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# The Effects of Micro-Blogging, Personality, and Culture on Group Decision-Making

*Research-in-Progress*

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## Abstract

*In today's global business ecosystem, enabled by advanced technologies in personalization and customization, an individual or business team has more leverage than ever before regarding the choice of communication media and communication tool. Moreover, an individual's personal attributes and preferences should be taken into consideration. As one of the new communication technologies, micro-blogging via the smartphone or other similar mobile devices may be acquired and used by a business person according to the person's preferences. To understand how people use micro-blogging in their decision-making with a smartphone, and how individual attributes such as personality and cultural background impact communication, a study is undertaken with a group of over 300 graduate students from both Korea and the United States. This 2 (Myers-Briggs Type Indicator [MBTI] personality group: diverse vs. similar) X 3 (communication mode: micro-blogging vs. asynchronous vs. face-to-face) X 2 (cultural background: Western culture vs. Eastern culture) factorial designed experiment is expected to reveal the degree of impact of the MBTI personality factor, communication mode, and cultural background on four-person group decision-making. A questionnaire is used as a measurement tool to assess the participants' experience from each group.*

**Keywords:** Micro-blogging, Social Media, Personality, MBTI, Culture, Communication, Group Decision-Making

## Objectives

Along with the advancement of Nano technology and engineering (NNI website, 2010) on the hardware side, there has been unprecedented growth in the mobile wireless communication sector of information technology in recent years. According to an industry report (TIA's report, 2010) on mobile internet demand, data-related spending nearly doubled during the past two years, rising to \$43 billion in 2009 from \$23.2 billion in 2007 and \$12.3 billion in 2006. The report also mentioned that the sale of smartphones in the United States is projected at 30% for 2010, and at 41% for 2013.

This on-going growth has also spurred the mobile device content market (Ankeny, 2010; Wauters, 2010). In the mobile device content market, the emphasis is on both personalization and customization from the user's perspective (Hwang, et al., 2006; Patrikakis, et al., 2009; Mahmoud and Wang, 2006). With the fiercely competitive global telecommunication market and demand for a higher level of localization due to cultural, personal, and lifestyle differences, the industry related business organizations are investing ever more in the areas of personalization and customization (Hinz, et al., 2004; Korpipää, et al., 2006; Häkkinen and Mäntyjärvi, 2004).

Application news and discussions about Apple's iPhone (Apple's website, 2010) or Google's Android (Android's website, 2010) is becoming common. Among the applications, the one that gets the most attention at the current time is social media (Shirky, 2008), e.g. Twitter (Twitter website, 2010) or Facebook (Facebook website, 2010). As more and more business organizations are adopting and embracing social media (Martinez, 2009; Baker, 2010; Oracle Twitter website, 2010; IBM Twitter website, 2010), one may ask how decisions are made and how behavior differs when using social media.

In addition to the use of social media, personality and cultural aspects are considered for personalization and customization. Personality and culture are two of the most easily identifiable characteristics of people, and they are clearly different among people. Different personalities exhibit different preferences (Cervone and Pervin, 2009). In the field of human psychology, we are told that there are clearly different personality types and each type tends to cause the person to think and behave differently (Myers and Myers, 1995). Similarly, a person's cultural background tends to cause the person to think and behave differently (Hofstede, 2001). We acknowledge that there is a reasonably close tie between technology and personality (Weinberg, 1998; Yourdon, 1997) and technology and culture (Sia, et al., 2009).

In this study, we create teams based on three different communication modes: micro-blogging, asynchronous, and face-to-face. Two additional independent variables are personality and culture. The objectives of this study are: 1) to understand how a decision is made in a micro-blogging group and if there is a difference between the conventional modes (asynchronous and face-to-face), 2) to investigate and understand how different personalities and cultures play a role in this context, and 3) to gauge each participant's experience according to these variables.

### ***Communication media***

Social media are emerging as important communication tools in organizations (Pitt et al., forthcoming; Yammer website, 2010; Baker, 2010). A great deal of past research has been devoted to computer-mediated communication (CMC) and its impact on team performance (e.g., Chidambaram & Jones 1993; Fjermestad and Hiltz, 1998; O'Leary & Cummings 2007). However, there are two directions that CMC studies have not taken yet. First, more research is needed on new social media such as Facebook and Twitter since they are being used in different ways from the past. Second, CMC is becoming highly mobile because of the use of smartphones. Communications in a mobile environment is quite different from communications in traditional ones because of the portability factor, along with personal, social, and work goals (Ishii 2006; Kim et al. 2007; Liu, et al., 2010). Most studies in CMC have investigated the impact of CMC in a desktop PC environment only.

