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Young-Ran Shin

Choong C. Lee

Kun-Ah Kim

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AN EMPIRICAL STUDY ON THE FACTORS INFLUENCING THE UTILIZATION AND THE EFFECTIVENESS OF ENTERPRISE INSTANT MESSENGER

Young-Ran, Shin, Korea Telecom, heaven@kt.co.kr
Choong.C. Lee, Yonsei University, Korea, clee@yonsei.ac.kr
Kun-Ah, Kim, Yonsei University, Korea, kunah@yonsei.ac.kr

ABSTRACT

Communication technology has been recognized to play an important role in boosting organization's competitiveness and viability by facilitating efficient communication and information sharing. Lately, many organizations began to actively adopt the self-developed Enterprise Instant Messenger (EIM) as a common organizational communication medium after experiencing security problem with public messengers like MSN.

Its utilization and tangible benefits of EIM, however, vary. There's an urgent need to understand how each organization embraces EIM and to empirically evaluate whether active use of EIM can result in a better communication, eventually leading into better business productivity. In this research we try to investigate those antecedents which may have affected the high use of EIM and a better decision making efficiency.

Theoretical justification of research variables and causal relationships of our research model are mainly based on Technology Acceptance Model (TAM), media selection theory, and social influence model. Through a survey data analysis of 171 EIM users, it was found that perceived usefulness, social influence, the externally-orientated organizational culture had a significant effect on the high use of EIM. In addition, the use of EIM was found to have a significant effect on the efficiency in the decision-making process.

Keywords: EIM, TAM, Media Selection Theory, Social Influence Model, organizational culture, frequency of usage, decision-making, information dissemination

INTRODUCTION

The Backgrounds and The Objectives

Information society can be defined as a society that can raise the value of information socially and economically through wide utilization of Information technology.

The communication's sub-structure that can support the production and the stream of information in the information society will be a very important social asset, and this will be technical backgrounds that can make it possible to be advent of information society. [1]

Along with the traditional communication technology such as e-mail has crucially affected a company's competitiveness through an information sharing and a vitality of communication. The instant messenger is widely used as a main communication tool recently. This communication tool is called Computer Mediated Communication (CMC).

All company are evolving rapidly because it has to interact with the constantly changing external environments, so the inter- and intra- communication is needed to be expedited further than usual. And recently, companies have adopted the instant messenger in order to achieve more efficient and fast communication activation and spontaneous decision making.

The previous researches on the instant messenger have focused on the public messenger such as MSN, NATE ON, AOL, BUDDY BUDDY, showing the critical limitation to understand the internal, business-oriented use of instant messenger within a company at the same time, this sub-structure will be an indispensable technical fundamental for the advent of Information Society.

It would be more valid to confine the research fast on the Enterprise Instant Messenger in order to make a valid verification about the result of using instant messenger as a way of communication with the company and to understand social factors and organizational culture factors related to the instant messenger use. In fact, many companies prohibit public messengers due to a security problem and have developed their own Enterprise Instant Messenger.

In this research, we attempted to understand critical factors toward a successful sue as an Enterprise Instant Messenger. Additionally, we study how much does the instant messenger contribute to the organization's accomplishment in the aspect of the quality improvement of information distribution and the enhancement of decision-making effectiveness on Instant Messenger.

Theoretical Background

Researches on factors that affect the acceptance of Instant Messenger (IM) are largely divided into three topics: research on the acceptance of information technology; research on Media Selection Theory and research on organizational culture and the acceptance of information technology.

First, researchers have examined the factors that allow IM to be accepted within an organization with Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA) that are used to explain the factors that enable users to accept

information technology. TRA suggests that outcomes of actual behavior are determined by a person's behavioral intention to perform the action, while behavioral intention depends on attitudes and subjective norms. (Ajzen&Fishbein, 1975)TAM, which is based on TRA, is a model to predict and explain a user's acceptance of information technology, which suggests factors that would have the most impact on a user's perceived ease-of-use and perceived usefulness [3].

Second, researchers have explained the factors that affect the acceptance of IM on the basis of media choice theories. Previous studies on communication media choice generally falls into two categories: media richness theory in which a richer format that a medium itself has is the most important factor in choosing a medium for communication; and, the Social Influence Theory which claims that people's attitudes, norms, and culture would influence media choice more than the richness of media itself. The theory of social influence that examines social variables that affects media use argues that social environment has a direct impact on the choice and use of media.

According to the theory of social influence, media choice is determined on the basis not only of objective technical characteristics but also of colleagues' statements, behaviors, attitudes, decisions, and evaluation as well as of organizational norms for media use and vicarious learning through other people's experiences and observation of a particular medium (Fult et al. 1987,1990). In his study on social variables that affect the use of IM at work, Hwang confirmed that particular characteristics of media, that is media richness, are not the only factor for media choice.[4] Yang and Choi examined the variables that affect Internet use and revealed that, even though less than perceived usefulness and perceived ease-of-use, social variables do have significant effects on Internet use.[5]

Third, research has found that the factors of organizational culture have significant effects on the successful acceptance and performance of IM within an organization. Lee.M and Olfman and Weber and Weber & Pliskin [6] argued that organizational culture is one of the most important success factors for the performance of information system because organizational culture functions as an internal factor for organizational members in information system. Zammuto and O'Conner [7] suggested that the success of IS depends on organizational culture and organizational structure, while Suh et al. [8] attributed the success of IS to organizational culture and leadership (Jang, Won-Kyung, Kim, Tae-Kyun, 2003). Lastly, Han, (2003) showed that innovativeness, supportiveness, and outcome-oriented of organizational culture have significant effects on the use of IM.

