	0.16*
Sex	-	-	0.10 ns
Education	0.12*	-	-
Age	-	-	-0.26***
Organizational employees	-0.13**	-0.12*	-
R ² change	0.06	0.01	0.11
F change	(3, 235) = 7.9***	(1, 237) = 5.3*	(4, 232) = 9.9***
Final adj R ²	0.39	0.41	0.42
Final F	(9, 235) = 18.0***	(7, 237) = 24.7***	(12, 232) = 15.5***

Note: values are standardized beta coefficients.

N = 245.

First block force-entered both social capital variables. Variables within each subsequent concept block were force-entered. Only significant explanatory variables from the regressions of Table 2 were used in this regression, for direct comparison for moderation effects.

Italicized coefficients indicate possible mediation. See text.

* p < 0.05.

** p < 0.01.

*** p < 0.001.

**** p < 0.10.

small keyboards and limited searching features of MIMs, the second to increased pressures of accessibility and response obligations.

5.2.5. Mediation by social capital of relationships between MIM use and affordances and employee outcomes (H4a and b)

For testing H4a and b, we use hierarchical regression, entering bridging and bonding social capital in the first block, and the significant explanatory variables from the H1 and H2 regressions, each force-entered within their relevant blocks. If a relationship in the H1 or H2 regressions was significant, but not in the H4 regression, which is noted as “ns” in Table 3, and considered potential evidence of full moderation by a significant social capital variable. Partial moderation would be indicated by a substantial decline in a still significant coefficient. Further, both conditions would require initial significant relationships between MIM use and the particular social capital, and social capital and the particular outcome [3].

For *performance* (adjusted $R^2 = 39\%$), there was no significant influence of bridging or bonding capital, and no substantive changes in the other coefficients, representing no mediation. For *job satisfaction* (41%), bonding capital was a significant influence ($\beta = 0.16$, $p < 0.01$), but there was no substantive drop in other coefficients. *Relational satisfaction* (43%) was also significantly influenced by bonding capital ($\beta = 0.16$, $p < 0.01$), and it mediated the influence of the affordance of enhanced privacy (from $\beta = -0.17$, $p < 0.01$ to $\beta = -0.08$ ns). However, this affordance was not a significant influence on bonding capital, so this change does not represent mediation either. The one remaining indicator of mediation is the role of mean varied MIMs: it had a significantly negative influence on *relational satisfaction* ($\beta = -0.13$, $p < 0.05$), but a significantly positive influence on *bonding* ($\beta = 0.14$, $p < 0.01$) (Table 2), and a significantly negative influence on *relational satisfaction* controlling for bonding ($\beta = -0.21$, $p < 0.001$). Thus we directly tested for the mediation effect of mean varied MIMs on *relational satisfaction* by *bonding social capital*, controlling for the other significant influences in the H4 regression: work contacts, reduce interruptions, years as agent, position, and age. The PROCESS [31] mediation analysis module for SPSS (model 4) indeed showed that the mediation was significant, but very small. The direct effect was ($\beta = -0.28$, $p < 0.001$, $SE = 0.056$, $CI -0.39$ to -0.17), while the indirect (mediation) effect was low and barely significant ($\beta = 0.03$, $p < 0.05$, $SE = 0.017$, $CI 0.01-0.08$).

Thus, there is moderate direct influence on employee outcomes by bonding or bridging social capital (neither for performance, only bonding for job satisfaction and relational satisfaction). However, very little evidence of mediation by online bridging or bonding social capital exists. Rather, online bridging and bonding social capital largely influence some employee outcomes independently from, but complementary to, some types of MIM use and some affordances.

6. Discussion

6.1. MIM use by real estate agents

The agents were quite heavy MIM users, which is not surprising for a job that requires constant finding and exchanging property and financial information with both coworkers and clients. Although the agents used the feature of text messaging most frequently, they preferred the newer social media-based messaging services that have both the basic texting feature and advanced capabilities such as group chat and sending images. They valued several MIM affordances, such as increasing communication, sharing information, connecting people in different regions and time zones, and multitasking.