The unprecedented use of micro-blogging (Twitter website, 2010), which provides individuals with "information as it is happening" and immediate feedback, has made social media a quickly-growing communication platform for today's Internet-savvy audience (TIA's report, 2010). Although social media are primarily used for one-way status notification messages, there are growing signs from personal and various business sectors that they can be used for more than simple status notification (Martinez, 2009; Baker, 2010; Oracle twitter website, 2010; IBM twitter website, 2010).

One social medium that stands out is Twitter (<http://twitter.com>). Since its debut in 2006, individuals from every age category have signed on for its services. Although it can be used on a personal computer, Twitter is mainly accessed by a smartphone or other mobile device. To take advantage of Twitter's large membership base, where there is potential to identify new customers and communicate with existing ones, a number of companies are deploying Twitter as their prime vehicle for brand advertisement, customer relations, complaints, and defense against negative word-of-mouth. Businesses, especially online gaming companies, are also using Twitter to test new products. Some 3D online computer game designers discuss the features and shortcomings of their products with their followers in a Twitter private group (Twitter private group website, 2010). They then modify their products

based on the discussion. This frugal and efficient business practice is a “win-win” situation for both the company and customers, since the company saves resources and customers get what they want.

Many nascent Twitter-related published works are either exploratory studies or qualitative studies based on popular technology adoption models, e.g. Unified Theory of Acceptance and Use of Technology (UTAUT) (Meyer and Dibbern, 2010; Venkatesh, et al., 2003). The “what is” (Java, et al., 2007; Krishnamurthy, et al., 2008) and “why use” (Meyer and Dibbern, 2010; Zhao and Rosson, 2009) Twitter studies continue to be valuable to our understanding, but it would be additionally valuable if we start to study its applications and impact under various information systems contexts. In preparation of this study, we were unable to identify any large-scale Twitter empirical studies. We believe our study is one of the first of its kind to empirically investigate decision-making on a large-scale with Twitter via the smartphone.

The shortness (maximum of 140 characters) of Twitter messages makes Twitter an ideal candidate for informal communication. It could be seen as analogous to a casual conversation that may take place during a coffee break at work. Informal communication at work places may generate significant contributions to group collaborative work (Zhao and Rosson, 2009). The “Eureka effect” (Perkins, 2000) suggests that when a person is in a state of “freedom,” e.g. taking a shower, strolling in a quiet park, or taking a coffee break, the person often finds a creative solution to a pressing problem. Twitter and the smartphone’s portability may allow a person to reach a “Eureka” moment more often than other conventional media. Several studies have shown that if groups were not time-constrained they had higher quality and creativity than groups that were time-constrained (Ocker et al., 1995; Ocker et al., 1998)

In contrast to turning on a PC or calling for a face-to-face meeting, the little codification effort of Twitter via a smartphone lowers the requirements and increases user friendliness and preference (Günther, et al., 2009). The simple touch technology and the convenience of smartphone portability are appealing to consumers. Unlike an email message or weblog, which can be static and long, the short posts of twitter can be considered as an “investment for content generation” (Java, et al., 2007). Twitter may embrace some of best features of both face-to-face and asynchronous media (Fjermestad and Hiltz, 1998).

In a group context, Twitter allows an unprecedented intimacy level that enables a greater awareness of what others are thinking. It lets members to be more proactive and friendly (Zhao and Rosson, 2009) in responding to the others’ posts. This expected relationship and group task similarity would allow the Twitter group to have less group conflicts and perform on a task such as group decision-making at a higher level than other communication medium groups (Meyer and Dibbern, 2010). Therefore, we propose the following hypotheses:

- H1a:** Micro-blogging groups will achieve significantly higher productivity scores than the other two communication groups.
- H1b:** Micro-blogging groups will arrive at a group decision with significantly fewer conflicts than the two other groups.
- H1c:** Micro-blogging groups will achieve significantly higher levels of communication, satisfaction, confidence, and compatibility than the other two communication groups.

