An Explorative Study of Creative Idea Generation Using Mobile Collaboration Platform

Stephen Choi
California State University Fresno
Craig School of Business
Dept. of Information Systems &
Decision Sciences
choi@csufresno.edu

One-Ki Daniel Lee
University of Massachusetts Boston
College of Management
Dept. of Management Science and
Information Systems
daniel.lee@umb.edu

Woojong Suh
Inha Univeristy South Korea
College of Business Administration
Dept. of Business Administration
wjsuh@inha.ac.kr

Abstract

This study examines creative idea generation within a given task involving the use of a mobile collaboration platform (MCP). Drawing upon the theoretical perspectives on cognitive creativity, mobility, and self-select communication mode, the study proposes a research model that explains how individuals generate creative ideas through MCP use in a group collaboration context. To validate our model, survey data was collected from individuals involved in a group collaboration—particularly when performing tasks that requiring creative solutions. The results of this study indicate that: 1) MCP use has a positive effect on the individual's creative idea generation; 2) both perceived MCP effectiveness and perceived freedom determine the individual's MCP use levels; and 3) the individual's personal innovativeness level in information technology (PIIT) has a conditional effect on the relationship between the perceived MCP freedom and MCP use. The significance of these findings stems from the fact that creative idea generation through group collaboration is a highly sought-after quality in organizational setting. Given the centrality of the mobile ecosystem in today's organizational task environment, this study presents both theoretical and practical contributions.

1. Introduction

Creativity is probably one of the most sought-after qualities in organizational settings, and therefore has been a popular topic of study across many business disciplines [23], [34]. It's agreed upon that creativity is influenced by a variety of circumstances such as the external environment, the target task, operational processes, those members involved in the project, and the technologies that support the processes [27], [28]. With this in mind, this study focuses on an emerging technology trend, *mobile collaboration platforms* (MCPs), as a facilitator of creative idea generation during group collaborations. This avenue of inquiry is all the more salient because the mobile platform is rapidly becoming the preferred means of communication and data exchange in our society.

MCPs are online communication and collaboration platforms comprised of a mobile device (e.g., smartphone) and a social media application. Devoid of physical boundaries, in particular, MCPs provide new potentials for an individual's collaboration activities in order to achieve a certain collective goal [35]. The materialized freedom through mobility embedded in MCPs may open up new possibilities for an individual by overwriting rules and transgressing norms in order to explore unexpected opportunities and paths [1].

As a research genre, MCPs fall under group decision support systems (GDSS), within the broader context of computer-mediated communication (CMC) [9]. In the GDSS domain, many studies examine distinctive communication modes, such as face-to-face, desktop asynchronous, and desktop synchronous, in both individual and group settings [9], [10], [11], [17], [28]. The research gap that we find is that there are no further studies that deal with both asynchronous and synchronous communication mode in the *mobile communication* setting for the purpose of group collaboration and decision making. Moreover, creativity in GDSS setting has not been studied to the same extent as similar topics have been [11]. In failing to reflect what is taking place among many mobile users in today's time, this research gap presents a significant research opportunity that will extend the GDSS domain to mobile dimension.

This study aims to investigate the relationship between an individual's MCP use and creative idea generation in the group collaboration setting. This type of exploratory study has not been undertaken even though we are witnessing a significant change in our mobile communication and data exchanges in organizational settings (as well as in our personal lives). This study is expected to contribute to the understanding of 1) creative idea generation in the emerging mobility-

HICSS

based collaboration environment, 2) the technical and behavioral drivers of this mobile collaboration phenomenon (i.e., platform effectiveness and perceived freedom in time, location, and situation), and 3) other personal intrinsic traits that impact creative idea generation in the context of collaboration with others through a mobile technology platform, i.e., an MCP. On a practical level, this study seeks to unearth new insights into individual mobile technology use in a small group setting. In turn, these will eventually provide data and information for commercial mobile technology vendors that they can then use to improve their future products and services.

Through this study, we present a theoretical framework and share the proposed model test results using survey data. Lastly, in the conclusion, we examine future avenues of inquiry.

