# Attitude toward Organizational Change and Information Systems Adoption*

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While world information systems (IS) spending has increased annually as organizations around the world have made enormous investments in IS, the relationship between IS investment and productivity has perplexed researchers and practitioners over the last decade. It has been argued that investments in IS can lead to productivity gains only if they are accepted and used in a way that contributes to the strategic and operational goals of the organization. While it is commonly assumed that IS have the potential to transform organizations, many attempts to introduce IS into organizations for the purpose of organizational change have often faced resistance to change from organizational members. The resistance to change is likely to lead to IS adoption failures through users' behavior to resist the system, regardless of whether the technical attributes of the system are met with users' requirements. This means that individual's response to organizational change should be considered as an independent factor in explaining the IS adoption behavior along with the beliefs about technological attributes of the system such as usefulness and ease of use. As a result, one of the keys to understanding IS usage behavior lies in understanding what perception individuals have on organizational change. Recognizing the organizational change nature of IS introduction, this study incorporates the attitude toward organizational change as an additional factor of explanatory variables in understanding why organizational members adopt and use the specific IS. For this purpose, a field research was conducted based on the data gathered from a Web-based survey. Overall, some support was found for the research model tested in this study. The data analysis showed that an individual's perception on utilization behavior was significantly affected by the individual's beliefs about the system's usefulness and ease of use representing the technological attributes of the system. At the same time, it was observed that an individual's utilization behavior of information systems was highly dependent on the individual's attitude toward change. Even though we had expected that the individual's attitude toward change also affect one's perception on the system's usefulness, their relationship was not supported. This means that an individual's attitude toward change influences the system acceptance as an independent determinant, not mediated by perceived usefulness. In conclusion, theoretical and practical implications are discussed along with limitations and future research direction.

Key words: attitude toward organizational change, technology acceptance model, resistance to change

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# Ⅰ. Introduction

Turbulent business environments have forced organizations to adopt information systems (IS) to improve organizational effectiveness. Reflecting this situation, world IS spending has increased annually as organizations around the world have made enormous investments in IS (IDC 2003). Some estimation indicates that IS investment has occupied about 50 percent of all new capital investment in organizations since the 1980s (Westland and Clark 2000). However, the relationship between IS investment and productivity has perplexed researchers and practitioners over the last decade. It has been argued that investments in IS can lead to productivity gains only if they are accepted and used in a way that contributes to the strategic and operational goals of the organization (Agarwal and Karahanna, 2000; Legris et al., 2003). Although IS have been advanced impressively, the issue of system underutilization in organizations has continued (Legris et al., 2003; Venkatesh and Davis 2000). Low usage of IS has been identified as a major factor underlying the "productivity paradox" describing uncertain returns from information technology investments. Therefore, understanding and identifying the conditions or factors under which IS will be accepted and used in an organization remains a central concern of information systems research and practice.

In the past decades, significant progress has been made in explaining and predicting user acceptance of information technology in a workplace. Among them, technology acceptance model (TAM) proposed by Davis (1989) has been tested and extended by many researchers and received substantial theoretical and empirical support from them (Lederer et al., 2000; Legris et al., 2003; Venkatesh et al., 2003). TAM predicts and explains user acceptance mechanism for specific information technology based on the causal linkage "belief-attitude-intention-behavior". TAM posits that two particular beliefs, perceived usefulness and perceived ease of use, are the primary determinants of information system usage. While these two beliefs are tightly coupled with the technological attributes of the target information system, researchers and practitioners alike have suggested that focusing only on the technological aspects for explaining and predicting information system use is not appropriate, in particular, within a business context (Legris et al., 2003; Lucas and Spitler, 1999). This has often led to the mixed results in IS acceptance and use behavior (Igbaria et al., 1997).