6.2. MIM use and employee outcomes

The primary MIM factors associated with employee outcomes were hours per day, frequency of using a variety of MIM services, and frequency of communicating with work contacts. Controlling for social capital and use of MIM features were not significantly associated with any of the three outcomes. Only a few affordances were related to these outcomes. Lower performance was associated with using MIMs to keep records, because either jobs requiring a lot of record keeping were more administrative (although there was no significant difference in this affordance between respondents who had at least some managerial role and those who were only agents) or such record keeping interfered with the primary goals of real estate agent work. Using MIMs for timely communication was negatively associated with job satisfaction, perhaps because that need implies stressful, high-paced work. Interestingly, relational satisfaction was associated with using MIM to reduce interruptions. That is, this affordance allowed users to focus more on the current interpersonal communication, emphasizing the relationship. Consistent with the literature review on IM use, these findings clearly show that, in modern real estate agencies, communication technology is playing an important role in daily routines. Different aspects of MIM use and affordances contribute to an employee's job performance, job satisfaction, and relationship satisfaction.

6.3. MIM use and social capital

The real estate agents reported a higher bridging capital than bonding capital, as reported elsewhere. All four categories of MIM use, a number of affordances, and multiple demographics contributed to social capital, but patterns of associations were quite different for the two types of social capital. Unique or stronger associations with *bridging capital* seem to indicate a slightly more instrumental use of MIMs involving multiple parties and multimedia resources and features, managing focus on and access to others, higher seniority, and perhaps more homophily (female and higher education). Unique or stronger associations with *bonding capital* include longer time/experience with using MIMs, longer contact lists, less texting, more frequent communication with work contacts, less affordance for controlling time and timely communication, more affordance for increased communication, help with multitasking, and keeping records. These associations indicate a higher investment in stronger, more, and less managed interactions; after all, stronger social relationships need time to develop. These findings are consistent with the findings of the literature (e.g., [23,67]) in that an agent accumulates social capital from people he/she interacts within his/her networks.

6.4. MIM use, social capital, and employee outcomes

Approximately 40% of the variance in performance, job satisfaction, and relational satisfaction scales was explained by different combinations of social capital, MIM use, MIM affordances, and demographics. Different aspects of MIM use were associated with the two types of social capital, which were differentially related to the outcomes. However, taking into account MIM use and affordances, and demographics, only online bonding social capital was associated with job satisfaction and relational satisfaction, but not with job performance. The stronger bonds within close others in one's networks and the more informational and connectedness resources available thus improve satisfaction with both job and relationships. Further, these relationships were independent of the associations between MIM use and affordances and demographics. Thus, social capital does not mediate, but

complements the other influences on employee outcomes. Intriguingly, controlling for the other influences, relational satisfaction is either not associated or negatively associated with MIM use and features, although is associated with communication with more work contacts through IM, and bonding social capital.

6.5. Theoretical implications

Our findings support the link between mobile communication and social capital in that real estate agents' greater use of MIM to communicate with their work contacts was associated with more of both types of online social capital, which subsequently but differentially affect employee outcomes. These results suggest that bonding capital and bridging capital need to be treated as related but individually viable constructs, as they are differentially associated with MIM uses and affordances, and behave differently in contributing to employee outcomes. In particular, bonding capital seems to foster positive psychological outcomes (job and relational satisfaction) but not tangible outcomes (performance). Our results reinforce prior theorizing that online bonding social capital is more enduring and psychologically rewarding than bridging capital.

Two issues arise regarding further theoretical development in understanding the relationships among mobile communication (here, IM), social capital, and employee outcomes. The first issue stems from our finding that the links between mobile communication and social capital and the social capital and employee outcomes are independent of each other (i.e., only one slight mediation by social capital between MIM use and employee outcomes). Possibly, certain types of mobile communication are instrumental and directly serve organizational outcomes, while other types foster social capital that does not translate to employee outcomes immediately. The second issue pertains to what conditions facilitate the conversion of social capital fostered by MIMs to tangible work outcomes. Time needed to convert social capital to tangible outcomes can be a good indicator of conversion efficiency.