Based on these three research frames, this study examines the variables that affect the acceptance of IM as a communication medium within an organization with focus on perceived ease-of-use and perceived usefulness in TAM, Social Influence Theory in media choice theories, and organizational culture based on previous studies on the relationship between the acceptance of information technology and organizational culture. Also, this study shows the effect of the use of IM as an official communication channel within an organization on the increase of effectiveness in decision-making process within an organization.

While previous studies on IM deal with the effects and the factors of acceptance of generic messengers, this study examines corporate messengers. As many companies and public agencies that implemented corporate messengers have shown noticeably different utilization of messengers, they also have varied outcomes of using messengers.

In examining the factors that affect the use of corporate messengers, this study focuses on the difference in the acceptance of information technology depending on usefulness and ease of use as well as on social perception of relatively informal and unofficial communication medium and organizational culture. In addition, when estimating the outcomes of messenger use, this study is distinguished from previous studies as it attempted to verify more substantive effects with a notion that the effectiveness of decision-making process is derived from the improvement of quality in information distribution.

LITERATURE REVIEW

Instant Messenger as Computer Mediated Communication

The development of information technology has led the incorporation of communication and computer, which basically affected the existing communication media. Computer Mediated Communication (CMC) is to use computer as a basic medium for communication. This term, CMC is found in "The Network Nation: Human Communication via Computer" by Hiltz and Turoff [9], in which CMC is defined as communication processes that allow 1-1, 1-many, or many-many transactions through printed messages via computer (Kim, You-Jung, 1998). In other words, CMC can be defined as communication phenomena or processes that are performed through computer as a medium, and in this phenomenon, transactions occur when senders and receivers connected through computers enter messages to communicate without meeting each other at the same physical place.

According to the capacity of CMC, Katherine (1999) divided them into: one-way CMC such as audio, video, and the World Wide Web (WWW); asynchronous two way CMC such as electronic-mails and bulletin boards; and, synchronous two-way CMC such as chatting and video conference. The subject of this study, Instant Messenger (IM), is basically a synchronous two-way CMC, but it also combines all three characters above.

Efficient communications within an organization is a critical element in a fast-changing management environment. The advancement of CMC technology has drastically changed organizations. In companies, the construction of information system has been developed as an area to support decision-making processes based on the promotion of communicative elements. Communications within an organization allows exploring and analyzing an environment that an organization faces and performing such roles as mediation between departments, establishment and dissemination of objectives and rules and support in decision-making process. CMC has innovatively improved these functions and made a considerable contribution to vitalizing organizational communication.

David and Danny [10] define Instant Messenger (IM) as follows:

First, status on a network: IM is one of carrier infrastructures that exist on a network. Second, the messaging: IM is a real-time messaging solution. Third, indication of user status: IM indicates the current status of friends or colleagues. Fourth,

interoperability of information processing: IM is a communication tool that is not restricted by Phone, PDA, or PC and is conveniently to be embedded in information appliance or mobile device.

In summary, IM is one of computer-mediate communication systems that provide various functions through computer such as instant transmission of messages, indication of a receiver's status, and management of friends, file transfer, and video chatting.

IM has become widely known with the acquisition of ICQ (I Seek You) by AOL in 1998; and, especially in South Korea, various generic messengers including MSN and NATE have made it more and more popular. As generic IM has become common, many companies begun to point out such problems as virus transfer through generic IM and security issues including information leakage in order to address the problems, such as information leakage, virus infection, and work productivity, which are derived from the use of generic messengers (e.g. MSN and NATE) within a company, corporate messengers have been developed and implemented and now many companies are actively using these convenient and efficient messengers as an official communication tool within an organization. It is expected that the domestic market of corporate messengers will be almost doubled from 3 billion won last year to 5 billion won this year (eWeekly, 2006.2.6). According to a market research company, about 135 million people are currently using messengers in their offices around the world and it is expected that the number will be increased to 477 million people by 2009 (Inews, 2006.2.22).

In addition to general functions of generic IM, corporate messengers provide functions such as organization management (member search), bulletin boards, and in-company news through the linkage to the existing group ware such as KMS or ERP. IM assists to strengthen collaborations and accumulate, organize, and redistribute information within a company. Currently in 2006, various functions including text-based chatting, video chatting, file transfer and screen sharing continue to be added to IM. Various attempts have been made to build faster and more efficient networks for corporate messengers, and messenger services incorporated with advanced technology are introduced to add various communication tools such as phone and webcam functions to messengers.

Currently many companies, governmental offices and public agencies develop and utilize their own messengers, and this trend is spreading. Messengers are actively utilized in financial industry, especially stock markets, while schools also use messengers as a way to deliver] messengers to students. Central administrative agencies and local governments are also building their own corporate messengers to vitalize communications among agencies.