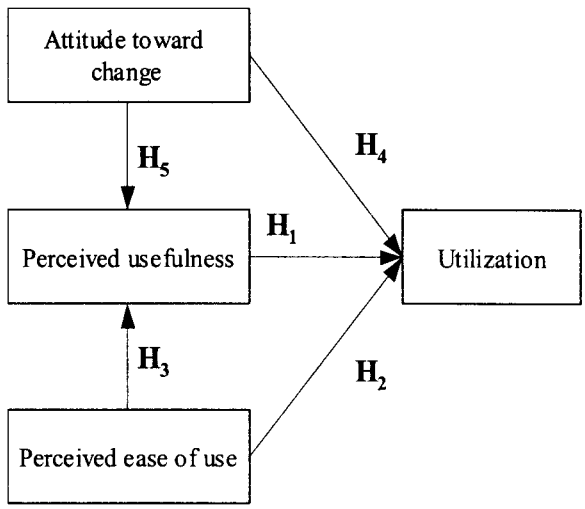
It is commonly assumed that IS have the potential to transform organizations (Robey and Sahay, 1996). The potential of IS to transform organizations has been a persistent theme

in both the management and information systems literatures (Robey and Boudreau, 1999). It has been argued that the adoption and use of IS should be conceptualized as a form of organizational change (Orlikowski, 1993) and IS should be seen as a powerful force enabling radical new designs for organizations (Lucas, 1996). Although the role of IS has been emphasized in an organizational change context like this, some studies have noticed that it is not complete without considering the individual's perception toward organizational change (Joshi, 1991). Many attempts to introduce information systems into organizations for the purpose of organizational change have often faced resistance to change from organizational members (Joshi, 1991; Markus, 1983; Ryan and Harrison, 2000). As a consequence, the resistance to change is likely to lead to individuals' behaviors to resist the system, regardless of whether the technological attributes of the system are met with users' requirements. This means that individual's attitude toward organizational change should be considered as an independent factor in explaining the IS adoption behavior along with the technological attributes of the system such as usefulness and ease of use. Therefore, one of the keys to understanding IS usage behavior lies in understanding what perception the organizational members have on organizational change. It is argued that a weakness of TAM for understanding information technology utilization is its lack of organizational aspects (Dishaw and Strong, 1999; Legris et al., 2003; Lucas and Spitler, 1999). This is partially because TAM's fundamental constructs do not fully reflect the variety of organizational dynamics (Legris et al., 2003). Recognizing the organizational change nature of IS introduction and TAM's weakness, this study incorporates the attitude toward change as an additional factor of explanatory variables in understanding why organizational members adopt and use the specific IS.

## II. Theoretical Background and Research Hypotheses

Recognizing that the adoption of information systems in an organization should be addressed from both organizational and technological aspects, we incorporate attitude toward change and beliefs about the system into a research model of constructs to explain the utilization of the system. This section elaborates upon the theoretical framework of the present study and derives the hypotheses. The research model is depicted in 〈Figure 1〉.

〈Figure 1〉 Research model




## 2.1 Technology Acceptance Model

Information systems research has long studied how and why individuals adopt and use new information systems or information technologies. One distinct stream of this comprehensive arena of research focuses on individual acceptance of technology based on beliefs and intention or usage, which is known as TAM (Davis 1989). Based on the theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), TAM was designed to understand the causal chain linking beliefs to attitudes, intentions, and behaviors in a workplace. TAM posits that actual system usage is influenced by behavioral intention to use the system, which is in turn affected by attitude toward using the system. Finally, attitude is directly determined by belief about the system. The model suggests that perceived usefulness and perceived ease of use represent the beliefs that lead to such acceptance process. Perceived usefulness is a measure of the individual's subjective assessment of the utility offered by the new IT in a specific task-related context, while perceived ease of use is an indicator of the cognitive effort needed to learn and to utilize the new IT (Gefen et al., 2003). According to TAM, perceived usefulness is also influenced by perceived ease of use because the easier system is to use the more useful it can be (Venkatesh and Davis, 2000).

TAM is at present a preeminent theory of technology acceptance in IS research and numerous empirical tests have shown that TAM is a parsimonious and robust model of technology acceptance behaviors (Gefen et

al., 2003). Despite its popularity and considerable empirical support, it has been criticized for undue parsimony (Hu et al., 2003) and mixed results (Igbaria et al., 1997; Legris et al., 2003). Consistent with this, Venkatesh and Davis (2000) also pointed out the need for a better understanding of key technology acceptance determinants. As a consequence, many studies have modified and extended the original TAM to identify various additional factors that improve its predictive and explanatory power.

