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Considering Cultural Differences with the Use of Twitter on a Mobile Communication Device under a Dispersed Group Collaboration Context

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ABSTRACT

The impact of technology on society is clear and profound, but the influence of society on technology is more subtle. The wave of social media on mobile communication devices has hit the shores of many countries. However, the influence of culture on these technologies is less obvious. This is an empirical study about Twitter on a mobile communication device (TMCD) used in group collaboration, undertaken to ascertain and gauge the user group's subtler exhibitions and behaviors from two opposite cultures: western and eastern. To outline TMCD impact on group communication, a baseline of online message board (OMB), a common form of computer-mediated communication (CMC), is used in a comparative analysis. A total of 167 MBA and undergraduate students from the United States and South Korea representing western and eastern cultures participated this experiment. This study revealed a mixed result in the cultural difference between the two countries. In the TMCD category, the Korean groups exhibited 1) a significantly higher number of initiatory tweets and 2) a significantly higher number of tweets promoting group harmony by virtue of their agreement with each other. But the Korean groups failed to exhibit 1) a significantly higher number of friendly tweets, and 2) a significantly high level of pro-activeness by tweeting more to each other to accomplish the given task than the U.S. groups. The data analysis result and discussion are provided.

Keywords

Cultural difference, Twitter, Mobile communication device, Group collaboration, Computer-mediated communication

INTRODUCTION

Social media has become a "hot" topic in many mass media reports. In contrast to skeptics who have questioned the legitimacy and the core value of social media, social media has firmly established its niche and continues to make its impact felt on many facets of our society. On a similar level, mobile communication devices and technologies have advanced rapidly and are also making the news headlines more recently (e.g., iPhone and Android smartphones and iPad and Galaxy tabs). The combination of social media and mobile communication brings to our society an unprecedented synergy in contrast to recent years. This combination not only impacts the technology sector and the communication sector, but also appears to touch many other sectors of our society. The MCD users are broadening their MCD usage to include many group activities. Equipped with features, such as online access, multimedia capability, texting, one-to-many, and many-to-many real-time communications, social media on MCD platform reveals its potential in dispersed group collaboration and in a decision-making environment. This judiciously fits the bill for busy field business professionals who often grapple with time constraints. The diverse applications and consumers' high satisfaction levels will continue to transform the way we communicate.

The phenomenon is not exclusive to the western world. According to a market research report (Pyramid-Research 2009), China will soon be the world's largest smartphone market, surpassing the U.S. market. Furthermore, countries, such as Brazil, India, Nigeria, Russia, and Turkey are expected to expand with compound annual growth rates exceeding 30% over the next five years. By the year 2015, smartphone sales are expected to grow eight times as fast as conventional cellphone

sales. It is estimated that three in five mobile phones sold in 2015 will be smartphones, up from one in five in 2010 (IDC 2011). This is largely due to the market demand in data-driven communication.

Social media is largely responsible for the smartphone's focus on data-driven communication. The best-known social media platform, Facebook, reports that there are more than 70 different language translations available, with some 70% of Facebook users outside the United States (Facebook 2011). Recent field reports show startling growth figures in Facebook memberships in countries such as China, Taiwan, Kuwait, Philippines, Thailand, and Brazil during the last 12 months (Check-Facebook 2011).

The most popular micro-blogging tool, Twitter, has emerged as the global platform for people to exchange real-time events and information. It has also become the vehicle of choice when addressing a large body of people. Twitter played a catalytical role in the recent revolution in the Middle East countries (Croovitz 2011; Wagstaff 2011). According to this research, Twitter, together with Facebook relayed the Middle East's desire for social liberty and freedom to the rest of the world. Twitter also provided an emergency reporting system during Japan's Tsunami in 2011. Twitter captured the full details of the disaster, tweeting them in real-time to the rest of the world, far more quickly than any of the world's leading mass media (Taylor 2011). Led by Facebook and Twitter, the social media and smartphone or mobile communication device (MCD hereafter) combination is now one of the most mentioned global topics around the world.

With these facts on the table, the question now is how people in different parts of the world use these technologies; more specifically, how do people use these technologies differently according to their various customs and social norms? Within a group decision-making context, the consequences of using such technology are significant, leading to a more efficient sharing of information, resource allocation and utilization, and an increase in productivity. The information systems research community needs to share its research focus from the long-lived personal computer to MCD.