This study examines corporate messengers that are developed and utilized by a company. Many studies have shown that IM increases communication efficiency and productivity in many organizations and helps strengthen a company's competitive power through efficiently sharing information. Lee and Hwang [11] demonstrated that the use of messenger increases intimacy within an organization and improves individual performance, and Hwang [4] also revealed that the use of IM at work could increase the effectiveness of decision-making process in an organization. Jeong examined how IM is used in tourism industry in order to enhance work efficiency, and especially that IM increases time-space economical efficiency among travel agencies and encourages information sharing. [12]

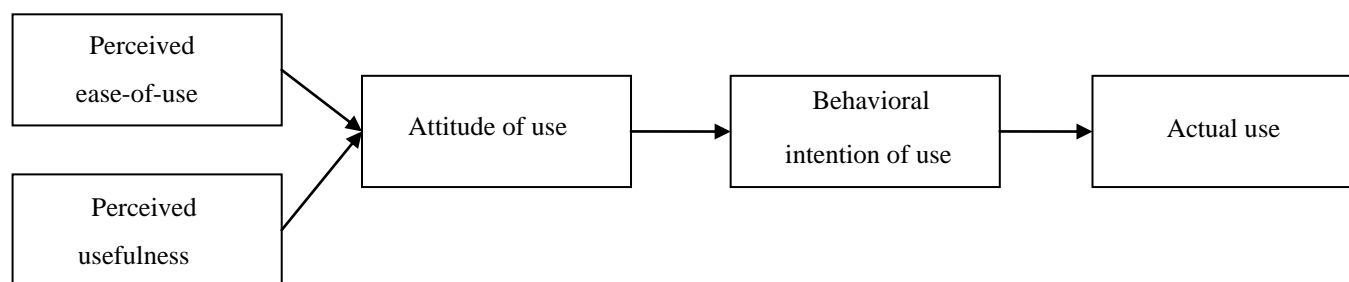
Technology Acceptance Model

Theory of Reasoned Action (TRA)

Theory of Reasoned Action (TRA) is a model widely studied in social psychology with regard to decision factors of consciously intended behaviors [2]. According to TRA, the outcome of a person's actual behavior is determined by behavioral intention to perform a behavior, and behavioral intention is guided a person's attitude and subjective norms. Here attitude is a person's valuation on his or her wish to use a system and subjective norms means an individual's perception who feels social pressure to perform certain behaviors. This idea that attitudes and subjective norms are connected to intentions and behaviors provides a general yardstick which allows combining users' processes to accept information technology. Thus, TRA becomes a theoretical basis for many researchers of management information system (Jang and Kim , 2003.)

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM), based on TRA, is to predict and explain users' acceptance of information technology, and it suggests that perceived ease-of-use and perceived usefulness are the factors that most significantly affect technology acceptance. This model explains that: when two behavioral beliefs – perceived ease-of-use and perceived usefulness – affect behavioral intention through a parameter called attitude, they eventually reach actual behaviors. Perceived ease-of-use in TAM is a category to assume that it is easy to use a certain system, while perceived usefulness is a category to believe that using a certain system allows making accomplishments. TAM, which is a model that is most frequently cited in governmental technology acceptance, is used in this study to analyze if perceived ease-of-use and perceived usefulness of a messenger affect on the actual use of a messenger.



[Figure 1. TAM]

Media Selection Theory

Media Richness Theory

The concept of media richness was first presented in order to address a question “why an organization processes information.” [13] According to Daft and Lengel, an organization processes information in order to minimize uncertainty and ambiguity. In processing information to reduce uncertainty and ambiguity, communication occurs using a communication media.

In Media Richness Theory, communication media is divided rich media and lean media by its ability to share meanings among people. The degree of richness is determined based on the following four categories: First, is immediate feedback possible?; Second, can it multiple clues such as voice, gesture, words, numbers, and graphics?; Third, how much does it secure language varieties to deliver meanings in various ways?; And, fourth, how much personal feelings can be injected to Attitude of use Behavioral intention of use communication media with personal focus? These four criteria determine the degree of media richness, and media richness decreases in the order of face-to-face communication, telephones and documents with senders (e.g. memos, letters) and documents without senders (e.g. bulletin boards and filters). Media richness theory contends that richness of a media has a critical effect on media selection. That is, when an organization processes information to reduce uncertainty and ambiguity, a medium with high richness would clearly deliver information, increasing a potential to be selected as communication medium within an organization [13][14][15].

Social Influence Model

The Social Influence Theory was introduced originally as a model on technological use and it views that personal perception and use of the media is partially socially constructed (Fulk, Stienfield, Schmits&Power, 1987; Fulk, Stienfield & Schmits, 1990). The model premises that media characteristics such as richness are not objective characteristics inherent in the media but subjective ones that are variably perceived by social factors including a user’s attitude, circumstances, and others’ influences. Thus, while objective media richness affects individuals’ use and perception of the media, these characteristics are only part of what determines media perception and use. Moreover, the recognition of richness varies by individuals. The theory of social influence can be seen as connected to the perspective of social information processing theory [14].

From the perspective of social information processing, Huang compared perceived richness of various forms of the media. It was found that the groups that have shared goals for the same media had the high degree of perceived richness than the groups that do not share goals, which suggests that the degree of richness is not unique attributes inherent in the media but could be changed by social environment [16]. That is, as in the Media Richness Theory, the Social Influence Theory contends that the media is selected not only for its richness appropriate for the characteristics of tasks but also for social factors including a user’s attitude, circumstances, and others’ influence.

This study applies the Social Influence Theory regarding the factors in selecting IM as communication media and examines the effect of social environment on the acceptance of instant media.

Organization Culture And Information Technology

The Meaning of An Organization Culture

Scholars have defined organization culture in various ways and emphasized its different aspects; it can be generally defined as “patterns by which activities are carried out in an organization.” (Kennedy, 1982) As a comprehensive concept that encompasses values, beliefs, ideology, issues, knowledge and technology shared by members of a company, organizational culture is an element that affects members’ behaviors and a factor that directly influences the performance of a company[17]. Here it also includes intangible system such as management styles and problem-solving methods as well as external symbols including uniforms, office arrangements and logo [15].