The present study examines the relationships between perceived ease of use, perceived usefulness, and utilization of the system. These relationships have been replicated and validated by many researchers (*e.g.*, for review, see Legris et al., 2003; Venkatesh et al., 2003). Extensive research provides evidence of the significant effect of perceived ease of use on system utilization, either directly or indirectly through its influence on perceived usefulness. Information systems need to be easy to use and easy to learn in order to prevent the useful but underutilized system issue. Many previous studies have indicated that individuals'utilization of the system is influenced by their perceived usefulness. The primary reason that employees exploit the business process application systems is that they find the systems useful for their tasks. The more useful and easier to use is the information system in enabling the employees to accomplish their tasks, the more it will be used.

$H_1$: Perceived usefulness will positively affect utilization of a business process application system.

$H_2$: Perceived ease of use will positively affect utilization of a business process application system.

$H_3$: Perceived ease of use will positively affect perceived usefulness of a business process application system.

## 2.2 Attitude toward Organizational Change

Transforming organizations with information technologies is an important business objective because traditional structures are often ineffective in producing desired levels of productivity, customer service, employee welfare, and shareholder value (Robey and Sahay, 1996). A range of perspectives on organizational change have developed over the past few decades. Among them, three perspectives have influenced studies of technology-based organizational change - planned change, technological imperative, and punctuated equilibrium (Orlikowski, 1996). Planned change perspective assumes that managers are the primary source of organizational change, and that these actors deliberately initiate and implement changes in response to perceived opportunities to improve organizational

performance. In the technological imperative perspective, technology is seen as a primary and relatively autonomous driver of organizational change, so that the adoption of new technology creates predictable changes in organizations' structures, work routines, information flows, and performance. Punctuated equilibrium perspective presumes that punctuated discontinuities are typically triggered by modifications in environmental or internal conditions such as new technology, process redesign, or industry regulation. While planned change and punctuated equilibrium perspectives make important and unique contributions to the literature on organizational change, the perspective to be included in the present research is the technological imperative view. As each new generation of technology and each major technological advance have emerged, it has been claimed that organizations will be radically and fundamentally altered (Robey and Boudreau, 1999).

However, the introduction of new information technologies or information systems does not mean successful organizational change. They are considered to play an important role in organizational transformation process only when they are accepted and used by organizational members. It has been argued that system usage is an appropriate measure of information systems success in most cases (DeLone and McLean, 2003; Goodhue, 1995; Igbaria et al., 1997). According to DeLone and McLean's (1992) IS success model, system usage influences individual impact, in turn, which effects organizational impact tightly coupled with organizational change. As a consequence, we can expect that technology-based organizational change require information systems acceptance and usage as a prior step of intended organizational change. In a situation of organizational change efforts such as business process reengineering project, however, newly introduced information technologies or information systems are not always accepted and used by organizational members even if their functional and technological characteristics show a desirable level. Ryan and Harrison (2000) reported, for example, a case that a material requirements planning (MRP) system was not well used for 18 months after being introduced into a petroleum parts manufacturer. Its key reason was not the technical issues but significant resistance by the employees. Change is a fundamental theme in human life and some organizational behavior and MIS researchers have noted that individuals generally resist changes (Joshi, 1991). MIS researchers have often attributed many IS implementation problems to unfavorable attitude toward organizational change, that is, users' propensity to resist change (Joshi 1991, Markus 1983, Robey and Boudreau 1999). While there are various perspectives on resistance to change, there is consensus that

understanding and explaining resistance to change is important (Swanson, 1988), which guide the behavior of systems implementers (Markus, 1983). Markus (1983) explained resistance to change and implementation difficulties primarily in terms of the conflict among users for increased power. Joshi (1991) proposed that individuals attempt to evaluate most change in terms of the equity status and changes considered unfavorable are likely to be resisted. These studies show that we need to shift the focus away from specific technological perspectives and emphasize organizational context considering users' attitude toward organizational change to be an independent factor for IS usage. It is argued that attitude toward organizational change generally consists of a person's cognitions about change, affective reactions to change, and behavioral tendency toward change (Dunham et al., 1989). Consistent with this, according to Elizur and Guttman (1976), individuals' or groups' responses to organizational change are classified into three types. Affective responses are a greater or lesser feeling of being linked to, satisfied with, or anxious about change. Cognitive responses are the opinions one has about the advantages and disadvantages, usefulness, and necessity, and about the knowledge required to handle the change. Instrumental responses are the actions already taken or which will be taken in the future for or against the change. This implies that different individuals may response differently to a particular organizational change (Yousef, 2000).