6.6. Practical implications

Communication technology is central to daily activities in modern organizations. Respondents in the present sample were voluntary, heavy users of IM on their smartphones for their mobile and information- and relationship-intensive work-related activities. They took advantage of advanced, multimedia features in communicating with work contacts (coworkers and clients) and accumulated resources from their social capital, which led to improved (at least psychological) outcomes. These results lend support to the general positive impact of technology on some organizational processes and psychological outcomes, but with attention to negative implications of some of the features and affordances. Organizations with characteristics similar to real estate firms can encourage employees to use new communication technologies to improve task and psychological conditions. For example, managers can consider using mobile messaging as a legitimate means to increase work connectivity, particularly for group tasks that involve input and feedback from participating members who are not at the same locale. At the same time, organizations need to maintain a balance between encouraging members to engage in work-related mobile communication and demanding timely responses – as the latter could increase work pressure and interruptions and decrease job satisfaction. In a broader sense, mobile messaging extends work connectivity beyond the boundaries of work units and those of organizations, so the role of the organization may not be as central as it has been (see Ref. [50]). Accordingly, organizations may need to adjust their

communication technology policies to accommodate the increasing work connectivity with external members.

6.7. Limitations and future research

Appel et al. [2] critiqued the Williams [87] measures as not valid indicators of the structural aspects of social capital. This study did not have network measures (as we surveyed individuals from different agencies), but future research on associations of real estate agents' use of new media, their social capital, and employee outcomes should include structural indicators. The scope of generalizing research findings often is limited due to sample characteristics and research design. In particular, current findings may be generalizable only to organizations with work routines and interactions similar to real estate companies. Although this study provides empirical support for the theoretical relationships between MIM use and social capital and relationships between social capital and employee outcomes, the close-ended research design did not probe how MIM use contributed to social capital and employee outcomes, particularly as features and affordances did not play much of a role statistically. Follow-up studies can add a more qualitative approach to examine how MIM interaction fosters social capital and how social capital facilitates certain employee outcomes. For example, communication themes, topic initiation and responding, and differentiation in interaction with strong ties versus weak ties could be three interrelated research areas. Future research is also needed to explore why social capital so far was associated with psychological outcomes but not with more tangible employee outcomes.

References

- [1] P.S. Adler, S. Kwon, Social capital: prospects for a new concept, *Acad. Manage. Rev.* 27 (1) (2002) 17–40.
- [2] L. Appel, P. Dadlani, M. Dwyer, K.N. Hampton, V. Kitzie, Z.A. Matni, P. Moore, R. Teodoro, Testing the validity of social capital measures in the study of information and communication technologies, *Inf. Commun. Soc.* 17 (4) (2014) 398–416.
- [3] R.M. Baron, D.A. Kenny, The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations, *J. Pers. Soc. Psychol.* 51 (6) (1986) 1173–1182.
- [4] R. Bishop, Can Hong Kong companies balance work and life? *Human Resources*, November, 10–13, Retrieved from http://www.communitybusiness.org/library/News/2011/201111_IHRM.pdf (2011).
- [5] P. Bourdieu, The forms of capital, in: J.G. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education*, Greenwood, New York, 1985, pp. 241–258.
- [6] A.F. Cameron, J. Webster, Unintended consequences of emerging communication technologies: instant messaging in the workplace, *Comput. Hum. Behav.* 21 (1) (2004) 85–103.
- [7] S.W. Campbell, Mobile communication and network privatism: a literature review of implications for diverse, weak, and new ties, *Rev. Commun. Res.* 3 (1) (2015) 1–20.
- [8] S.W. Campbell, N. Kwak, Mobile communication and social capital: an analysis of geographically differentiated usage patterns, *New Media Soc.* 12 (3) (2010) 435–451.
- [9] F. Cavazotte, A.H. Lemos, K. Villadsen, Corporate smart phones: professionals' conscious engagement in escalating work connectivity, *New Technol. Work Employ* 29 (1) (2014) 72–87.
- [10] W. Chen, The implications of social capital for the digital divides in America, *Inf. Soc.* 29 (1) (2013) 13–25.
- [11] W. Chen, R. Ling, Mobile media and communication, in: P.J. Schulz, P. Coblely (Eds.), *The Handbook of Communication Science* (vol. 5, Communication and Technology, L. Cantoni & J. Danowski, eds.) (pp. 323–344), SAGE Publications, Thousand Oaks, CA, 2015.
- [12] H.-K. Cho, M. Trier, E. Kim, The use of instant messaging in working relationship development, *J. Comput. Mediated Commun.* 10 (4) (2005), doi: <http://dx.doi.org/10.1111/j.1083-6101.2005.tb00280.x>.
- [13] S.C. Chu, S.M. Choi, Social capital and self-presentation on social networking sites: a comparative study of Chinese and American young generations, *Chin. J. Commun.* 3 (4) (2010) 402–420.
- [14] J.S. Coleman, Social capital in the creation of human capital, *Am. J. Sociol.* 94 (1988) S95–S120.
- [15] J.S. Coleman, *Foundations of Social Theory*, Belknap Press, Cambridge, MA, 1990.