Organizational culture could have a positive effect on the process to introduce new information technology and its success, but also cause resistance and conflicts. Therefore, the success of information technology differs by whether it is appropriate to organizational culture or style [18] , and when information technology supports organizational culture and styles, an organization could maintain balance and harmony. This kind of organizational culture is a factor that dominates behaviors of a company and has a significant effect on the performance of a company.

Regarding the types of organizational culture, Quinn and Kimberly (1984) and Quinn and McGrath (1985) discussed Competing Values Framework. These studies identify four types based on the flexibility-control dimension and the internal-oriented and external-oriented dimension.

The flexibility-control dimension indicates preference of organizational structure. In other words, a system that prefers

flexibility emphasizes decentralization and differentiation, while a system that is oriented toward control focuses on centralization and integration. The second internal-external dimension is concerned with the organizational value system with which whether an organization emphasizes socio-technological system or competitive position under an external environment.

According to two dimensions, organizational cultures are divided into group culture, developmental culture, hierarchical culture and rational culture. Group culture considers flexibility and internal orientation important and specifically emphasizes coherence, teamwork, family-like human relations, morale and development of human resources. Developmental culture characterized with flexibility and external orientation stresses creativity, entrepreneurship, flexibility, adventure, and innovation.

On the contrary, hierarchical culture marked with stability and internal orientation values order, rules, procedures, and regulations, which is also called bureaucratic culture. Rational culture in pursuit of stability and external orientation attaches importance to goal attainment, competition, and performance [19].

Organization Culture And Information Technology

A theoretical examination of the relationship between organization culture and information technology was carried by Zammuto and O'Conner [7]. They pointed out that the use of AMTs(Advanced Manufacturing Technologies) in information technology failed because the elements of organizational culture were overlooked. On the basis of Competing Values Framework for organizational culture, they formulated hypotheses on the associations among organizational culture, organizational structure, and performance of information manufacturing technology and showed the relationship between information technology and organizational performance.

In addition to this study by Zammuto and O'Conner[7], many previous studies examined the effect of organizational culture on the use of information system (IS) (Lee, M. and Olfman, 1997; Weber & Pliskin, 1996; Suh et al, 2000; Jang, Won-Kyun, Kim, Tae-Kyun, Cho, Young-Bok).

In their research on the effect of organizational culture and leadership on the success of information system, Suh et al. [23] demonstrated that organizational culture affects the commitment to the development of IS as well as the use of IS, contributing to individual performance, while Jang and Kim (2003) showed that perceived organizational culture affects the acceptance of Internet.

Other studies deal with organizational culture and the use of Instant Messenger (IM). Han (2003) verified that the elements of organizational culture (innovativeness, supportiveness, outcome-oriented, analytic tendency, and aggressiveness) have significant effects on the use of IM. A study by Lee and Lee (2003) examined the effect of Confucian values on Korean's use of IM and revealed that Confucian culture concerning "propriety" and "face (reputation)" has a limitation in using IM as a communication channel in a hierarchical structure. Taking a close look at previous studies on the effect of organizational culture on the use and success of information technology, two frameworks are used in defining and assessing organizational culture.

The first research group including O'Reilly et al. (1991) measures organizational culture by using 8 variables including Innovativeness, Attention to Detail, Outcome Orientation, Aggression, Supportiveness, Emphasis on Reward, Team Orientation, and Decisiveness.

The second group is based on Competing Values Framework proposed by Quinn and Kimberly (1984) and Quinn and McGrath (1985), which studies four types of organizational culture categorized by the flexibility/control dimension and the internal-oriented and external-oriented dimension. This group includes Zammuto and O'Conner (1992) and Suh et al..

As IM is characterized as simplicity and informality as information technology for organizational communication, the culture with high degree of autonomy and flexibility has higher probability in using IM than the culture that emphasizes regulations and procedures. Thus, it is assumed that the types of culture in the flexibility-control dimension have a significant effect on the acceptance of IM.

When an organization places more importance on maintaining the existing social information system or competitive location in an external environment, it is deemed that an organization would stress efficiency over formality in accepting communication-related information technology, and that the internal-external dimension would have a significant effect on the use of IM.

In this study, the hypothesis that the degree of flexibility and external orientation of an organization would affect the use of IM within an organization will be tested.

Organizational Communication and Decision-Making Process

Organizational communication is defined as "two or more people send and receive messages in order to consciously form and maintain a system of a series of activities" (Tompkins, 1984). Organizational communication is generally defined as communication among members within an organization, but there exists communication that occurs beyond a boundary of a certain organization. That is, organizational communication is a concept that includes all forms of communicative activities within and between organizations.

In the 1980s, a study of the top 100 out of 500 U.S. companies pointed out the following problems with the communication structures of these organizations (Goldhaber,1990). For example, workers do not receive sufficient information on the company and workers' opinions are not reflected in making important decisions. Also, senior management does not quickly respond to workers' messages, or frequently messages are delivered too late to be taken into consideration. The current management does acknowledge the problems in organizational communication in their companies, so they are examining ways to promote various communication channels [15].

Research on organization communication started from the aspects of business management such as organizational task

performance, goal attainment and management efficiency. Most significant areas of organizational communication research are decision-making process, conflict management, and information distribution. According to Gouran [20], when members are engaged in active communication in the introduction stage, the early stage of the decision-making process, probability of making uniform decisions increases. Also, Leathers [21] claimed that when members experience the high level of positive feedback in the decision-making process and receive the information on task performance and organizational maintenance at appropriate times, they are more likely to make desirable decisions.