Organizational members who have favorable perceptions on organizational transformation are likely to proactively participate in any organizational change situation and look forward to changes at work. They believe that organizational change should be realized to improve organizational performance and their productivity. Therefore, we can expect that they are ready to adopt and use information systems required for organizational change. When there is great confidence placed on organizational change, perceptions about the usefulness of the system can be influenced by beliefs that indicate what the system will give a lot of benefits to the organization and individuals. The more positive the perception on organizational change is, the more it will be used and the more useful it can be.

$H_4$: Favorable attitude toward organizational change will positively affect utilization of a business process application system.

$H_5$: Favorable attitude toward organizational change will positively affect perceived usefulness of a business process application system.

# III. Research Method

## 3.1 Data Collection

To examine the effects of attitude toward change and perceived technological attributes on utilization of the system, a field study technique was employed. The unit of analysis in this study is the organizational members who use business process application systems for performing their jobs. We decided to select the target organization on the basis of the consideration of (1) context of using information systems with various information technologies, (2) experience of organizational change situation, and (3) fulltime employees using information systems for their tasks. In this research, the subjects were employees working for a public organization in Republic of Korea. The system was implemented by one of the largest system integration companies in Korea. Cross-functional business processes were analyzed and redesigned to meet the user and system requirements. After launching the system, the organization has continued to maintain and upgrade the system almost every year. The survey data were gathered using questionnaires administered to the employees of the organization through a Web-based survey. The survey Web site was designed with high usability to increase response rate and accuracy. A program was developed to handle the data collection process by the help of the target organization. The questionnaires were distributed on the Web site to employees (4,547 users) of 6 divisions who were using the systems after the survey schedule had been notified in the internal bulletin board system a week ago. The returned questionnaires were initially screened for usability and reliability. 1,348 responses were found to be complete and usable, rendering a response rate of about 30%.

## 3.2 Measures

To ensure the content validity of the scales, the items selected should represent the concept about which generalizations are to be made (Straub, 1989). Therefore, as much as possible, items used to operationalize the constructs included in this study were mostly adapted and modified from previous studies, with some changes necessary for the target information system and the organizational context. The questionnaire items and key supporting literature for each construct are reported in Appendix.

Perceived usefulness and perceived ease of use were measured by six items each, which were adopted from the previously validated measurement inventory and then modified to suit the context of the research (Davis, 1989; Gefen et al., 2003). The item to measure

utilization was based on Goodhue and Thompson's (1995) work and Rai et al.'s (2002) study. Even though there have been controversial arguments for the measurement of information system use (Goodhue, 1992; Straub et al., 1995), the present study assessed information system use in terms of user dependence on the target system. According to Goodhue and Thompson (1995) and Rai et al. (2002), the information system utilization in an organizational context is well reflected by the extent to which the information system has been integrated into each individual's work routines. Based on the literature on attitude toward organizational change and organizational behavior (Dunham et al., 1989; Elizur and Guttman, 1976; Yousef 2000), we developed five items to measure attitude toward change. These items were designed to reflect three types of response to the introduction of organizational change - affective, cognitive, and behavioral tendency toward change. All question items were measured using a five-point Likert-type scale, with anchors ranging from "strongly disagree" to "strongly agree". All items were randomly arranged on the questionnaire to reduce a potential ceiling or floor effect that may induce monotonous responses from subjects to the items designed to measure a particular construct.

# Ⅳ. Results

## 4.1 Respondent Characteristics

The respondent characteristics are reported in terms of gender, age, and tenure. Gender distribution indicated an approximate 1.5:1 ratio in favor of female employees. On average, our respondents were 31 years old and had 41 or more months (about 3 years and 5 months) in total of work experience within the organization. Of the 1,348 respondents, the majority (79.1%) was between twenty-six and thirty-five years of age. Most respondents (69.9%) had more than three years of work experience and more than half (55.2%) were between three years and five years in work experience.

## 4.2 Instrument Validation

The construct validity of the research instruments determines the extent to which the operationalization of a construct actually measures what it purports to measure. The test of measurement instrument includes estimation of the reliability coefficients of the measures, as well as an examination of the convergent and discriminant validity of the research instruments. 〈Table 1〉 summarizes the result of instrument validation tests.