By using two "opposite" cultures, the western versus the eastern, we may better gauge their distinct differences. In this study, we expect to contribute to the culture-technology category with our major research question: Are there truly significant cultural differences between the two cultures in the use of Twitter on MCD (hereafter TMCD) under group decision-making, and how are these differences manifested? The online message board (hereafter OMB) by personal computer is used to serve as the baseline.

LITERATURE REVIEW

As broad, wide, and complex as culture itself, the term "culture" has generated diverse definitions according to different perspectives and domains. From a behavioral science perspective, culture is defined as "that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society" (Tylor, 1920, page 1). From an education perspective, culture is understood as "the values, symbols, interpretations, and perspectives that distinguish one people from another in modernized societies" (Banks and McGee-Banks 2010, page 8). A socio-psychology view describes culture as "the collective programming of the mind that differentiate a group of people from another group" (Hofstede 2010, page 6). These many different definitions of culture agree that the culture variable is a major influencing variable in many disciplines. The culture domain itself also features research inquiries into its intricate layers, its subculture, and acculturation (Chun and Organista 2003; Gelder 2007; Walsh 2010).

In western and eastern societies, distinct cultural differences are deeply entrenched and manifested in communication; yet, the differences are subtle and hard to detect. Lee and Park (2011) report how Koreans and Americans expressly different sentiments – using "apology" versus "thank you" – in order to achieve the same goal. Wagatsuma and Rosett (1986) find the implications of issuing an "apology" are different in Japanese and American cultures. These kinds of differences are also evident in self-disclosure within online group communication. The notion of self-disclosure refers to how each member forms a closer relationship with other members by disclosing one's personal stories or information. This prompts other members to do the same, hence the expectation of a better group understanding and tighter group cohesion. Americans exhibit a positive correlation between self-disclosure and trust; but, in contrast, Koreans show an inverse association, while Japanese show no significant association (Yum and Canary 1997; Yum and Hara 2005). With Koreans and Japanese, an immediate response or show of reciprocity does not reveal any signs of the inverse or no association; and they are difficult to discern.

Similarly, it is hard to detect the subtle difference in technology adoption and usage between cultures (Haddon 2004). The 'Social Shaping of Technology' view (MacKenzie 1999) argues that many aspects of a technology are fundamentally influenced by the social context in which it is utilized. This study suggests that the technology would support the society's values and norms. This 'Domestication of Technology' (Haddon 2004) leads to different attitudes, perceptions, and

interpretations among different countries. For example, a person in the U.S. typically would not answer a call from an anonymous person or a stranger, but in a country like Morocco, that call would be answered. This is due to a custom in Morocco where a stranger is always welcomed and given hospitality. For many centuries, Morocco's harsh desert climate has cultivated this ethic to its people: to be generous and hospitable to a stranger who may be in a danger, stranded in the middle of the desert and in need of help.

Acknowledging the culture variable and its influence, the questions are how, how much, and how specifically, does culture impact certain areas (Connaughton and Shuffler 2007; Lee and Lee 2003; Leidner and Kayworth 2006; Li 2007; Reinig and Mejias 2004; Schmorrow and Nicholson 2011; Sia et al. 2009; Türetgen et al. 2008). In summary, many studies feature the putative western culture versus the eastern culture comparison. In these studies, the western culture, seen as the more individualistic culture, exhibits a greater degree of self-efficacy, self-expression, and self-empowerment, whereas the eastern or collectivistic culture exhibits a greater degree of group conformity, group cohesiveness, and group harmony (Ahuja 2002; Andrew et al. 2007; Im et al. 2011; Kim et al. 2010). Respecting the significance of these culture's distinct profiles, many business organizations foreground such cultural factors in their global strategies, especially when designing and formulating their communication medium (Baack and Singh 2007; Singh et al. 2006; Usunier et al. 2009).

RESEARCH FRAMEWORK

When surveying other disciplines in order to identify a suitable culture model, no particular model stands out. Each discipline has its own "lens," and through that "lens" it views the cultural factor and interprets it. The popular Hofstede's five dimension cultural model has been subject to criticism; the Hofstede's model, which only used interviews by IBM employees, fails to account for the growth of such internal cultural diversities (Ess and Sudweeks 2005). In an increasingly interconnected world, with global exchanges and transactions, a country's culture evolves constantly and attains cultural diversity.