2. Theoretical Backgrounds

2.1. Creativity

The academic literature on creativity, covers various theoretical perspectives on the subject [22]. From among these perspective, this study adopts a cognitive creativity perspective as the principle theory of the generation process behind an individual's creative ideas. The main premise of this perspective is this: it is the ideational thought processes that are the basis for creative ideas, and those thought processes may stem from both convergent and divergent thinking (along with individual differences, conscious operations and unintentional processes). Divergent thinking occurs when ideas move in varied directions in search of an original idea, while convergent thinking is when the best idea needs to be identified [6].

Following the Handbook of Creativity [20], we identify the following as leading creativity definitions: "creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context" (p. 90) [30], "a sequence of cognitive operations that gives rise to novel insights or ideas" (p. 217) [21], and "the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system" (p. 293) [41]. These definitions show that the creativity assessment not only lies with the end product but should also concern the processes that lead to the end product. Consequently, an idea that leads to a breakthrough or an alternative path towards a solution is highly prized. These definitions also hint at the fact that creativity not only emanates from a source or an individual, but also from dynamic interactions under various contexts and environments.

In other words, there are as many reciprocities between the main actor and other actors as there are with the actors and their changing surroundings.

2.2. Group Decision Support Systems (GDSS)

The relationship between creativity and technology use has largely focused on group decision support systems (GDSS) in the computer-mediated communication (CMC) domain [9], [10], [27], [28]. In this stream of research, there are two prominent theoretical perspectives regarding media used for communication among group members: the Media Richness and Media Synchronicity theories [7], [8]. Brifely, the Media Richness theory proposes that the more prevalent certain media are the more one expects see a reduction in uncertainty, a diffusion of equivocality, and an increase in communication effectiveness. Media Synchronicity theory discusses the media's capabilities: *transmission velocity* - the speed at which a medium can deliver a message to intended recipients, *parallelism* - the number of simultaneous transmissions that can effectively take place, *symbol sets* - the number of ways in which a medium allows information to be encoded for communication, *rehearsability* - the extent to which the media enables the sender to rehearse or fine tune a message during encoding, before sending, and *reprocessability* - the extent to which the medium enables a message to be reexamined or processed again, during decoding, either within the context of the communication event or after the event has passed.

Along with the media capabilities, various communication modes, such as face-to-face, desktop asynchronous, and desktop synchronous (as well as their blended modes), and their distinctive effects have been studied within both individual and group settings [9], [10], [11], [17], [28]. For instance, Ocker et al. [27] discuss four modes of group communication and argue for the better creativity and performance outcomes of the blended mode (i.e., face-to-face and asynchronous computer conferencing). However, these reserch findings, having been derived from the study of traditional communication settings like face-to-face and/or desktop-based CMC, are now challenged by the emerging phenomenon of mobile communication and smart devices [13], which is the main motivation of this study.

2.3. Mobile Collaboration Platform (MCP)

Mobile collaboration platform (MCP), for the purpose of in this study, is defined as an online platform that is comprised of a mobile device (e.g., smartphone) and a social media application (i.e., a mobility-based

social media [1]). This platform presents two major components: *mobility* and *self-select* communication capabilities.

Mobility plays a vital part in this study. Not only is it a fertile base for spontaneous mobile activities, but it is also a key source of the dynamical and synergistic effects between two or more individuals and between individuals and an MCP. For a deeper insight into mobility, we refer to the Sorensen's six mobility capabilities – portability, connectivity, priority, pervasiveness, memory, and intimacy [35]. Portability refers to the convenient pocket-size of a typical mobile device, which makes carrying it around quite easy. Connectivity is the continuous connection with fast Internet bandwidth that allows an individual to quickly transmit his/her creative idea (or a response to other's ideas) without a delay in the thought process. Priority refers to the prioritizing process of creative idea management, in which a decision is made about which idea is more subjectively valued. This in turn may or may not result in a follow-up response or action. Pervasiveness is the MCP's capability in directly detecting the idea exchanges and discussion that is taking place in group setting. Memory refers to the MCP's memory (storage) capability that allows an individual to go back and access ideas and discussions that occurred in an earlier time. Finally, intimacy describes the physical proximity of a mobile device in an individual's possession (typically in a pocket). The greater the intimacy, the lower any cognitive barriers to wielding the mobile device are. All in all, these mobility capabilities are highly applicable to MCP.