- [16] M. Collis, What a mobile, technology-driven age means for real estate agents, Retrieved from <http://blog.softwareadvice.com/articles/crm/mobile-technology-age-for-real-estate-agents-1011012/> (2012)
- [17] A.F. Cook, Type. Send. Communicate: text and instant messaging within the workforce and its effects on management, Presented at the Annual Conference of the National Communication Association, San Diego, CA, USA, 2008 (November).
- [18] S.C. D'Urso, K.M. Pierce, Connected to the organization: a survey of communication technologies in the modern organizational landscape, *Commun. Res. Rep.* 26 (1) (2009) 75–81.
- [19] A.R. Dennis, J.A. Rennecker, S. Hansen, Invisible whispering: restructuring collaborative decision making with instant messaging, *Decis. Sci.* 41 (4) (2010) 845–886.
- [20] J. Donath, Signals in social supernets, *J. Comput. Med. Commun.* 13 (1) (2007) 231–251.
- [21] M. Duggan, *Mobile Messaging and Social Media*, Pew Research Center: Internet, Science & Tech., 2015 (Retrieved from <http://www.pewinternet.org/2015/08/19/mobile-messaging-and-social-media-2015/>, August 19).
- [22] N.B. Ellison, J.L. Gibbs, M.S. Weber, The use of enterprise social network sites for knowledge sharing in distributed organizations: the role of organizational affordances, *Am. Behav. Sci.* 59 (1) (2015) 103–123.
- [23] N.B. Ellison, C. Steinfield, C. Lampe, The benefits of Facebook friends: social capital and college students' use of online social network sites, *J. Comput. Mediated Commun.* 12 (4) (2007) 1143–1168.
- [24] Emarketer.com, What's up with the US? (Not WhatsApp—Yet). Retrieved from <http://www.emarketer.com/Article/Whats-Up-with-US-Not-WhatsAppYet/1010892qLY7LQ4w> (2014).
- [25] A.J. Flanagin, IM online: instant messaging use among college students, *Commun. Res. Rep.* 22 (3) (2005) 175–187.
- [26] K.R. Garrett, J.N. Danziger, IM = Interruption management? Instant messaging and disruption in the workplace, *J. Comput. Mediated Commun.* 13 (1) (2008) 23–42.
- [27] J.J. Gibson, *The Ecological Approach to Perception*, Lawrence Erlbaum Associates, Hillsboro, NJ, 1986.
- [28] T. Goveia, Communications: faster and shorter, *Can. Bus.* 81 (17) (2008) 25–26.
- [29] K.N. Hampton, Persistent and pervasive community new communication technologies and the future of community, *Am. Behav. Sci.* 60 (1) (2016) 101–124.
- [30] K.N. Hampton, C. Lee, E.J. Her, How new media affords network diversity: direct and mediated access to social capital through participation in local social settings, *New Media Soc.* 13 (7) (2011) 1031–1049.
- [31] A.F. Hayes, Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-based Approach, Guilford Press, New York, 2013.
- [32] V. Hu, J.F. Wood, V. Smith, N. Westbrook, Friendships through IM: Examining the relationship between instant messaging and intimacy, *J. Comput. Mediated Commun.* 10 (1) (2004). <http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.2004.tb00231.x/abstract>.
- [33] IPSOS, Media atlas Hong Kong, Retrieved from <http://www.casbaa.com/images/stories/atac/features/MediaAtlasHongKong2011/hongkongmediaatlas1q42011.pdf> (2011)
- [34] S.M. Jex, T.W. Britt, *Organizational Psychology: A Scientist-Practitioner Approach*, Wiley, Hoboken, NJ, 2008.
- [35] J. Karikoski, K. Kilkki, Building social capital with mobile communication services, *Int. J. Electron. Finance* 7 (2) (2013) 115–131.
- [36] M. Kikuchi, C.L. Coleman, Explicating and measuring social relationships in social capital research, *Commun. Theor.* 22 (2) (2012) 187–203.
- [37] H. Kim, G.J. Kim, H.W. Park, R.E. Rice, Configurations of relationships in different media, *J. Comput. Mediated Commun.* 12 (4) (2007) 1183–1207.