Instead of latching on to one particular model, it would be plausible to utilize the various cultural dimensions from multiple models. The following dimensions provide a useful list of categories for a comparative analysis: *Uncertainty avoidance*; *Power distance*; *Masculinity-Femininity*; *Horizontal and Vertical Individualism - Collectivism*; *Time-orientation*; *Monochronism-Polychronism*; *Context*; and *Locus of Control* (Faiola and Matei 2005; Hall 1983; Hewling 2005; Hofstede 2010; Lee et al. 2007; Smith et al. 1995; Triandis and Suh 2002). The dimensions are defined as follows: *Uncertainty Avoidance Index* – measures the level of a group's tolerance on uncertainty and ambiguity. *Power Distance Index* – measures the extent to which the less powerful members of organizations and institutions accept and expect that power is distributed unequally. *Masculinity vs. Femininity* – measures how a group exhibits more of either men's or women's values. The men's values are assertive and competitive, while the women's values are modest and caring. *Horizontal and Vertical Individualism vs. Collectivism* – measures the level of group conformity among the group members. Horizontal individualism describes a person who pursues his/her own interests, whereas vertical individualism describes a person who strives to be the best in the group. *Time orientation* – measures how a group exhibits more of either long-term values, such as thrift and perseverance or short-term values, such as obligations and saving one's 'face.' *Monochronism-Polychronism* – measures how time is used, such as one unit at a time or multiples at any given time. *Context* – measures how communication is based on implicit information or based on explicit information. *Locus of control* – measures the degree to which a person perceives his or her life is influenced by others or is controlled by oneself.

This study was conducted in both the United States and South Korea: the two countries that best represent the two opposing cultures. Some notable facts about South Korea are: a rich long tradition, covering 5000 years of history; a booming economy, with a market economy ranking of 14th in the world; one of the leading nations in adopting new technologies and innovations; a high literacy rate; a dense population; a country divided into North and South; a culture which maintains strong "superior-subordinate relationships" among individuals across many societal groups and organizations. "Superior-subordinate relationships" refers to a form of collectivism. In South Korea, an individual with age seniority, an earlier graduation or admission date (etc.), receives or assumes seniority or the superior status within a relationship or a group. In contrast to Korea, the United States is notable for the following facts: it is a relatively new country, founded over 200 years ago; it is the world's leading industrial country; the highest producer of technologies and innovations; it has a moderate level of population; unlike eastern culture, it has no "superior-subordinate relationships."

Hypotheses Development

In group studies, we find that peer trust and persuasion is a great influence in a group context (Sia et al. 2009). In eastern culture, which is predominantly collectivist, there is a significantly greater conformity to the group norm than in the western culture, which is more individualist. In the use of social media, we see similar results. Kim et al. (2011) reports that Korean groups use social media to positively reinforce and strengthen their social relationships, whereas American groups place more emphasis on seeking entertainment and other individual-driven social venues. This study delineates that, given the opportunity, eastern culture groups choose to embrace the group norm and acceptance among peers, rather than pursue one's own interests. Choi et al (2011) presents a study that has the following findings: American college students form a wider and looser network of online friends, including new friends, but Korean college students form a much tighter and denser network, involving only those friends who are in a more advanced stage of friendship.

Further studies confirm this collectivistic behavior from the eastern culture countries. The individuals in these collectivist cultures clearly 1) show a stronger affinity toward group affiliation and acceptance and 2) strive for group conformity. This differs from the people from individualist cultures who are 1) more willing to pursue individual interests and 2) more willing to deal with ambiguous messages (Bouas and Arrow 1996; Jarvenpaa and Leidner 1999).

Within a group collaboration and decision-making context, we find similar results. A group decision-making study that used face-to-face and CMC as communication modes and a pool of Chinese college students, reported a low number of conflicts during group process (Li 2007). Another study, on the effect of cultural diversity on group effectiveness and performance, indicates that homogenous groups exhibited significantly higher levels of satisfaction and cohesion than heterogeneous groups (Zhao and Rosson 2009). Additionally, this study reports that the virtual heterogeneous group performed far better than the face-to-face heterogeneous group. Here, with the virtual technology "suppressing" some of the cultural impacts, the magnitude of cultural impact and difference becomes apparent.

Given the aforementioned studies and findings, we argue that Korean groups will decisively seek group acceptance and conformity by actively sending and exchanging messages between members. Moreover, they will devote more time to socially friendly messages to lower the barrier in achieving their objectives. This is often manifested through the use of animated messages and emoticons, such as the smiley and through paralanguages.