Because there are many published works (Fjermestad and Hiltz, 1998) in regard to both asynchronous and face-to-face comparative analysis, no hypotheses are presented about the two groups. We focus on how micro-blogging is different from the two conventional communication media.

## ***Personality***

Among other notable personal attributes, personality type presents an interesting and significant research value with its considerable presence. The personality profile assessments offer diverse personality models in understanding how different individuals with different personality types think and behave differently (Cervone and Pervin, 2009; Swerdlik and Cohen, 2005). Moreover, it is our general assumption that this profound personal attribute would play a role during group dynamics. Thus, some empirical experiments have personality as an independent variable.

Examining studies with the personality variable reveals that the general assumption is not always met. We find two contrasting results. Some studies report insignificant or minor differences among different personality types. Salleh, et al., (2009) manipulated personality and reported that the differences in personality traits did not significantly affect the outcome. Thatcher and De La Cour (2003) manipulated the 16 different Myers-Briggs Type Indicator (MBTI) personality types. The result revealed that personality plays a minor role in differentiating between the media conditions.

Contrastingly, some studies report significant differences among different personality types. Choi, et al. (2009) manipulated MBTI personality types as one of the experiment's independent variables. The result revealed that MBTI diversely composed groups exhibited a higher level of computer programming productivity than both MBTI similarly and oppositely composed groups. Topi, et al., (2002) manipulated a group into two subgroups of introverts and extroverts. The result revealed that extroverts were significantly more satisfied with the communication process than introverts, and introverts had significantly more influence over extroverts in terms of the joint solution and the independent post-negotiation solution.

This study extends Choi, et al. (2008) by going from dyad formation to a four-person group. The hypotheses are crafted based on the findings of the earlier study, which suggested that a diversely-formed group exhibits significantly higher productivity. In forming a diverse or similar four-person group, we use type theory (Bayne, 2002; Keirse, 1998). A typical MBTI profile of a person is generated by eight preferences (extraversion 'E' vs. introversion 'I,' sensing 'S' vs. intuition 'N,' thinking 'T' vs. feeling 'F,' judging 'J' vs. perceiving 'P'), and yields a four-letter type indication, e.g. INFJ, ESTP, or ISFP. There are a total of 16 different MBTI types.

The type theory states that the two innermost preferences are dominant and auxiliary. A person uses the dominant type the most, feels most comfortable using it, and feels at his or her best when using it. Additionally, the auxiliary type is a person's second dominant type. One may frequently shift back and forth between the dominant and auxiliary types without realizing it. This gives four possible MBTI couplings of ST, SF, NF, and NT. Some 'diverse' groupings are (ST, ST, NF, NF), (SF, SF, NT, NT), and (ST, SF, NF, NT). Some 'similar' groupings are (ST, ST, ST, ST), (NF, NF, SF, NF), and (NT, ST, ST, ST). Depending on the given subject pool, both groups will be prepared as close as possible to the group categories. For example, SF would be allowed in a group of three NF, and ST would be allowed in a group of SF, NF, and NT.

**H2a:** The 'diverse' MBTI groups will achieve significantly higher productivity scores than the 'similar' groups.

**H2b:** The 'similar' MBTI groups will reach a solution in significantly less time than the 'diverse' groups.

## ***Culture***

As companies become global, managers need to understand cultural differences, not only to appreciate employees from different contexts but also to improve performance in other countries. This raises the question of whether or not a person's cultural background has a significant impact on the person or group's decision-making. A recent comparative cross-cultural study featured groups of Australian students, representing western "individualistic" culture, and groups of Hong Kong students, representing eastern "collectivistic" culture. The results revealed that in regard to the peer trust category, there is significant impact made by the person's cultural background (Sia, et al., 2009). The Hong Kong student groups exhibited significantly greater responses to the peer customer endorsements on trust perception than the Australian student groups. Peer trust and persuasion has a greater influence under eastern culture.

Jarvenpaa and Leidner (1999) found that persons from individualistic cultures are more prone to trust than persons from collectivistic cultures because they show a greater willingness to respond to ambiguous messages. Bouas and Arrow (1996) suggested that persons from collectivistic cultures are more prone to identify with a group. A review of a group decision-making study with 23 teams using face-to-face and computer-mediated communication modes revealed that there were very few conflicts during team interactions because participants possessed Chinese cultural values, which emphasize harmonious relationships (Li, 2007). Therefore, it is possible, for the purposes of this research that the "individualistic" American teams will outperform the "collectivistic" Korean teams when messages sent by team members are vague or ambiguous. At the same time, it is possible that members of Korean teams will

become more cohesive than American teams since members are more likely to identify with the group and promote harmonious relationships with members.