- [38] T. Kobayashi, Bridging social capital in online communities: heterogeneity and social tolerance of online game players in Japan, *Hum. Commun. Res.* 36 (4) (2010) 546–569.
- [39] R.E. Kraut, C. Egido, J. Galegher, Patterns of contact and communication in scientific research collaboration, in: J. Galegher, R.E. Kraut, C. Egido (Eds.), *Intellectual Teamwork: Social and Technological Foundations of Cooperative Work*, Lawrence Erlbaum Associates, Hillsdale, NJ, 1990, pp. 149–171.
- [40] S. Lancaster, D. Yen, A. Huang, S. Hung, The selection of instant messaging or e-mail: college student's perspective for computer communication, *Inf. Manage. Comput. Secur.* 15 (1) (2007) 5–22.
- [41] G. Lawton, Instant messaging puts on a business suit, *Computer* 36 (3) (2003) 14–16.
- [42] D.Y. Lee, P. Dawes, Guanxi, trust, and long-term orientation in Chinese business markets, *J. Int. Mark.* 13 (2) (2005) 28–56.
- [43] D.J. Leiner, R. Hohlfeld, O. Quiring, What people make of social capital online: empirical study on capital conversion via networking sites, Paper Presented at the Annual Meeting of the International Communication Association, Marriott, Chicago, USA, 2009 (Retrieved from http://citation.allacademic.com/meta/p298562_index.html).
- [44] H. Li, A. Gupta, X. Luo, M. Warkentin, Exploring the impact of instant messaging on subjective task complexity and user satisfaction, *Eur. J. Inf. Syst.* 20 (2) (2011) 139–155.
- [45] N. Lin, *Social Capital: A Theory of Social Structure and Action*, Cambridge University Press, New York, NY, 2001.
- [46] R.S. Ling, *New Tech, New Ties*, MIT Press, Cambridge, MA, 2008.
- [47] J. Mackiewicz, C. Lam, Coherence in workplace instant messages, *J. Tech. Writing Commun.* 39 (4) (2009) 417–431.
- [48] Mobilezine, Hong Kong has the second highest smartphone penetration in the world (Retrieved from <http://mobilezine.asia/2013/01/hong-kong-has-the-second-highest-smartphone-penetration-in-the-world/>) (2013).
- [49] M.J. Muller, M.E. Raven, S. Kogan, D.R. Millen, K. Carey, Introducing chat into business organizations: towards an instant messaging maturity model, GROUP '03: Proceedings of the 2003 International ACM SIGGROUP Conference on Supporting Group Work, New York, NY: ACM, 2016, pp. 50–57.
- [50] S.F. Matusik, A.E. Mickel, Embracing or embattled by converged mobile devices? Users' experiences with a contemporary connectivity technology, *Hum. Relat.* 64 (8) (2011) 1001–1030.
- [51] B.A. Nardi, S. Whittaker, E. Bradner, Interaction and outeraction: instant messaging in action, CSCW '00: Proceedings of the 2000 ACM Conference on Computer-supported Cooperative Work, New York, NY: ACM, 2000, pp. 79–88.
- [52] National Association of Realtors, REALTOR® technology survey report 2012; (Retrieved from <http://www.realtor.org/research-and-statistics/research-reports#tech>) (2013).
- [53] Nielsen, News release: Smartphone ownership on the rise in Asia Pacific (Retrieved from http://jp.en.nielsen.com/site/documents/SPLm-jun12_FINAL.pdf) (2012).
- [54] C.X.J. Ou, R.M. Davison, Interactive or interruptive? Instant messaging at work, *Decis. Support Syst.* 52 (1) (2011) 61–72.
- [55] C.X.J. Ou, R.M. Davison, X. Zhong, Y. Liang, Empowering employees through instant messaging, *Inf. Technol. People* 23 (2) (2010) 193–211.
- [56] C.X.J. Ou, P.A. Pavlou, R. Davison, Swift Guanxi in online marketplaces: the role of computer-mediated-communication technologies, *MIS Q.* 38 (1) (2014) 09–230.
- [57] P. Pazos, J.M. Chung, M. Micari, Instant messaging as a task-support tool in information technology organizations, *J. Bus. Commun.* 50 (1) (2013) 68–86.