H1: In the TMCD category, the Korean groups will exhibit a *significantly higher number of new (initiatory) tweets* than the U.S. groups.

H2: In the TMCD category, the Korean groups will be pro-active by *tweeting significantly more to each other* to accomplish the given task than the U.S. group

H3: In the TMCD category, the Korean groups will exhibit a *significantly higher number of friendly tweets* than the U.S. groups.

H4: In the TMCD category, the Korean groups will exhibit a *significantly higher number of tweets* that promote group harmony by agreeing with each other than the U.S. groups.

Experiment Design

A pool of university students and MBA students from the U.S. and South Korea volunteered to participate in the experiment. A preliminary evaluation was assessed with the participants to measure each student's background and their fluency level with TMCD. We then divided the group into two distinct categories. The first group, the TMCD category, was formed with participants who owned a smartphone, such as iPhone or Android, and who also used Twitter. The second group, the online message board (hereafter OMB) category, was formed with the remaining participants. The OMB used 'Google Groups' (<http://groups.google.com>), which is publicly available and has enough functionality for asynchronous communication. The experiments were conducted twice in Korea and once in the U.S. A total of 167 university students in 33 four-man groups, 10 three-man groups, and 1 five-man group participated.

The experiment facilitator checked and confirmed the Twitter ID of each participant; he also forwarded the other group members' IDs, and the assigned group number information. A high level of attention and supervision was exercised to ensure that no other medium was used except the assigned medium, TMCD and OMB by each group. For each team, a set of business problems was assigned as a task within a ten-day timeframe. The groups were directed to actively discuss the topic, issues, and questions, and compromises on a final group consensus and solution, which was then written up as a report.

A total of six tasks were assigned, with each task given to one TMCD group and to one OMB group, minimum. To ensure enough variances in task characteristics, the tasks came from various sources. The first three tasks – Zappos, RFID, and Starbucks – were case studies from an Information Systems textbook (Rainer and Turban 2010). The fourth and fifth tasks – University Ethics Committee and Noble Industries – were adopted from previous empirical studies (Choi 2004; Strauss and McGrath 1994). The sixth task, the McDonald’s case was a Harvard Case. After each team submitted their report, all messages exchanged were collected for further analysis.

RESULTS

Two different types of data – the contents of messages and the post-experiment questionnaire – were analyzed in this study. The content dataset provides subjects’ actual communication, while the questionnaire shows subjective perceptions.

Content Analysis

With no previous similar studies to draw upon, the profound challenge of this research was in developing the message coding instrument. Upon reviewing the message content, the following message labels were devised and used;

- *Task-specifics*: If the message addresses the task then it is a task-specific message. Within this group, the messages are further refined to following sub-groups: initiatory message; referred message; process related message; and non-task specific message.
- *Friendliness*: The extent to which a message is friendly or unfriendly.
- *Agreeableness*: Whether a message agrees or disagrees with previous messages.

The average total number of messages were not significantly different between the U.S. and Korea groups and between the TMCD and OMB groups. More rigorous analyses were conducted on the sub categories of messages. The non-parametric analysis method was employed because the distribution of the number of messages did not follow normal distribution. The analysis results are summarized in Table 1.

Message Types		Korea		U.S.	
		Average Numbers	Average %	Average Numbers	Average %
Average number of messages		17.3	100%	14.1	100%
Friendliness	Unfriendly	0.0	0.0%	0.8	1.3%
	Neutral	11.8	67.6%	13.2	94.4%
	Friendly*	5.5	32.4%	1.4	4.3%
Task specifics	Initiatory*	12.3	72.0%	5.1	42.6%
	Referred	0.4	2.3%	0.1	0.8%
	Process*	3.3	18.9%	6.6	49.8%
	Non-task specific	1.3	6.8%	3.6	6.8%
Agreeableness	Agree	2.4	11.7%	1.9	13.7%
	Neutral	14.0	82.2%	13.4	85.0%
	Disagree*	0.9	6.1%	0.1	1.3%

*: significantly ($\alpha=0.05$) different across Korea and the U.S.

Table 1. Average numbers of messages

The Korean group had significantly more friendly messages, initiatory messages, and disagreeing messages. The discrepancy may come from the differences in the total number of messages. The ratio of messages (number of messages / total number of messages) in each category was also analyzed using the same non-parametric method. The results were the same as in Table 1, except that the number of messages that were neutral in friendliness was also significant (the U.S group had more neutral messages).