Along with the mobility capabilities, MCP as a communication media contains a unique communication capability. During the early days of CMC, the asynchronous and synchronous communication modes were rather clearer and differentiated [27]. Initially, asynchronous communications opened the door using such technology as the electronic bulletin board, and later synchronous communication widened the communication spectrum by using such technology as instant chat messenger and video conference. Currently, with the advancements in computing hardware and the networking sectors, very little effort is required when cross communicating between the two modes in real time.

2.4. Self-Select beyond Async and Sync Communication Modes

The self-select communication mode does not referring to a particular communication mode, but rather to the behavior where a user intentionally selects one mode over the other modes for a personal purpose or advantage in a given context [16]. For example, an individual may choose a voice communication for an urgent item or choose asynchronous text communication for a message that is not as time sensitive. The urgency, seriousness of the message, who the sender is, what situation the receiver is in, self-interest or advantage each plays a certain part in the user committing to a specific communication mode among those available.

This user behavior is analogous to the combined communication user behavior discussed in some of the GDSS studies [11], [17], [28]. From the list of communication types (asynchronous and synchronous), and technological choices (electronic bulletin and instant messenger), the concept of 'self-select' communication mode can be traced back to its GDSS origin [16].

The self-select communication mode is the key feature of MCPs since they provide individuals with more freedom in places, situations, and time for their communications and collaborations with others [19]. For instance, during a group collaboration using an MCP, an individual can purposely delay her/his response (e.g., communicate asynchronously) or respond immediately (e.g., synchronously) based on personal conditions and intentions.

This concept also touches on personal traits. For example, a technological inclined individual, i.e., someone more innovative in information technology (IT) adoption, may prodigiously wield those available communication modes to engage in multiple transactions in less time compared to another individual who is not so technologically inclined. Hence, this personal factor also need to be investigated in line with MCP use and its impacts.

2.5. Personal Innovativeness in Information Technology (PIIT)

The creative idea generation through MCP use can also be seen as an innovation diffusion process [32], particularly in the specific domain of a new mobile technology [24]. In such an innovation diffusion process, personal innovativeness has been considered to be a key influential factor [32], [33]. As a personal trait concerning the adoption of innovations, this can be divided into two areas: global innovativeness and

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[1] Examples of MCP include WhatsApp, WeChat, and KakaoTalk, which are most popular in U.S., China, and South Korea, respectively.

domain specific innovativeness [14]. Global innovativeness is a trait that a person exhibits generally, regardless of the context, while the domain-specific innovativeness in a person is highly sensitive to the context. Hence, for the context of this study, i.e., MCP use for a group collaboration, an individual's domain-specific innovativeness in information technology (IT) needs to be investigated along with the mechanism of creative idea generation through MCP use.

Agarwal and Prasad [2] define the personal innovativeness variable in IT as "the willingness of an individual to try out any new information technology" (p. 206) [2]. This is coined as personal innovativeness in information technology (PIIT) [24], denoting an individual's intrinsic attributes such as whether they are an early technology adaptor or technology advocate – a trait wherein a person shows a high level of affinity to new technology and its operations [24]. A person with this trait will actively seek out technology's features in order to exploit the benefits to his/her advantage. In the study, a person with this trait is more inclined to explore the various features of the MCP – social medium and mobile device – in order to better their position in group communication and collaboration.

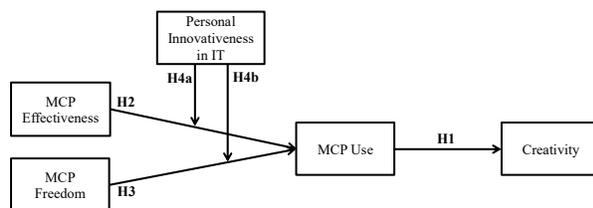## 2.6. Hypothesis Development

Figure 1. Theoretical Model

The mobility of the MCP provide individuals with more freedom in places, situations, and time for their communications and collaborations with others. This results in the lessening of an individual's cognitive burden for creative idea generation. The self-select communication feature of the MCP further facilitates the reduction of an individual's cognitive burden. The resulting reduction in anxiety and the overall less-taxing nature of use thus lowers the user's cognitive burden, which then increases the possibility of unintentional processes and divergent thinking, which are potential sources of creativity [25], [40]. In other words, creativity is not likely to be produced in a pre-planned manner, but rather arises spontaneously during an unplanned or unintentional act or process.