Another important issue of organization communication is information distribution. In order to efficiently manage an organization, information should be distributed quickly and richly, for which organizational communication should be actively performed. In defining the quality of information distribution, King and Epstein (1983) applied the variables of information quality such as an information delivery, information sufficiency, and the reduced time for information distribution. Instant Messenger (IM) makes it easy to send messages in 1 – 1 or 1 – many, and to form and manage friend groups, so it is expected that information delivery and speediness will improve. However, it is possible to have problems including excess of unnecessary information such as spam messages.

As communication media that is rapidly spreading, Enterprise Instant Messenger (EIM) has a positive effect on the vitalization of organizational communication, through which it would increase efficiency in making decisions and accelerate the speed of information distribution.

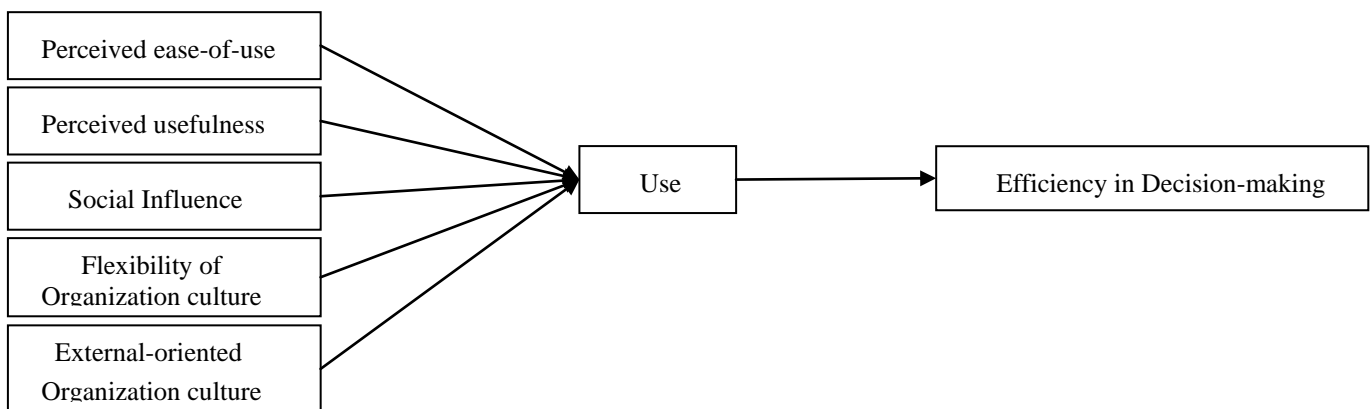
RESEARCH METHODOLOGY

Research Model

Many organizations have implemented corporate instant messengers, but its use and performance differs by organization. Thus, with focus on this difference, this study aims to examine the factors that affect the acceptance of EIM. Furthermore, this study tests the hypothesis that the use of EIM vitalizes organizational communication and further increases the efficiency of organizational decision-making.

In the research model, perceived ease-of-use and perceived usefulness from TAM, organizational culture and social influence variables from the theory of social influence are used as independence variables and the use of EIM as a dependent variable, in order to empirically test the factors that affect the acceptance of corporate EIM as an official communication medium, and to examine the effects of the use of corporate EIM on the efficiency of decision-making process and the increase of information distribution.

And here is the research model.



[Figure2. Research Model]

Hypothesis

Hypothesis1. Perceived ease-of-use of Enterprise Instant Messenger significantly affects the use of messenger.

Hypothesis2. Perceived usefulness of Enterprise Instant Messenger significantly affects the use of messenger.

TAM designed by Davis [22] is a model to predict and explain a user's acceptance of information technology, which is based on TRA in the area of social psychology. In this model, two behavioral beliefs – perceived ease-of-use and perceived usefulness – affect behavioral intention through a parameter called attitude, and they eventually influence the use of information system. By using TAM, this study tests the hypothesis that perceived ease-of-use and perceived usefulness for corporate messenger have an impact on the use of IM.

Hypothesis3. Social Influence of Enterprise Instant Messenger significantly affects the use of messenger.

Fulk et al. (1987; 1990; 1993) argued that social variables have direct effects on the selection and use of communication media.

A work group that a user belonged acts as an influential group for each user. Therefore, general attitude and use pattern of the system within work group would have a significant effect on a individual members' use of the system. Based on this theory of social influence with regard to media choice, it is hypothesized that the rate of messenger use in a given department, members' perception of messengers, and a boss's use and perception of messenger would have a significant effect on the use of messenger.

Hypothesis4. More flexible organizational culture in a company leads into to the wider use of EIM.

Hypothesis5. External-oriented organizational culture leads into to the wider use of messenger.

Grounded in Quinn's Competing Values Framework on organizational culture, Zammuto and O'Conner [7] hypothesized the relationship between organizational culture, organizational structure and performance of information-manufacturing technology and demonstrated the relationship between information technology and organizational performance. With consideration of the elements of organizational culture that would affect the use of corporate messenger, this study inquires how the degree of external orientation and flexibility level in a company affect the acceptance of corporate messenger. As information technology for organizational communication, corporate messengers are characterized as a simple, instant, informal means. Thus, it is known that the culture with high degree of autonomy and flexibility tends to prefer more flexible, spontaneous, quick information than the formalized culture with emphasis on regulations and procedures. In addition, the external-oriented culture that prioritizes competitiveness also needs more dynamic information exchanges than the internal-oriented culture that rely on the routine maintenance.