In order to test the hypotheses, the TMCD group was separated and more analyses were conducted on this group. The results are summarized in Table 2.

Message Types		Korea	U.S.
Average number of messages		24.7	17.4
Friendliness	Unfriendly	0.0	1.3
	Neutral	18.0	14.3
	Friendly*	6.7	1.8
Task specifics	Initiatory*	18.7	5.1
	Referred	1.0	0.0
	Process	4.0	6.4
	Non-task specific	1.0	5.9
Agreeableness	Agree	4.5	1.8
	Neutral	19.5	15.5
	Disagree	0.7	0.2

*: significantly ($\alpha=0.05$) different across Korea and the U.S.

Table 2. Average numbers of messages (TMCD group)

Table 2 shows that with TMCD, the Korean group had significantly more friendly messages and more initiatory messages. Process-related messages and disagreeing messages, which were significantly different with entire groups (Table 1), were not significantly different.

A general linear model (GLM) analysis was performed using country and communication mode as the main factors while the task type was controlled. A small number of groups were formed with either three or five members; this group size variance was controlled as a covariate. The results (Table 3) show that there is no significant difference between the two countries in the number of messages and the number of friendly (or unfriendly) messages. The Korean group had a significantly larger number of disagreeing messages than the U.S. group. The results also show significant interaction effects between the country and communication mode with the number of initiatory messages, the number of referred messages, and the number of agreeing and disagreeing messages.

Dependent Variables	Independent Variables	F values
Number of initiatory messages	Communication mode	3.7*
	Country	1.6
	Mode*Country	3.6*
Number of referred messages	Communication mode	2.3
	Country	0.1
	Mode*Country	8.1**
Number of agreeing messages	Communication mode	3.6*
	Country	0.1
	Mode*Country	4.9**
Number of disagreeing messages	Communication mode	0.3
	Country	12.9**
	Mode*Country	1.3

* : significant at $\alpha=0.1$; ** : significant at $\alpha=0.05$

Table 3. GLM analysis on messages

The interaction effects between communication mode and country on a number of initiatory messages, a number of referred messages, and a number of agreeing messages are graphically illustrated in Figure 2. The first graph in Figure 2 shows that the Korean group using OMB has initiatory messages similar to the U.S. group; however, the Korean group using TMCD has a significantly higher number of initiatory messages than the U.S. group. This supports *H1: In the TMCD category, the Korean groups will exhibit a significantly higher number of new (initiatory) tweets than the U.S. groups.*

Figure 2 also shows that the Korean group has significantly more agreeing messages than the U.S. group in the TMCD category. This provides support for *H4: In the TMCD category, the Korean groups will exhibit a significantly higher number of tweets that promotes group harmony by agreeing with each other more than the U.S. groups.*

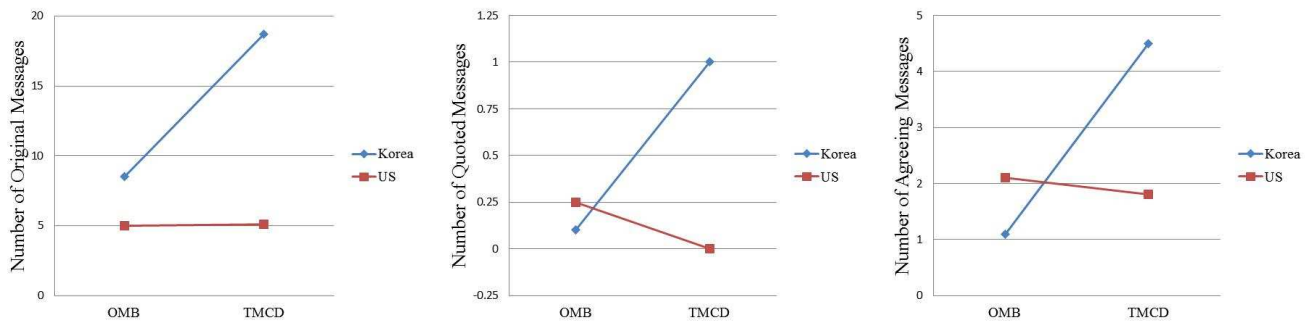


Figure 2. Interaction effects on number of messages

There was no statistically significant difference between the Korean and the U.S. groups in the number of messages. Therefore, *H2: In the TMCD category, the Korean groups will be pro-active by tweeting more to each other to accomplish the given task than the U.S. group* was not supported. The analysis result shows that the number of friendly messages is not significantly different between the Korean and the U.S. groups. This did not support *H3: In the TMCD category, the Korean groups will exhibit a significantly higher number of friendly tweets than the U.S. groups.*