Divergent thinking implies a variety of different views and perspectives in seeking creativity. Zabelina and Ganis [43] argue that divergent thinking is associated with higher attentional flexibility (e.g.,

shifting from one level of attention to another) and this is cognitively controlled.

From a GDSS perspective, it is known that use of group support systems (GSS) generally has a positive influence on group decision-making [10]. Furthermore, in comparison to the face-to-face communication mode, GSS significantly improves group creativity in the idea-generation and idea-development stages of the problem-solving process [28].

In short, the emphasis is on the MCP capabilities – mobility and self-select online communications for social collaboration. By utilizing these MCP capabilities, an individual may widen his/her cognitive interaction with others whereas an individual with less use of MCP and its features may face more challenges in being creative or conveying his creativeness in communicating with others. Based on these arguments, we develop the first hypothesis as follows:

H1: *More use of an MCP helps produce more creative idea generation in an individual within a group task collaboration*

MCPs offer specific technological features that support group communication and collaboration in a more interactive, yet flexible environments. Regarding the software aspects, the features of MCP involve transmission velocity, parallelism, symbol sets, rehearsability, and reprocessability [8]. Concerning hardware, MCPs are built upon easy thumb-drive touch technology, portability, intimacy, memory, and connectivity features [35]. The effectiveness of these features increases an individual's positive perception of the value of this platform in achieving the desired outcomes, which in turn leads to a significantly higher level of MCP use [39]. Based on these obsesrvations, we develop our second hypothesis as follows:

H2: *An individual's positive perception of MCP effectiveness in turn leads to higher levels of individual MCP use.*

The MCP freedom feature not only indicates the device's usability "anytime, anywhere, and in any situation," but also the option of "not so of anytime, anywhere, and in any situation." In other words, an individual may choose not to be connected anytime, anywhere or under any situation because it may not be appropriate. Therefore we can say that freedom truly works in both ways, depending on an individual's preference [19]. For example, a user may delay or postpone a response to an incoming message for some purpose or advantage or engage in multiple communication and transactions as they see fit. Hence, an individual's perception of these features empowers

his/her MCP use behavior, which allows an individual to engage in the on-going discussion in a self-control manner to his/her advantage. Based on these arguments, we develop our third hypothesis as follows:

H3: *An individual's higher perception of MCP freedom leads to a higher level of individual MCP use.*

If an individual is an 'early adopter,' the MCP-mediate interactions among group members can be heightened to a point where they will likely induce a higher level of creative idea generation. Regarding the technology that is to be adopted, most MCPs typically consist of a mobile device (e.g., smartphone) and social mobile app. These technologies are not necessarily new to many and may not require much "technological innovativeness" in order to use them. However, an individual's PIIT still influences how the individual uses and manages the MCP features and interactivities that take place. For example, Rogers [32] argues that "innovativeness indicates overt behavioral change, the ultimate goal of most diffusion programs…" (p. 268). A high-level PIIT individual like an innovator or early adopter will reap the benefits of the high-level interactions and result-yielding potential. Therefore, the high-level PIIT will positively moderate the relationship between MCP effectiveness/freedom and MCP use. Based on these arguments, we develop the following moderation hypotheses:

H4a: *An individual's PIIT positively moderates the relationship between MCP effectiveness and individual MCP use.*

H4b: *An individual's PIIT positively moderates the relationship between MCP freedom and individual MCP use.*

3. Methods

To test the model and hypotheses, we conducted a field survey, in which the survey participants were involved in a group task using an MCP. After they completed the group task within a given period, a survey was conducted to collect the data.