Hypothesis6. Wide use of Enterprise Instant Messenger leads into a better decision-making efficiency.

In research on the decision-making process in an organization, one of the most important elements is the relationship between communication and the quality of decision-making process. According to Gouran [23], when members are engaged in active communication in the decision-making process, probability of making valid decisions increases. Also, when members experience the high level of positive feedback in the decision-making process and receive the information on task performance and organizational maintenance at appropriate times, they are more likely to make desirable decisions. [21] Based on these previous studies on communication and the decision-making process, it was hypothesized that the vitalization of communication and the fast and sufficient attainment of information via corporate messenger would have a positive effect on the efficiency in the decision-making process.

EIM' functions such as making announcements, sending messages to friend groups, and 1-1 conversations, would facilitate distribution of information in an unprecedented speed and alleviate the imbalanced distribution of information within an organization. Especially, corporate messengers can vitalize horizontal and downward communications along with downward. It may vary by organizational culture, but it was also found that the use of messenger encourages upward communication, transmitting information from the bottom to the top (Lee,Eun-Mi, 2005).This study aims to empirically demonstrates that corporate messengers as an official channel for organizational communication would improve the quality of information distribution within an organization with better information delivery, information sufficiency, and speediness, and to further advance the efficiency of the decision-making process.

Operational Definitions of Research Variables

The operational definitions of variables used in this study are as follows:

Perceived Ease-of-Use And Perceived Usefulness

Measures of perceived ease-of-use and perceived usefulness are based on Davis (1989)'s study. Validity and reliability of these variables have been confirmed through many previous studies. Perceived ease-of-use and perceived usefulness are core concepts of TAM. Perceived ease-of-use is "the degree of an individual's belief that a certain system is easy to use." In this study, a person's perceived ease-of-use in using EIM is "the degree of belief that it is easy and not cumbersome to use EIM" which consists of three measurements – the degree of easiness to learn to use a corporate messenger, the degree of easiness to use a messenger and the degree of easiness to attain proficiency. Perceived usefulness is defined as "the degree of a person's belief that using a certain system would improve a person's work performance." For the purpose of this study, it is defined as "the degree of a person's belief that the use of EIM would be useful for work performance and organizational communication," with four items of improved speed of work performance, increased productivity, improved efficiency and the degree of usefulness in making work easy.

Social Influence

Measurements for social influence that would affect the use of EIM include the rate of messenger use in a group that a user belongs to, the degree of (positive/negative) perception of a group on the use of messenger, and a senior worker's attitude toward the use of instant messenger and utilization. (Fulk et al. 1987;1990;1993).

Flexibility of Organization Culture, And External-Oriented Organization Culture

Operational definitions to measure organizational flexibility were; the degree of an individual's perceived autonomy and permitted discretion, the degree of demand for official documentation in performing tasks, and the degree of emphasis on hierarchical order. [7]

The degree of organizational external orientation was measured with the degree of competition with external organizations and the degree of pressure for internal innovation by changes of external environment.

Use of EIM And Efficiency of Decision-Making

The use of corporate messenger was measured with the frequency, frequency of daily use. Additionally, the pattern of messenger use was examined in terms of the purpose of messenger use.

Leathers [21] showed that when members experienced the high level of positive feedback in the decision-making process and received the information on task performance and organizational maintenance at appropriate times, they were more likely to make desirable decisions [15].

To measure efficiency in the decision-making process through the use of corporate messenger, Huber's (1984) and Chidambaram and Jones (1983) instrument were used. Four operational definitions to measure the efficiency for the decision-making process proposed in the studies by Huber (1984) and by Chidambaram and Jones (1983) include timeliness and speediness of decision making, the effectiveness of work, and cost reduction in making decisions [4]. Also, the variables related to the concept of information quality presented by King and Epstein (1983), information sufficiency and time reduction in information distribution were additionally applied. (Park, Hae-Youn, 2004)

Measurements and operational definitions of each variable are summarized in Table 3-1.

[Table3-1 Operational Definitions and measurement of Variables]

Variables	Operational Definition	Measurements (Operational Definition)	No. of Items
Perceived ease-of-use	Degree of belief that it is easy and not cumbersome to use a corporate messenger	Degree of easiness to learn how to use	3
		Degree of easiness to use	
		Degree of easiness to attain proficiency	
Perceived usefulness	Degree of belief that the use of corporate messenger is useful for work and organizational	Improved speed of work	4
		Increased productivity	
		Improved efficiency	
		Degree of usefulness in making work easy	
Social influence	Social influence that affects messenger use including a group's perception of and attitude toward messenger	the rate of messenger use in a group	4
		Degree of a group's perception on messenger use	
		Superior's perception on messenger	
		Degree of a superior's messenger use	
Flexibility of org. culture	Degree of permission of autonomy and discretion rather than regulation and norms	Degree of permitted autonomy and discretion	3
		Degree of formulation	
		Degree of emphasis on hierarchical order	
External orientation of org.	Degree of emphasis on competitive position in an external environment	Degree of competition with outside organizations	2
		Degree of pressure for change and innovation	
Use	Degree of pressure for change and innovation	Frequency of daily use	1
Efficiency in decision-making	Degree of efficiency for fast, timely and effective decision making through obtaining information	Timeliness of decision making	6
		Speediness of decision making	
		Effectiveness of work	
		Cost reduction in making decisions	
		Information sufficiency	
		Time reduction in information distribution	

DATA COLLECTION AND ANALYSIS

Sampling And Data Collection

In order to examine the factors that affect the use of corporate messengers and its effectiveness, the nine sample sites were chosen when they are currently using corporate messengers. Sampling sites in Korea include employees of governmental offices and ministries, telecommunication companies, and banks, including the Ministry of Justice, Fair Trade Commission, the Ministry of Patriots and Veterans Affairs, National Emergency Planning Commission, Korea Telecommunication, SK Telecom, LG Telecom, KTF Co. Ltd., and Kookmin Bank.