Post-Exp Questionnaire Analysis

To analyze user experiences, a post-task questionnaire was designed and administered. The questionnaire measured levels of satisfaction with communication and outcomes, conflict, and team cohesiveness. The measurement constructs and items were adopted from previous studies (Chidambaram 1996; Choi 2004; Majchrzak et al. 2005; Pornsakulvanich et al. 2008). After eliminating invalid answers, the number of respondents totaled 84 (43 from Korea and 41 from the U.S.). To ensure instrument validity and reliability, a factor analysis, using the Principle Component and VARIMAX methods, was performed. Items with factor loading values below 0.5 were removed (Fields 2009).

The finalized constructs' Cronbach's alpha values were all acceptable (> 0.7). The factor scores of the five constructs were used as dependent variables in the subsequent analyses. A GLM analysis was performed to examine the effect of culture and its interaction effects with communication mode. Task type was entered as control variables in the GLM analysis. All constructs, except conflict were significant as summarized in Table 4.

Dependent Variables	Independent Variables	F values
Communication Quality	Mode	1.1
	Culture	1.1
	Culture * Mode	3.9*
Communication Satisfaction	Mode	0.8
	Culture	0.1
	Culture * Mode	8.1**
Outcome Satisfaction	Mode	0.4
	Culture	6.8**
	Culture * Mode	7.7**
Team Cohesiveness	Mode	0.2
	Culture	26.4**
	Culture * Mode	0.8

* : significant at $\alpha=0.1$; ** : significant at $\alpha=0.05$

Table 4. GLM analysis on questionnaire

There were two constructs where culture had significant effects – outcome satisfaction and team cohesiveness. The Korean group exhibited higher outcome satisfaction (Korea: 0.34, U.S.: -0.41) and team cohesiveness (Korea: 0.59, U.S.: -0.70). There were three constructs where communication mode and culture had interaction effects – communication quality, communication satisfaction and outcome satisfaction. These interaction effects are visually presented in Figure 3.

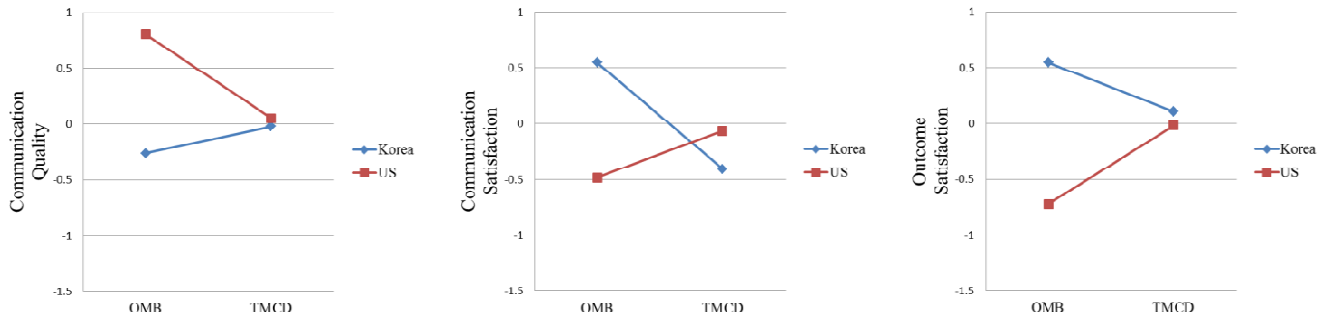


Figure 3. Interaction effects on user perceptions

Figure 3 shows that the U.S. group perceives higher communication quality with OMB while the Korean group perceives that TMCD is of higher quality than OMB. The U.S. group using OMB is significantly less satisfied with communication than the group using TMCD. The Korean group using OMB is more satisfied with communication than the group using TMCD. A similar pattern is shown in outcome satisfaction. The U.S. group using TMCD is more satisfied with their outcomes than the group using OMB. The Korean group using OMB is more satisfied with their outcome than the Korean group using TMCD.

In sum, the Korean group and the U.S group exhibit different levels of perceived quality and satisfaction when using OMB; but both have similar levels of satisfaction and perceived communication quality when using TMCD.