The internal consistency (*i.e.*, reliability)

〈Table 1〉 Assessing the measurement

| Scale items[a] | Cronbach α | Item-to-total correlation | Factor loadings | | |
|---|---|---|---|---|---|
| | | | Factor 1 | Factor 2 | Factor 3 |
| PU | 0.8182 | | | | |
| PU1 | | 0.546 | 0.735 | | |
| PU2 | | 0.624 | 0.727 | | |
| PU3 | | 0.583 | 0.713 | | |
| PU4 | | 0.580 | 0.628 | | |
| PU5 | | 0.624 | 0.627 | | |
| PU6 | | 0.542 | 0.542 | | |
| PEU | 0.7597 | | | | |
| PEU1 | | 0.522 | | 0.753 | |
| PEU2 | | 0.526 | | 0.650 | |
| PEU3 | | 0.491 | | 0.622 | |
| PEU4 | | 0.444 | | 0.576 | |
| PEU5 | | 0.551 | | 0.549 | |
| PEU6 | | 0.472 | | 0.505 | |
| ATC | 0.7665 | | | | |
| ATC1 | | 0.611 | | | 0.783 |
| ATC2 | | 0.583 | | | 0.759 |
| ATC3 | | 0.546 | | | 0.723 |
| ATC4 | | 0.486 | | | 0.679 |
| ATC5 | | 0.458 | | | 0.633 |

[a]PU, perceived usefulness; PEU, perceived ease of use; ATC, attitude toward change

was examined using Cronbach's α value. All constructs in the model exhibited an α value greater than 0.70, suggesting a reliability exceeding the generally acceptable level (Nunnally and Bernstein, 1994). The convergent and discriminant validity of each scale were verified with a factor analysis. We used a principal components factor analysis (PCA) with a varimax rotation. To determine the appropriateness of factor analysis, two tests were conducted (Hair et al., 1998). The statistical probability of the Bartlett test of sphericity ($p$=0.000) indicated that the correlation matrix had significant correlations among at least some of the variables. The Kaiser-Meyer-Olkin measure resulted in 0.898, showing meritorious sampling adequacy. Generally, convergent validity is considered to be satisfactorily established when measurement items load highly on their respective constructs. In determining the appropriate minimum loadings required for the inclusion of an item within a measurement, we followed Hair et al.'s (1998)

recommendation that factor loadings greater than 0.50 is considered to be very significant. All of the factor loadings of the items in the research model were greater than 0.50, with most of them above 0.60. In addition, for convergent validity, we assessed the item-to-total correlation that is the correlation of each item to the sum of the remaining items. There were no items with item-total correlations lower than 0.4, showing the convergent validity of each scale. A primary criterion for discriminant validity evaluation is each item's loading being higher on its respective construct than that on any other constructs. All three factors emerged with no cross-construct loadings above 0.50, suggesting that the included measures exhibited satisfactory discriminant validity.

### 4.3 Hypotheses Test

The hypotheses were tested using a multiple regression analysis. 〈Table 2〉 summarizes the result of hypotheses tests. Two models including five hypotheses were run separately for each of the dependent variables: utilization being regressed against perceived usefulness, attitude toward change, and perceived ease of use, and perceived usefulness being regressed against perceive ease of use and attitude toward change. In addition, stepwise multiple regressions were conducted to examine the contribution of each predictor variable to the regression model.

The first regression model having utilization construct as a dependent variable was significant ($F$=245.9, $p$<0.001). Perceived usefulness, attitude toward change, and perceived ease of use accounted for 35.4% of the observed variance in utilization ($R^2$=0.354). There were no independent variables with VIF values above 10.0, indicating no multicollinearity problems in the model (Hair et al., 1998). We found that perceived usefulness was significantly related to utilization ($\beta$= 0.519, $t$-value=15.477, $p$<0.001). It was also observed that attitude toward change ($\beta$ =0.329, $t$-value=11.415, $p$<0.001) and perceived ease of use ($\beta$=0.130, t-value= 3.791, $p$<0.001) had a significant influence on utilization. The positive relationship of perceived usefulness and perceived ease of use with utilization was reconfirmed, as suggested by previous TAM studies. Also, we found that attitude toward change had a significantly positive effect on utilization. Therefore, hypotheses 1, 2, and 4 were supported.