3.1. Group Task Setting

As this study is about creative idea generations in a group collaboration environment, the group task must be cognitively challenging and problematical, yet must also be doable. For these specific settings, this study focuses on a social and educational problem-solving task in a higher-education environment, in which students are required to generate creative ideas and suggestions for their group collaboration outcome.

The group task centers on "popcorn brain syndrome" – a phenomenon that occurs when a person depends too much on digitalized contents and computerized retrieval systems, and thereby his/her memory retention deteriorates. Basically, the task presents a situation where iPads replace textbooks and other school materials in the K1-12 educational environments. The aim of the group project is to better understand how this impacts the student's memory capability in the light of popcorn brain syndrome. Consequently, we pose the following question to the group: what are some ideal policies or school measures that can embrace iPad utilization, while also minimizing the occurrence of popcorn brain syndrome? The two ideas conflict and clash with each other, so in order to find a middle ground the individuals must be creative with their ideas and suggestions. Moreover, the technological context of this study is MCP, which comprises a mobile device and a social media app. Therefore, an ideal individual for our study is a person who can sympathize with the iPad's positives and negatives, and is familiar with mobile social media apps. From this, we believe university students are appropriate samples for our field survey.

The survey was conducted in an information systems (IS) class of a university in South Korea, whose subject is relevant to the topics of the given task.[2] Considering the regional specification, students were asked to use KakaoTalk, the most popular mobile social media app in South Korea as their MCP.[3] With this setting, we were able to operationalize mobility, portability, ubiquity, ease access, and self-select communication, which are the technological requirements of this study.

3.2. Survey Procedures and Samples

The survey was conducted with a pool of 183 university students in multiple sessions of a class. The main survey steps were: 1) the participants were briefed

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[2] When considering the world-highest smartphone adoption rate (95%) in South Korea [36] and the very high penetration rate (93%) of the target MCP, i.e., KakaoTalk [38], the data collection in South Korea is considered appropriate for the context of this study.

[3] We reviewed all of the functions and features of this platform and carefully compared them with the purposes and processes of our study. We also verified the generalizability of the functions and features of this platform with other similar platforms, e.g., WhatsApp and WeChat.

on the task and its motive, 2) four-member groups were formed randomly, 3) students were asked to become familiar with the task and the MCP, 4) the group engaged in discussions by presenting and responding to each other with creative ideas and suggestions via the MCP during the 3 week time period, and 5) at the end, a survey was conducted.[4]

Initially, 183 students participated the group collaboration task. After excluding incomplete and miscoded responses in the final survey, a total of 174 participants' survey data were collected for statistical analysis. Concerning the demographic characteristics of the collected surveys, the participants' ages ranged from 19 to 26 and the distribution are 52.3% (n=91) male and 47.7% (n=83) female. For their work experience, 42.0% (n=73) of the participants have part-time jobs and only one participant reported being a full-time worker. The average tenure of the mobile social media app is 6.6 years, while an individual's period ranged from .5 to 11.9 years. In regards to academic major, 78.2% (n=136) of the participants are management majors, while the remaining percentage represents other majors such as finance/accounting, linguistics, statistics, and media studies.

3.3. Measurement Development

The survey consists of the self-reporting questionnaires on individual's creativity, MCP use, MCP effectiveness, MCP freedom, PIIT, and the participant's profile. The research variables are developed from the constructs' measurements of prior literature.

First, an individual's creativity is measured to determine the degree of creative idea generation in terms of fluency (how frequently), originality (how unique), flexibility (how alternatively), and extensiveness (how elaborative) [31]. Second, MCP use is measured to determine technology accessibility activity in terms of intensity, frequency, diversity, and overall usage [37]. Third, MCP effectiveness is measured using four items asking its effectiveness and constructiveness in supporting group collaboration and presenting ideas [44]. Fourth, MCP freedom is measured to determine the degree of freedom in terms of time, locations, and situations [42]. Lastly, PIIT is measured to determine the personal tendency with new technologies [24]. The items of these research constructs are measured as reflective measures using the seven-point Likert scale (1 = strongly disagree and 7 = strongly agree). Additionally, the participant's gender, age, working status (no, part-time, or full-time), and

MCP tenure (duration of MCP use) are adopted as the control variables.