- [58] A. Peslak, W. Ceccucci, P. Sendall, An empirical study of instant messaging (IM) behavior using theory of reasoned action, *Inst. Behav. Appl. Manage.* 11 (3) (2010) 263–278.
- [59] J. Phua, S.A. Jin, 'Finding a home away from home': the use of social networking sites by Asia-Pacific students in the United States for bridging and bonding social capital, *Asian J. Commun.* 21 (5) (2011) 504–519.
- [60] S.-M. Pi, Y.-C. Liu, T.-Y. Chen, S.-H. Li, The influence of instant messaging usage behavior on organizational communication satisfaction, Proceedings of the 41st Hawaii Conference on System Sciences (2008) 449–458, doi:<http://dx.doi.org/10.1109/HICSS.2008.445> (January, IEEE).
- [61] R.D. Putnam, *Bowling Alone: The Collapse and Revival of American Community*, Simon & Schuster, New York, 2000.
- [62] A. Ramirez Jr., J. Dimmick, J. Feaster, S. Lin, Revisiting interpersonal media competition: the gratification niches of instant messaging, e-mail, and the telephone, *Commun. Res.* 35 (4) (2008) 529–547.
- [63] Real Estate Insider Magazine, Best smartphone: Comparing smartphones for real estate agents (Retrieved from <http://www.realestateinsidermag.com/business-tips/comparing-smartphones-for-real-estate-agents/>) (2013).
- [64] J. Rennecker, A.R. Dennis, S. Hansen, Reconstructing the stage: the use of instant messaging to restructure meeting boundaries, Proceedings of the 39th Annual Hawaii International Conference on System Sciences, Washington, DC: IEEE Computer Society, 2006 (p. 27. 1).
- [65] P. Resnick, Beyond bowling together: sociotechnical capital, in: J. Carroll (Ed.), *HCI in the New Millennium*, Addison-Wesley, Boston, MA, 2001, pp. 247–272.
- [66] E.M. Rogers, *Diffusion of Innovations*, 5th ed., Free Press, New York, NY, 2003.
- [67] H. Rojas, D. Shah, L.A. Friedland, A communicative approach to social capital, *J. Commun.* 61 (4) (2011) 689–712.
- [68] B. Shaw, D.A. Scheufele, S. Catalano, The role of presence awareness in organizational communication: an exploratory field experiment, *Behav. Inf. Technol.* 26 (5) (2007) 377–384.
- [69] V.C. Sheer, Teenagers' use of MSN features, discussion topics, and online friendship development: the impact of media richness and communication control, *Commun. Q.* 59 (1) (2011) 82–103.
- [70] V.C. Sheer, Supervisors' use of influence tactics for extra-role tasks: perceptions by ingroup versus outgroup members in organizations in Hong Kong, *South. Commun. J.* 77 (2) (2012) 143–162.
- [71] V.C. Sheer, In search of Chinese paternalistic leadership: conflicting evidence from samples of mainland China and Hong Kong's small family businesses, *Manage. Commun. Q.* 27 (1) (2013) 34–60.
- [72] V.C. Sheer, L. Chen, Successful Sino-Western business negotiation: participants' accounts of national and professional cultures, *J. Bus. Commun.* 40 (1) (2003) 50–85.
- [73] A. Smith, U.S. smartphone use in 2015, Pew Internet and American Life Project <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/> (April 1) (2015).
- [74] D.M. Smith, Prediction: IM will take over, *Bus. Commun. Rev.* 37 (8) (2007) 9.
- [75] B. Song, W. Wang, Instant messaging continuance: a media choice theory perspective, *Front. Bus. Res. China* 5 (4) (2011) 537–558.
- [76] M.A. Stefanone, K.H. Kwon, E. Lackaff, Exploring the relationship between perceptions of social capital and enacted support online, *J. Comput. Mediated Commun.* 17 (4) (2012) 451–466.
- [77] S. Sum, M.R. Mathews, M. Pourghasem, I. Hughes, Internet technology and social capital: how the internet affects seniors' social capital and well-being, *J. Comput. Mediated Commun.* 14 (1) (2008) 202–220.
- [78] Y. Sun, R. Shang, The interplay between users' intraorganizational social media use and social capital, *Comput. Hum. Behav.* 37 (2014) 334–341.