The second regression model trying to explain perceived usefulness construct showed a satisfactory level of significance ($F$=597.1, p<0.001). All independent variables had VIF values lower than 10.0, showing no multicollinearity problems (Hair et al., 1998). The value of $R^2$ indicated that the proposed model explained 47.0% of variance in per-

〈Table 2〉 Regression analysis for hypotheses

| Models[a] | $R^2$ | $\Delta R^2$ | $\beta$ | $t$-value | VIF[d] | Hypotheses test |
|---|---|---|---|---|---|---|
| 1. Utilization | | | | | | |
| U = PU + ATC + PEU | 0.354[b] | | | | | |
| PU | | 0.288[b] | 0.519[b] | 15.477[b] | 1.888 | $H_1$ supported |
| ATC | | 0.059[b] | 0.329[b] | 11.415[b] | 1.009 | $H_4$ supported |
| PEU | | 0.007[b] | 0.130[b] | 3.791[b] | 1.900 | $H_2$ supported |
| 2. Perceived usefulness | | | | | | |
| PU = PEU + ATC | 0.470[b] | | | | | |
| PEU | | 0.470[b] | 0.699[b] | 34.520[b] | 1.007 | $H_3$ supported |
| ATC | | - | 0.031[c] | 1.343[c] | 1.007 | $H_5$ not supported |

[a]PU, perceived usefulness; ATC, attitude toward change; PEU, perceived ease of use; U, Utilization
[b]$p<0.001$; [c]Not significant, $p>0.05$
[d]variance inflation factor

ceived usefulness ($R^2=0.470$). However, the portion of variance was explained by perceived ease of use alone, showing a significant influence on perceived usefulness ($\beta=0.699$, $t$-value=34.520, $p<0.001$). It was observed that attitude toward change was not associated with perceived usefulness at the $\alpha=0.05$ significance level ($\beta=0.031$, $t$-value=1.343, $p$-value=0.179). As a consequence, hypothesis 3 was supported, while hypothesis 5 was rejected.

### 4.4 Model Comparison

The present study compared the proposed model with the original TAM. As shown in 〈Table 3〉, both models accounted for a significant portion of the variance in utilization of information systems. While the original model explained 29.1% of the observed variance in utilization (*adjusted* $R^2=0.291$), the proposed model including attitude toward change accounted for 35.3% of the

〈Table 3〉 Comparison of the proposed model with the original TAM

| Model constructs[a] | Original TAM | | | | The proposed model | | | |
|---|---|---|---|---|---|---|---|---|
| | $R^2$ | *Adj.*$R^2$ | $\beta$ | $t$-value | $R^2$ | *Adj.*$R^2$ | $\beta$ | $t$-value |
| Utilization | 0.292[b] | 0.291[b] | | | 0.354[b] | 0.353[b] | | |
| PU | | | 0.533[b] | 15.192[b] | | | 0.519[b] | 15.477[b] |
| PEU | | | 0.096[c] | 2.686[c] | | | 0.130[b] | 3.791[b] |
| ATC | | | - | - | | | 0.329[b] | 11.415[b] |

[a]PU, perceived usefulness; ATC, attitude toward change; PEU, perceived ease of use
[b]$p<0.001$; [c]$p<0.01$

utilization variance (*adjusted* $R^2$=0.353), showing better explanatory power than the original model. Perceived usefulness ($\beta$= 0.533; $\beta$=0.519) and perceived ease of use ($\beta$=0.096; $\beta$= 0.130) alike were significantly related to utilization in both models. Within the proposed model, attitude toward change had a significant effect on utilization ($\beta$= 0.329, $t$-value=11.415, $p$<0.001), showing stronger influence than perceived ease of use ($\beta$=0.130, $t$-value=3.791, $p$<0.001). As a consequence, the overall result suggested that the proposed model appeared to be better than the original TAM.

## V. Discussion

### 5.1 Summary of Results

There have been many issues influencing individual's choices to use information systems in an organizational context. The present research investigated two aspects of this choice, attitude toward change and perceptions on the technological attributes of the system, and showed how these aspects are associated with utilization behavior of information systems. So, the underlying hypotheses of this study were (1) that individuals' utilization is influenced by both their attitude toward change and technological aspects of the system, and (2) that individuals' perception on the usefulness of the system is enhanced by their attitude toward change.