4. Data Analysis & Results

The partial least squares (PLS) approach is used to test the measurement and structural models [5]. For our statistical analyses, the SmartPLS (v. 3.2.7) [29] is employed.

4.1. Measurement Model Assessment

Internal consistency reliability is assessed using composite reliability in which scores exceeding .7 are considered adequate [26]. Validity is assessed using convergent and discriminant validity tests. For convergent validity, the values of the standardized outer-loading scores should be at least .6 and ideally, higher than .7, for statistical significance [4]. In addition, the average variance extracted (AVE) scores of the research constructs should exceed .5 [12]. The results of our first confirmatory factor analysis found that one of the MCP use items (MCPU3) has a low loading score of .548 and thus this item is removed for the final measurement and structural model analyses. Table 1 shows the results of the second confirmatory factor analysis with the values of item-level loadings, composite reliability, and AVE. The values of composite reliability satisfied the criterion of internal consistency reliability. The values of AVE exceeded .5, and all items of research constructs have sufficient loadings and are statistically significant. Therefore, our measurement model shows significant reliability and convergent validity.

The Fornell-Larcker criterion and cross-loadings are tested to evaluate the discriminant validity of the measurement model [18]. The results in Table 2 show that the square root of each construct's AVE (bolded diagonal values) are higher than its correlation with other constructs. Moreover, each item's loading to its own latent construct is higher than its cross-loadings to other constructs. The results confirm the discriminant validity of our measurement model.

Table 2. Correlation Matrix

Constructs	CRET	MCPU	MCPE	MCPF	PIIT
CRET	**.779**				
MCPU	.436	**.785**			
MCPE	.169	.301	**.837**		
MCPF	.180	.220	.293	**.816**	
PIIT	.293	.339	.106	.045	**.820**

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[4] Since this study aimed to investigate the impacts of the different levels of MCP use on individual creative ideas

generation, all students were involved in the same task using the same MCP.

Table 1. Results of Confirmatory Factor Analysis

Constructs	Items	Means	Standard Deviations	Item Loadings	Composit Reliabiltiy	AVE
Creativity (CRET)	4	5.034 - 5.454	1.018 - 1.213	.628 - .846	.859	.607
MCP Use (MCPU)	3	3.983 - 4.649	1.126 - 1.375	.686 - .869	.827	.616
MCP Effectiveness (MCPE)	4	4.960 - 5.264	1.310 - 1.412	.733 - .917	.902	.700
MCP Freedom (MCPF)	3	4.943 - 6.241	1.112 - 1.644	.690 - .895	.855	.666
Personal Innovativeness in IT (PIIT)	3	5.391 - 5.103	1.280 - 1.573	.712 - .882	.859	.672

We further conducted supplemental analyses to address potential multicollinearity and common method variance issues. To test multicollinearity, we used the variance inflation factor (VIF). The VIF scores of all the principal constructs are between 1.006 and 1.273, which were under the proposed threshold of the multicollinearity problem in measurement models (i.e., 5.0) [15]. Therefore, we conclude that our model is free from the multicollinearity concern.

## 4.2. Structural Model Assessment

In this phase, the relationship between individual's MCP use and creativity is tested. Subsequently, following Chin et al. [5] guidelines, the moderating effects of PIIT on the relationship between MCP effectiveness and MCP use and the relationship between MCP freedom and MCP use are examined using the item-multiplication method to create the interaction terms. Figure 2 below shows the entire structure model's results.

According to the results in Figure 2, all proposed direct relationships are significant (at least at the .05 level). Particularly, MCP use has significantly affected the creativity of MCP users (at the .01 level), and the MCP effectiveness and freedom have significantly determined the actual use of the MCP during their group collaboration (at the .01 and .05 levels, respectively). Our model explains 20.5% of creativity and 26.3% of MCP use. The results support hypotheses H1, H2, and H3. Interestingly, PIIT also had a significantly positive effect on MCP use (at the .01 level).

However, the results of moderation effect tests are varied. While PIIT showed a positive moderation effect on the relationship between MCP freedom and MCP use (significant at .05 level), it did not have a significant moderation effect on the relationship between MCP effectiveness and MCP use. These results support hypothesis H4b, but not H4a. Figure 3 below shows the simple slope analysis results for the two moderation effects where they are consistent with our structural model test results.