Discussions

Overall, the results give a mixed review. For this, we discuss the possibilities in communication technology difference, cultural dynamics, and group context. A discussion of the implications is also provided.

Communication technology difference - This study's results did not fully resonate with the recent social media studies done between Korean groups and U.S. groups (Choi et al. 2011; Kim et al. 2011). However, recent studies have used Facebook as the social medium, while this study focused on Twitter, where users' prime purpose and usage are moderately different. Facebook is one's online 'home base' where others visit, whereas Twitter is mainly a communication conveyor enabling the transfer of a message. Also the challenges in the learning curves are different between Facebook on PC and Twitter on MCD, since Twitter on MCD is perceived as more challenging with the additional work of "how-to" navigate MCD. The '140-characters-only' tweet also limits a person's ability to add more friendly words and consequently may hinder the ability of that person to achieve his/her objective.

With the post-experiment questionnaire result, we have the following result: the Korean and the U.S. groups are different in perceived communication quality and satisfaction, but the groups exhibit similar levels of satisfaction and perceived quality with TMCD (see Figure 3). This connotes that we may still be at an early stage of the TMCD learning curve. In other words, the domestication of TMCD is still in progress, with high familiarity and confidence yet to come. A substantial cultural difference is expected to surface once the users have fully mastered TMCD.

Cultural dynamics - The cultural variable is an elusive phenomenon to define as we encountered various subservient dimensions and domains of culture. Culture continues to evolve to ever-newer forms as the dynamics and composition of a country's population changes. The sub-cultures or acculturation in linguistic behaviors and communication technology adoptions may manifest differently from traditional culture. Furthermore, the age category remains an important consideration; in this study we have mostly dealt with the age category of a generation in their 20s and 30s, a group that responds sensitively with studies emphasizing technology and its diffusion and domestication.

Group context - Another point is the context of this experiment is group decision-making. The strong propensity towards group conformity may have led the Korean groups to be more functional with regards to the decision-making task. We have known from CMC studies that the task type is an influence on a group process. The group decision-making with a deadline may also create a different group atmosphere from that of other group tasks. Additionally, the anonymity of and the unfamiliarity between group members may have also had a certain impact on the outcome.

From the cultural perspective, the implications of this study are that TMCD still has its users on a learning curve and, consequently, the anticipated cultural differences and their assessments are yet to be seen and understood. With OMB, we clearly show the distinct differences as our society has a high level of OMB fluency. The "full" domestication of OMB has led to diverse applications and value creation in our society, as seen in online auctions (e.g., www.eBay.com) or online distance learning platforms. In spite of this, we forecast a strong growth of TMCD and we will revisit this question again in the near future.

Limitations

This study has several limitations due to its sample and research method. First, there are limitations in the sample of this study. The subjects were mainly undergraduate and MBA students, who may not be a representative sample of real world users. Second, the teams were newly formed for the purpose of this study. Since team member familiarity may influence team dynamics and TMCD would likely be used by team members familiar with one another in the real world, the results may have been affected by this bias. Third, although we have made a great deal of effort to select appropriate tasks for the experiment, there probably exist some limitations due to the experiment tasks. The tasks in the experiment were relatively simple compared to the typical tasks carried out in real organizations. Therefore, the results may not have adequately captured the effects of undertaking really complicated tasks. Fourth, the experiments had been conducted over a 10-day period. Since typical team collaboration lasts more than 10 days, the results of this study may not apply to long-term tasks.

Conclusions and Future studies

This study is part of an on-going research project. Many areas of this study will continue to be studied, especially the *culturally different* user experiment (e.g., the post-questionnaire assessment). Consequently, more cross-discipline literature reviews and sturdy research frameworks are in order.

In contrast to known scholarship on Facebook, this study reports a mixed result on the difference between eastern and western cultures. Both the data analysis and the user experience indicate that it is still too early to issue a verdict on the use of Twitter on a MCD with a focus on cultural difference. This may be largely due to the learning curves on both Twitter and MCD. However, we continue to witness the epic growth of both social media and MCD. TMCD, like OMB, will develop and grow to the point where we will be able to detect and sift the cultural peculiarities and distinctions. Clearly, more cultural studies have to be carried out on these emerging technologies; we anticipate more foci on the synergy of social media and MCD, with future studies revealing the underlying effects of culture on technology and distinct user and organizational behaviors.

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