Lee and Lee (2003), in a cross-cultural study based in Korea and the United States, focused on the participants' media choices to communicate with their superiors, colleagues, and subordinates at the work place. The study pointed out that the cultural factor had a significant impact on the moderation of the media richness theory applicability. In other words, the significant difference was from neither the task perception nor the media perception difference, but the task-media fit in different cultures.

In a recent study by Staples and Zhao (2006) where the effect of cultural diversity on team effectiveness and performance was examined, the results indicated that heterogeneous teams were less satisfied and cohesive and had more conflict than the homogeneous teams; there were no significant differences in team performance levels. However, an examination of just the heterogeneous teams found that the performance of the virtual heterogeneous teams was superior to that of the face-to-face heterogeneous teams.

The "collectivistic" eastern culture emphasizes group harmony and peer trust whereas the "individualistic" western culture tolerates constructive criticism and individual values (Chen & Chung, 1994; Kim, et al., 2001; Ma & Chuang, 2001; Li, 2007; Sia, et al., 2009). In this study, we expect that American groups will exhibit more output, but the Korean groups will express higher levels of satisfaction.

- H3a:** The American groups will achieve significantly higher productivity scores than the Korean groups.
- H3b:** The American groups will experience significantly higher levels of conflict than the Korean groups.
- H3c:** The Korean groups will achieve significantly higher levels of communication, satisfaction, confidence, and compatibility than the American groups.
- H3d:** The Korean groups of both micro-blogging and asynchronous communication mode groups will exhibit higher levels of satisfaction regarding the choice of communication mode than the Korean groups of face-to-face communication mode groups.

### ***Interaction Effects***

We expect to find some interesting interaction effects among the variables. Many empirical studies infer that there is a coupling phenomenon between communication, personality, and culture. It is expected that a person will exhibit varying degrees of attachment to values of social traditionalism and communication methods. We reference a number of studies on MBTI and culture (Wirtz, et al., 2009; Konstabel, et al., 2002; Heine and Buchtel, 2009), MBTI and communication modes (Goby, 2006; Harrington and Loffredo, 2010; Topi et al., 2002), and culture & communication modes (Goby, 2006; Zou, et al., 2009; Rule, et al., 2010).

#### **MBTI and Culture**

- H4a:** The Korean groups will generate significantly greater number of compromises than the American groups.
- H4b:** The Korean groups will exhibit significantly less in the difference of satisfaction level between the MBTI 'similar' and 'diverse' groups than the American groups.

#### **MBTI and Communication**

- H5a:** 'Extroverts' will exhibit significantly higher levels of satisfaction in the face-to-face mode than in the other two communication modes.
- H5b:** 'Introverts' will exhibit significantly higher levels of satisfaction in the asynchronous mode than in the other two communication modes.

**H5c:** The differences in perceptions of conflict among the face-to-face, asynchronous and micro-blogging groups are significantly larger in MBTI ‘diverse’ groups than in MBTI ‘similar’ groups.

## Setting up the Experiment

This is a 2 MBTI personality type: (similar vs. diverse) X 3 Communication Mode: (face-to-face vs. asynchronous vs. micro-blogging) X 2 Cultural Background: (western culture vs. eastern culture) factorial design. Over 300 business graduate students from both Korea and the United States are expected to participate. Business graduate students are selected over undergraduate students because many graduate students have either some years of professional experience or are currently working as full-time professionals. The students are given a course credit for their voluntary participation. The following is the planned flow of the experiment (Figure 1):