- [79] S. Szreter, Social capital, the economy, and education in historical perspective, in: S. Baron, J. Field, T. Schuller (Eds.), *Social Capital: Critical Perspectives*, Oxford University Press, Oxford; New York, 2000, pp. 56–77.
- [80] J.W. Treem, P.M. Leonardi, Social media use in organizations: exploring the affordances of visibility, editability, persistence, and association, *Communication Yearbook*, vol. 36, Routledge, New York, NY, 2012, pp. 143–189.
- [81] S. Valenzuela, N. Park, K.F. Kee, Is there social capital in a social network site? Facebook use and college students' life satisfaction, trust, and participation, *J. Comput. Mediated Commun.* 14 (4) (2009) 875–901.
- [82] M. Vergeer, B. Pelzer, Consequences of media and Internet use for offline and online network capital and well-being: a causal model approach, *J. Comput. Mediated Commun.* 15 (1) (2009) 189–210.
- [83] B. Wellman, K. Frank, Network capital in a multi-level world: getting support from personal communities, in: N. Lin, K. Cook, R. Burt (Eds.), *Social Capital: Theory and Research*, Aldine de Gruyter, Hawthorne, NY, 2001, pp. 233–273.
- [84] B. Wellman, A.Q. Haase, J. Witte, K. Hampton, Does the Internet increase, decrease, or supplement social capital? *Am. Behav. Sci.* 45 (3) (2001) 436–455.
- [85] R. Wilken, Bonds and bridges: mobile phone use and social capital debates, in: R.S. Ling, S.W. Campbell (Eds.), *Mobile Communication: Bringing Us Together and Tearing Us Apart*, Transaction Publishers, New Brunswick, NJ, 2011, pp. 127–149.
- [86] J. Wilkins, R U ready for IM? *Inf. Manage. J.* 41 (3) (2007) 3–27.
- [87] D. Williams, On and off the net: scales for social capital in an online era, *J. Comput. Mediated Commun.* 11 (2) (2006) 593–628.
- [88] S. Yang, Y. Lu, S. Gupta, An empirical investigation of mobile services' cross-category promotions, *Int. J. Mob. Commun.* 11 (6) (2013) 580–596.
- [89] S. Zhang, J. Fjermestad, Instant messaging: observations from two small e-commerce businesses, *J. Enterp. Inf. Manage.* 21 (2) (2008) 179–197.
- [90] L. Zhou, An empirical investigation of deception behavior in instant messaging, *IEEE Trans. Prof. Commun.* 48 (2) (2005) 147–160.
- [91] T. Kobayashi, K. Ikeda, K. Miyata, Social capital online: collective use of the internet and reciprocity as lubricants of democracy, *Inf. Commun. Soc.* 9 (5) (2006) 582–611.
- [92] J. Boase, J. Horrigan, B. Wellman, L. Rainie, *The Strength of Internet Ties*, Pew Internet and American Life Project, Washington, DC, 2006. http://www.pewinternet.org/files/old-media/Files/Reports/2006/PIP_Internet_ties.pdf.

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