The results shown in Figure 3 indicate that the effect of MCP freedom on the MCP use is conditioned by an individual's PIIT. In other words, there is a positive effect of MCP freedom on MCP use by a user with a high level of PIIT, e.g., an 'early adaptor' [32], but no

such effect in the case of a user with a low level PIIT, e.g., a 'late adaptor.' On the other hand, the effect of MCP effectiveness on MCP use is positive, although the effect is slightly increased as the level of PIIT is elevated. We also tested the effects of four control variables (age, gender, working status, and MCP tenure), on creativity and MCP use, but no significant effects of these control variables were found.

(a)   PIIT x MCP Effectiveness

(b) PIIT x MCP Freedom
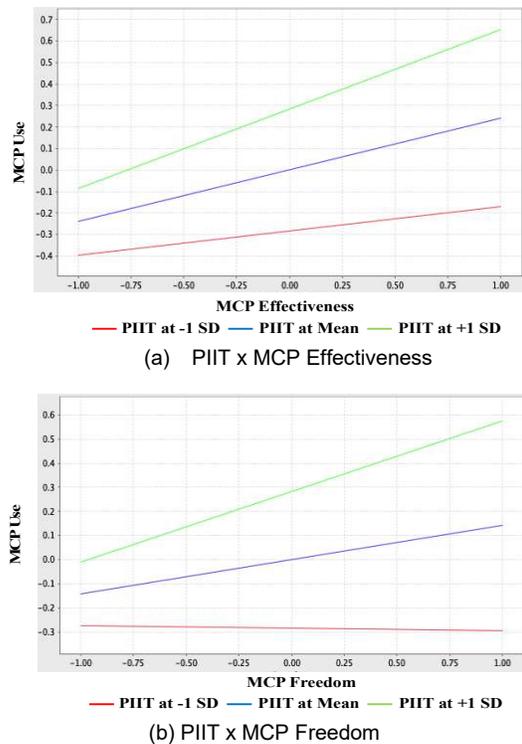
Figure 3. The Results of Slope Analysis

5. Discussion

The hypotheses in the proposed research model are mostly supported, except hypothesis H4a. The H1's significant result (β=.420, p<.01) clearly states that more MCP use leads to higher level of creative idea generation. In this study, the MCP is defined as a set of unique capabilities, involving mobility and self-select communications. Given these capabilities, a high level of MCP use clearly heightens an individual's creative idea generation level [35].
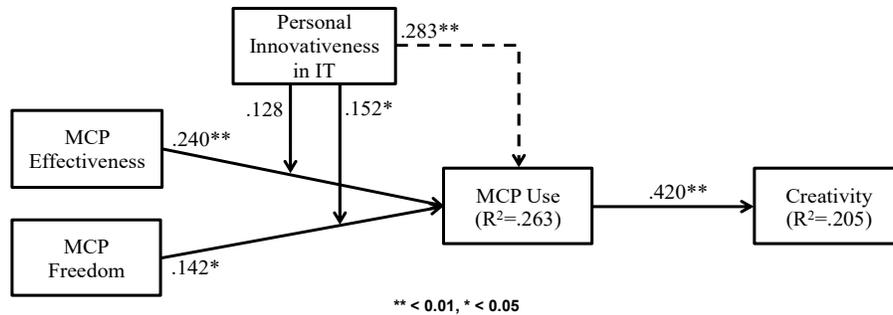
Figure 2. Entire Model Test Results (n=174)

For H2, MCP effectiveness brings a positive impact on the MCP use (β=.240, p<.01). The effectiveness of the MCP's technological features in supporting group collaboration and communication allows the subjects to consummately work to their potentials. An individual's perception on effectiveness of the MCP features in group collaboration is inclined to support his/her perceived ease of use and perceived usefulness [39]. Consequently, these dexterous MCP's technological features and their effectiveness explain the significant level of MCP use.