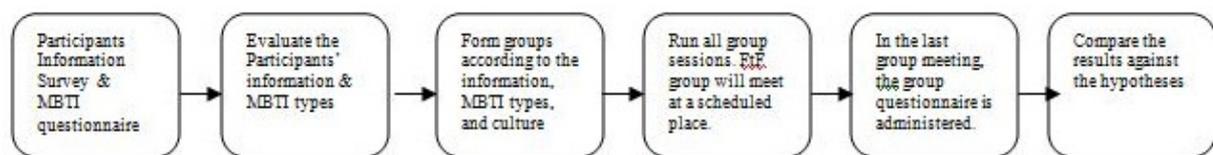


Figure 1

Developed originally, the participant information form is mainly used to understand the level of experience with social media via a smartphone among the participants. The participants with more of this experience are likely to participate in the micro-blogging group. A “pencil-and-paper” or online MBTI assessment will be provided by Consulting Psychologists Press. With each participant’s MBTI type and the participant information form, the groups will be assigned according to the independent variables. A separate but parallel experiment in Korea is to be synchronized with the experiment in the United States. Extra caution will be exercised to ensure that every step is identical except for the location. The gender and academic/work background are intentionally diffused, e.g. avoiding same gender or same major group, to nullify any compound impacts.

The micro-blogging groups will be told to create a protected (private) Twitter group for themselves with each member’s Twitter ID. All the tweet transactions will occur only within the group. Similarly, the asynchronous groups will be told to create and join a Google group (<http://groups.google.com>). An online Google group allows the members to manage an online message board to upload and read the members’ messages. Every group will be identified with a number for easy identification and management. Additionally, the groups will be told to use only the assigned medium for communication.

A total of two decision-making tasks that were used in previous empirical studies are to be given, one for each discussion session. One task presents a business organization’s downsizing situation. From a list of the organization’s employees and the employees’ profiles, a layoff list in chronological order will need to be prepared. For example, the first person on the list is the first person to be laid off. Each group member must complete his or her list before the group discussion. During the discussion, each member will exchange the list and the reasons for the order. All group members must consent to the final list before its submission. In the second task, the group will play the role of a school’s ethical committee that is being asked to issue an appropriate disciplinary action on a case where a college teaching assistant has accepted a bribe from the basketball team’s star player to change the student’s grade on an exam. The concerning issues will be the student’s grade on the exam or in the course, the student’s status on the basketball team, the student’s academic status, the teaching assistant’s work status as an instructor, and the teaching assistant’s academic status. All group members must consent to the final action and reasons before its submission. Neither of the two tasks has an optimal solution.

For the measurement, it is essential for the authors to collect all the tweets and transactions from the Twitter groups. Twitter's headquarters in San Francisco verified that all the messages could be saved and retrieved later. The micro-blogging group will yield tweets, replies, retweets, and direct messages. From these, the frequency, date and time stamp, messages content, and the identities of the sender and recipient will be recorded. Similarly, in the Google online group, all posted message threads are to be reviewed and analyzed. The face-to-face group will be given a date, time, and location for the group discussion. The session is to be video-recorded. After the first round, the second round is to be administered. At the end of each round, an originally developed questionnaire will be administered.

As this is a "research-in-progress", we are currently going through rounds of pilot studies. During these pilot rounds we expect to make a number of changes and modifications to improve the instruments and materials.

## **Expected Contributions and Conclusion**

This study makes three valuable contributions. The first contribution is that the study is one of the first large-scale group collaboration studies on micro-blogging using the smartphone. This study intends to investigate and hopes to discover the various processes of different cognitive behaviors that may be exhibited by each group member with different backgrounds in reaching a group consensus by using Twitter on a smartphone. The second contribution involves an assessment of the impact that personality has on decision in a group collaborative context. We expect to see which of the two MBTI groups – 'dissimilar' or 'similar' - is more inclined to perform productively under this group collaborative context. The last contribution is the cultural aspect of the micro-blogging adoption and usage. This study attempts to determine if there are any significant culture-related signals from either of the two very different cultures. South Korea is considered as one of leading nations in adopting new technologies and innovations (OECD, 2006), but its culture is opposite in many ways to that of the United States. This study also intends to study other significant interaction effects that may arise among the three independent variables.

The limitation of this study involves validity and applicability. Because this is one of the first studies of its kind, the projected objectives, hypotheses, and instruments are new and may not prove to be valid. Due to limited research resources and a lack of access to a subject pool, we are conducting this experiment with a group of graduate students who have some years of business experience. It would be prudent to expedite this experiment in a real-life business context with a group of business professionals performing business decision-making tasks.

It is expected that Web 2.0, along with the accelerated advancement in mobile technologies, will continue to influence our society and the way we communicate and share information. We hope that this study is one of many to come that will unveil information on group collaborative work using micro-blogging via the smartphone, and also provide results that will assist business organizations in their plans to adopt micro-blogging for their enterprise technology portfolios.

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