Survey questionnaires include multiple-choice questions on demographic information and the use of corporate messenger, and other measurements in Likert 7- point scale from 1 – “never”/ “strongly disagree” to 7 – “always”/ “strongly agree.” Total 171 questionnaires were completed and used for data analysis.

Data Analysis

Characteristics of The Samples

Respondents consists of men 57% and women 43%. In terms of age, relatively diverse respondents participated in the study with 16% in their 20s, 59% in their 30s, 23% in their 40s, and 2% in their 50s and over. Respondents' positions were 25% employees, 38% assistant managers, 22% managers, and 2% deputy general managers. Regarding their divisions, 14% worked in sales, 66% in office, 16% in computers and communications, and 2% in others, showing the majority of respondents were office workers. In terms of their areas, 32% of respondents were in governmental offices, 60% in telecommunication industry, and 4% in finance, indicating that the sample is composed of most people in governmental offices and telecommunication industry. Demographic characteristics of respondents are shown in Table 4-1.

[Table 4-1 Sample profile]

Variable	percentage	
Sex	Male	57%
	Female	43%
Age	20s	16%
	30s	59%
	40s	23%
	50s above	2%
Position	Staff	25%
	Deputy managers	38%
	Managers of sections	22%
	Vice-chiefs of departments	13%
	Managers of departments	2%
Work	Marketing	14%
	Clerical employees	66%
	Communication/computation	16%
	Research	2%
	Etc.	2%
Types of businesses	Government offices	32%
	Finance	8%
	Communication	60%

Descriptive Statistics

Descriptive statistics of measured values of variables were examined. The mean values and standard deviations are as follows: The mean value of perceived ease-of-use is 6.14 and its standard deviation is 0.834, indicating that the measured values are inclined to very high values. In other words, the majority of participants answered that their perceived ease-of-use is very high.

[Table 4-2 Statistical Analysis]

Descriptive statistics

	N	Mean	Std. Deviation
Perceived usefulness	171	6.14	.834
Social Influence	171	5.61	1.207
The Flexibility of organizational culture	171	5.08	1.273
The External-oriented organizational culture	171	3.80	.833
The validity of decision-making	171	5.10	1.287
Valid N (listwise)	171	5.12	1.157

Validity Analysis

In this study, factor analysis was performed to test the construct validity. Orthogonal rotation of Varimax Method was performed with eigen value of 1 were extracted. The results of factor analysis are shown in Table 4-3.

[Table 4-3 Analysis Result]

Rotated Component Matrix (a)

	Component					
	1	2	3	4	5	6
Ease-of-use 1	.131	.173	.886	.039	.090	.027
Ease-of-use 2	.173	.258	.883	.088	.129	.029
Ease-of use 3	.216	.129	.792	.148	.165	-.018
Usefulness 1	.411	.742	.322	.208	.188	.085
Usefulness 2	.391	.795	.218	.261	.209	.080
Usefulness 3	.439	.769	.275	.228	.175	.097
Usefulness 4	.443	.760	.215	.231	.181	.089
Social Influence 1	.382	.161	.386	.625	.188	.290
Social Influence 2	.352	.404	.358	.714	.263	.242
Social Influence 3	.393	.216	.192	.754	.047	.143
Social Influence 4	.210	.274	.033	.830	.171	.080
Flexibility 1	.415	.123	.124	.036	.487	-.194
Flexibility 2	.141	.121	.022	.338	.255	.715
Flexibility 3	.120	.060	.015	.007	.064	.891
External-oriented 1	.198	.126	.131	.245	.833	.099
External-oriented 2	.145	.224	.192	.041	.851	.132
Validity 1	.715	.231	.220	.109	.139	.190
Validity 2	.665	.365	.286	.122	.171	.070
Validity 3	.801	.235	.145	.236	.172	.062
Validity 4	.874	.225	.111	.204	.141	.022
Validity 5	.782	.328	.141	.263	.174	.112
Validity 6	.789	.285	.137	.217	.138	.209

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 6 iterations.

The use of EIM was excluded from the factor analysis since factor was measured with one item. Thus, five out of six variables, excluding the use, were loaded from the factor analysis. It was found that all research variables but flexibility of organizational culture was loaded as expected, showing the construct validity of each variable. Since one measurement, flexibility of organizational culture, could not be loaded, it was excluded from the research variables.

Reliability Analysis

Reliability means the possibility to obtain the same or similar values when a construct is measured by comparable, independent methods, and it implies stability, consistency, and predictability. When Cronbach's Alpha is 0.6 and higher, it is considered that reliability is relatively high. Reliability was tested for five variables loaded from the factor analysis, and all variables showed more than 0.8 Cronbach's coefficients.

The findings are shown in Table 4-4.

[Table 4-4. Result of the Reliability test]

Variable	No. of Items	Cronbach's Alpha
Perceived ease-of-use	3	.8976
Perceived usefulness	4	.9753
Social Influence	4	.8664
External-oriented	2	.8528
Validity of decision-making	6	.9444

Testing Research Hypotheses

To test this study's hypotheses, regression analysis was performed for the 171 sample data by using SPSS 11.5.