Overall, some support was found for the research model tested in this study. The data showed that an individual's perception on utilization behavior was significantly affected by the individual's beliefs about the system's usefulness and ease of use representing the technological attributes of the system. At the same time, it was observed that an individual's utilization behavior of information systems was highly dependent on the individual's attitude toward change. Even though we had expected that the individual's attitude toward change also affect one's perception on the system's usefulness, their relationship was not supported. This means that an individual's attitude toward change influences the system acceptance as an independent determinant, not mediated by perceived usefulness. We can partly understand the non-association between two constructs in that individuals with strong resistance to change are likely to be reluctant to use the system without looking into the usefulness of the system.

Examining the relative importance of the three determinants identified in this study, we found that perceived usefulness has the most effect on utilization behavior. The path coefficient from the perceived usefulness to utilization construct was 0.519, whereas re-

maining path coefficients were 0.329 (attitude toward change) and 0.130 (perceived ease of use) respectively. It appears that the perceived usefulness construct remains the most significant predictor of utilization behavior, which is consistent with most prior studies. In addition, while both attitude toward change and perceived ease of use had a significant influence on utilization, attitude toward change was a stronger direct predictor than perceived ease of use. In a comparison with the rival model that does not include attitude toward change construct, the model proposed in this research showed a better explanatory power than the rival model.

### 5.2 Implications: Theoretical and Practical

Orlikowski (1993) demonstrated that adopting and using a specific IT is not solely dependent on the characteristics of the IT but is also dependent on other aspects such as organizational or social context. Attitude toward change is a social antecedent, while perceived usefulness and perceived ease of use are technological ones. These two distinct sets of antecedent constructs are intertwined in this research. Recognizing the two aspects (technological and organizational) of information systems adoption behavior, this study can be discussed in the framework of socio-technical systems (STS) theory and its related research. The STS theory assumes that an organization or organizational work system can be described as a socio-technical system. In other words, a work system is made up of two jointly independent, but correlative interacting systems the social and the technical (Bostrom and Heinen, 1977; Palvia et al., 2001). It is assumed that the outputs of the work system are the result of joint interactions between these two systems. Thus, any intervention or planned change effort such as introduction of information systems must deal with both systems in an integrated form (Bostrom and Heinen, 1997). This means that the adoption of information systems should be explained and predicted in the perspective of the social system and the technical system simultaneously when we consider the introduction of information systems as a planned change effort. Therefore, for the researchers, this study gives an opportunity to broaden the scope of future research for investigating the motivational factors influencing IS acceptance and use. In this research context, particularly, attitude toward change (or resistance to change) was introduced into existing TAM framework. While attitude toward change of employees seems to be critical in making a decision on whether to deploy enterprise-wide information systems across organizations, there has been little research on this. From this background, compared to previous TAM research, this study makes a theoretical contribution

to IS adoption literature.

In a competitive environment like today, most information systems are introduced into organizations for the purpose of improving organizational effectiveness and productivity dramatically. This possibly involves organizational change across enterprise wide regardless of the intention of the organization. In such an organizational change context, individuals come to think about the change and identify the introduced information systems with a kind of change efforts. As a result, individuals are not likely to accept the information systems when their attitude toward change is not favorable. We demonstrated the importance of attitude toward change as an organizational factor affecting the individual's acceptance of information systems. Organizations installing the same information systems may experience differing degree of change depending on the organizational environment in which it is implemented. That's why many organizations installing and launching the same information technologies or information systems show the mixed results with their acceptance. This study sheds some light on this issue by showing that attitude toward change influences utilization behavior, which have not been tested in existing IS adoption research. The technological perception on the system and the individual's attitude toward change are shown to be two distinct sets of beliefs, each contributing in its own right to utilization behavior, implying that organizations trying to introduce new information systems need to pay attention to both aspects. Therefore, this finding emphasizes the need for practicing managers in charge of information systems introduction to focus on organizational aspects as well. For another practical implication, further analysis was conducted based on the demographic data to examine which demographic groups had more favorable attitude toward change (*i.e.*, less resistance to change). The analysis of variance (ANOVA) of gender and tenure on attitude toward change showed significant group differences ($F$=18.905, $p$=.000 for gender; $F$=5.676, $p$=0.004 for tenure). There was also no significant interaction effect on attitude toward change between gender and tenure ($F$=0.717, $p$=0.488 for gender× tenure). After post hoc tests for each main effect, it was observed that male group and short-term tenure group had more favorable attitude toward change than female group and long-term tenure group, respectively. This finding emphasizes the need for practicing managers to manage differently those more resistant groups from others.