Freedom is an accompanying characteristic of MCP use. Its effect is to make an individual's cognitive process during problem solving or creative idea generation less burdensome, and thus helps induce divergent or convergent thinking. An individual will expect and weigh these positive impacts of freedom in route to MCP use. Furthermore, our results indicate that the potential benefit of the MCP freedom is actualized through the actual level of MCP use[5]. Hence, H3 is well supported (β=.142, p<.05).

Rogers [32] argues that innovators and early adopters take a risk in getting to know the target technology and discovering its pros and cons, but in turn, this behavior simultaneously reduces the uncertainty that is associated with new technology and its related-task. Agarwal and Prasad [2] mention that "we believe that PIIT potentially represents a construct that might be highly salient for studies examining innovative behaviors with respect to computing technology in that it may account for a significant proportion of the variance in innovation related dependent variables" (p. 213). The H4 result soundly supports these arguments by exhibiting the positive sign of the moderating effects of PIIT on both MCP effectiveness and MCP freedom, but only the MCP freedom result is significant (β=.152, p<.05). An alternative explanation for why the moderation effect

of PIIT is not significant for the relationship between MCP effectiveness and MCP use is as follows: PIIT is a trait that focuses on technology and MCP effectiveness is technology-driven, so that when these two interact and "technologically blend" into each other, the moderating effect and its result are hard to distinguish. Moreover, PIIT trait tendency may get subsumed under the highly seminal MCP's technological features in this context, so that their impact is not so vivid and significant as it is in the case of the freedom construct. This inconsistent result needs to be further investigated in future studies.

6. Conclusion

This study focuses on the impact of mobile collaboration platform (MCP) use on generating creative ideas by individuals in the context of a group task. Creative idea generation is a highly sought-after quality in organizational settings. Given the pervasiveness of the mobile ecosystem in our society, this study presents both theoretical and practical contributions. In regards to its theoretical contribution, no major study has been conducted in this category. As a pioneering study it examines how an MCP built upon the mobility and self-select communication capabilities plays a role in impacting a person's creative idea generation. Particularly, this study proposes an extended theoretical perspective on the GDSS communication modes in the new mobile collaboration setting. Due to the enlarged freedom in choosing a communication mode based on individual's situation and willingness, MCPs open a new communication capability beyond the traditional asynchronous and synchronous ways.

Additionally, the study examines the driving forces of MCP use, i.e., MCP effectiveness and freedom, from the perspective of an individual. The conditional effect of an individual's personal innovativeness in IT

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[5] This mediation effect was tested using Baron and Kenny's four step analysis [3]. The results confirm a full mediation effect of MCP use between MCP freedom and creativity. An

additional test also confirms a full mediation effect of MCP use between MCP effectiveness and creativity. These results confirm the goodness of our research model.

trait is also examined through this lens of study. On the practical side, the results of this study can be referenced by organizations that hope to induce a higher level of creativity among workers in collaborations.

There are a few limitations to mention. The first is the participant's limited age category. Ideally, a more diverse population (particularly in terms of different age categories) would have been of greater value to the study. Additionally, participants with more diverse backgrounds and work experiences could have strengthened the arguments of the study. Another limitation is the single location of data gathering in this study. Data from diverse contexts would help improve the generalizability of the findings. The data source, which in this study is solely from a survey, is another limitation of the current study. According to the cognitive creativity perspective, creative ideas are generated by an individual's cognitive process through interactions among people, technology, and task. Hence, the interaction process data, e.g., communication logs over the MCP, would be more useful in detecting an individual's creativity.

For our future research, data from more diverse groups and regions (within the U.S.) will be collected to improve the generalizability of the findings and to aid in the investigating the role of cultural differences in the dynamics of creative idea generation through group collaboration over a MCP. In addition, more objective and process-oriented data, e.g., communication and location logs, will be collected and analyzed in our future research. Especially, more objective measures can be used for the log data. For example, instead of asking the level of MCP use to each individual, an individual's participation frequency can be counted and used for her/his MCP use. Likewise, the amount of MCP use can be measured using the actual amount of words posted by each individual. Moreover, a content analysis using these objective measures is expected to unveil the additional and more objective insights that the study is focused on. These insights and expected saliencies will stimulate other future studies in this genre.

7. References

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