First, regression analysis was performed for perceived ease-of-use, perceived usefulness, social influence, organizational culture on the dependant variable, use of EIM to reveal the factors that affect the use of corporate messenger. This test was to support for Hypotheses 1, 2, 3, and 5.

And here is the model summary

[Table4-5 Final Result of the stepwise Regression Analysis 1]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.558(a)	.311	.307	1.332
2	.585(b)	.342	.334	1.306

Model		Sum of Squares	df	Mean Square	F	Sig.
Step wise Regression	Regression	157.124	3	52.375	31.418	.000(c)
	Residual	278.397	167	1.667		
	Total	435.520	170			

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	-2.080	.510		-4.079	.000
	Social	.414	.116	.330	3.584	.000
	External	.202	.091	.163	2.228	.027
	Usefulness	.271	.122	.205	2.217	.028

The second regression analysis was performed to test Hypothesis 6 on the correlation between a parameter, the use of corporate messenger, and a dependent variable, the improvement of efficiency in the decision-making process after using a messenger.

The regression result is summarized in Table 4-6.

[Table4-6 Result of the Regression Analysis 2]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.497(a)	.247	.242	1.007944486415933		
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.184	1	56.184	55.302	.000(a)
	Residual	171.696	169	1.016		
	Total	227.880	170			
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.197	.147		28.608	.000
	Use	.359	.048	.497	7.437	.000

a Dependent Variable: Validity

The results of regression analyses for this research model are summarized as in Table 4-7.

[Table 4-7 The results of hypothesis tests]

No.	Hypothesis	P	Selection
H1	Perceived ease-of-use of Enterprise Instant Messenger significantly affects the use of messenger.	.524	rejected
H2	Perceived usefulness of Enterprise Instant Messenger significantly affects the use of messenger.	.028	supported
H3	Social Influence of Enterprise Instant Messenger significantly affects the use of messenger.	.000	supported
H4	More flexible organizational culture in a company leads into to the wider use of EIM.	.027	supported
H5	External-oriented organizational culture leads into to the wider use of messenger.	.000	supported
H6	Wide use of Enterprise Instant Messenger leads into a better decision-making efficiency.	.000	supported

As reported in Table 4-7, out of 6 hypotheses drawn from the initial research model, one hypothesis was dropped due to low reliability, and five hypotheses were supported, while Hypothesis 1 were rejected.

CONCLUSION

Research Result And The Implication

This study examined the factors that affect the use of corporate messengers, which are nowadays widely used in companies, governmental offices and public agencies, and the effect of messenger use on the efficiency of decision-making process.

The findings of this study can be summarized as the followings:

First, perceived usefulness of corporate messengers have a significant effect on the use of corporate messenger. That is, as people realize usefulness, the use of messenger increases.

Second, social influence for the use of corporate messenger has a significant effect on the use of corporate messenger. It implies that in order to use the EIM, a critical mass should be established. In addition, a widespread positive perception on EIM among group members and high-ranked worker' proactive uses should be prevailed.

Third, the external orientation of organizational culture also had a significant effect on the use of corporate messenger. It means that an external-oriented organization is highly likely to select the more flexible and efficient communication media such as EIM due to the pressure from changes of external environment and the aggravation of competition, and the hypothesis was empirically confirmed.

Fourth, the use of corporate messenger was found to have a significant effect on the efficiency in the decision-making process. This means that corporate messenger enhances the efficiency in an individual's decision-making.

Lastly, it was found that perceived ease-of-use on corporate messenger did not have a significant effect on the use of messenger. The results of the survey showed that most respondents gave high scores on the easiness to use a messenger. That is, regardless of their actual use of corporate messenger, people think it is easy to use a messenger, which is interpreted as not having a significant effect on the use of corporate messenger.

Many companies have prohibited using a generic commercial messenger at work because of security issues like computer virus and information leakage. As an alternative, corporate messengers are introduced and many companies have actively adopted to take advantage of this newer media. In actuality, most companies have linked messengers to the existing infrastructure such as KMS or intranet, reinforcing messenger functions. While these corporate messengers are not much different in terms of their functions, use and performance of messengers considerably varies; so, this study attempted to examine the factors that affect this variance in the use and the effects of using a corporate messenger.

Considering its findings, the study suggests the followings.

First, unlike generic messengers, corporate messengers are the communication media officially recognized by organizations. Usefulness of EIM must be proactively educational through a few realistic example cases.

Second, one of the findings regarding the importance of social influence variable would have an important insight. Communication forms a network and as the size of user groups for the network is bigger, benefits one can gain from the medium also increase. And this is the network effect. This study indirectly proves that: When an organization implements a corporate messenger as communication media, the use of corporate messenger is promoted intensively at the early stage, and when the number of users reaches critical mass, the use of messenger rapidly spreads due to network effects.

Third, another finding that an external-oriented organization actively utilizes a messenger demonstrates that corporate messengers are competitive communication media appropriate for organizations that have fierce competitions and fast changes absorbing the necessary external information and sharing them internally.

Fourth, this study has presented an empirical finding on the outcome of widespread use of EIM by showing that the use of corporate messenger could process tasks speedily through reducing the time to obtain and distribute information and support making decisions efficiently.

In conclusion, an effective, wide use of EIM can be an unknown competitive advantage for a company of user creational contents.

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