## Ⅵ. Conclusion

This study investigated factors essential to

acceptance of information systems by organizational members. Findings of the research suggest (1) that an individual's beliefs on the system usefulness and ease of use still remain important factors affecting information systems usage, (2) that attitude toward change is a significant factor to utilization behavior of information systems, having stronger effect than perceived ease of use, and (3) that perceived usefulness is not influenced by attitude toward change.

This study has several limitations. First, we used a one-item measure to assess system dependence as an instrument of utilization behavior. Multi-item measures can be used to capture more diverse aspects of the construct. Second, the data were collected by a questionnaire administered to the users of the same information system. In addition, measures of all constructs in this research were collected at the same point in time and through the same instrument. So, the potential of the common method variance for some of the result exists (Straub et al., 1995). Third, this study was conducted with a cross-sectional research approach in which causality can only be inferred via the theory, but a longitudinal approach needs to be considered as well. Fourth, the present research examined the factors directly influencing utilization behavior. However, understanding of what causes users to hold certain beliefs about the system and attitude toward change would be of value to both researcher and practitioners. So, motivational factors for these constructs need to be further investigated.

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## Appendix. Questionnaire items

| Constructs | Question items | Key relevant literature |
|---|---|---|
| Attitude toward change | Organizational change benefits my organization.<br>I am inclined to try the new ideas derived from organizational change activity.<br>I actively participate in a project concerned with organizational change.<br>Organizational change improves quality of work I perform.<br>I look forward to changes at work. | Dunham et al. 1989, Elizur and Guttman 1976, Yousef 2000 |
| Perceived usefulness | Using the system enables me to have more accurate information.<br>Using the system enhances my effectiveness in performing my task.<br>Using the system is useful for performing my task.<br>Using the system increases my productivity in performing my task.<br>Using the system enables me to access more relevant information.<br>Using the system enables me to acquire high quality information. | Davis 1989, Gefen et al. 2003 |
| Perceived ease of use | Learning to operate the system is easy.<br>It is not difficult to learn how to use the system.<br>I find the system to be flexible to interact with.<br>My interaction with the system is clear and understandable.<br>I find the system to be easy to use.<br>Interaction with the system does not require a lot of my mental effort. | Davis 1989, Gefen et al. 2003 |
| IS Utilization | I am dependent on the system | Goodhue and Thompson 1995, Rai et al. 2002 |

# 조직변화에 대한 태도와 정보시스템 수용*

곽기영**

요 약

일반적으로 정보시스템 또는 정보기술은 조직을 변화시킬 잠재력을 지니고 있는 것으로 가정된다. 그러나, 조직변화를 목적으로 전사적 차원에서 정보시스템을 도입하고자 하는 시도는 종종 조직구성원들로부터 변화에 대한 저항에 직면하게 된다. 조직에 도입된 정보시스템은 변화에 대한 저항으로 인해 조직구성원들이 기술적인 측면에서 유용성 및 사용용이성을 인지하고 있다 하더라도 사용자들로부터 외면되는 현상이 나타나기도 한다. 이러한 관점에서 볼 때, 정보시스템 사용행태를 이해하기 위한 열쇠중의 하나는 조직구성원들이 조직변화에 대해 어떠한 태도를 지니고 있는가 하는 점을 이해하는데 놓여있다고 할 수 있다. 정보시스템 도입의 조직변화적 속성을 고려하여, 본 연구에서는 조직구성원이 특정 정보시스템을 채택하고 이용하는 이유를 이해하기 위해 조직변화에 대한 태도라는 요인을 도입한다. 조직변화에 대한 태도가 정보시스템의 수용행태에 미치는 영향을 분석하기 위해, 웹기반 서베이를 통해 수집된 데이터를 이용한 실증연구가 수행되었다. 실증분석 결과 조직변화에 대한 태도는 지각된 유용성 및 사용용이성과 함께 정보시스템의 사용행태에 유의적인 영향을 미치는 것으로 드러났다. 분석결과와 함께 연구결과에 대한 시사점을 이론적 관점 및 실무적 관점에서 논의하였고 마지막으로 연구의 한계점 및 향후 연구방향을 제시하였다.

한글색인어: 조직변화에 대한 태도, 기술수용모델, 변화에 대한 저항

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