Effects of Organizational Culture and Leadership on Information System Success

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The purpose of this research is to examine the effects of organizational factors on individual-level information technology assimilation process. The result of research suggests that managers should actively exercise their leaderships, and not passively rely on the organizational culture elements to induce users' participation and involvement in IS development process. Another finding is that both organizational culture and leadership can affect individuals' IS usage directly. However, organizational culture seems to have a negligible total impact on IS usage. This research also indicates that leadership can positively affect user performance through improving user involvement, user satisfaction, and IS usage. This research concludes that there is a strong indication that leadership can significantly affect individuals' information technology assimilation process.

I. Introduction

Many organizations, recognizing the importance of information technology (IT) for improving organizational performance, have invested or start to invest heavily in developing and maintaining corporation- wide management information systems (Wiseman and MacMilan, 1984; Porter and Millar, 1985; King et al., 1989). The success of the investment, however, is contingent upon how well the organizations can assimilate IT into the business processes (Abdul-Gader and Kozar, 1995; Whiteman, 1996). Studies of IT assimilation have been done both on individual and organizational levels.

Individual-level research have focused on individual users' attitudes, beliefs, and other factors that affect information system (IS) acceptance and usage behavior. For instance, Taylor and Todd (1995) postulated that users' attitude toward IS is affected by the perceived usefulness and ease

of use. Chau (1996) maintained that IS acceptance is very much influenced by ease of use, whereas Etezadi-Amoli and Farhoomand (1996) found that user performance is affected more by IS functionality and the quality of IS output than by ease of use. Pettingell et al. (1988) concluded that IS success is dependent upon users' involvement in IS development process.

Organization-level research, on the other hand, have focused on the influences of organizational environment, structure, culture, strategy, and other factors on the performances of firms adopting IT. For instance, Kettinger et al. (1994) stated that the substantiality of competitive advantage based on IT is determined by three sets of factors: environmental factors such as industry characteristics and political changes; foundation factors such as firms' infrastructure and slack resources; and action factors such as organization strategy and plan. Zammuto and O'conner (1992) suggested that IS success may be dependent upon organizational culture and structure. Leifer (1988) proposed that IS success can be ensured by matching IS structure with organizational structure. Finally, Teo and King (1996) found that the integration of business planning with IS planning can contribute to an improved organizational performance.

Although there have been extensive studies on individual and organizational IT assimilation processes, little has been studied on how organizational characteristics affect individual users' acceptance and usage of IT. The purpose of this paper is to examine how organizational factors affect individuals' IT assimilation process.

II. Literature Review

Management Information Systems (MIS) research centers around identifying key factors that contribute to the success of IS. Grover et al. (1996) suggested that the success of IS investment can be examined on two levels: organizational and individual.

2.1. Individual-level IT Assimilation Process

Individual-level IT assimilation research employ user attitude and beliefs to predict the utilization of IS (Davis, 1989; Doll and Torkzadeh, 1991; Lucas, 1975; Robey, 1979). A general model of the way in which IT affects individual performance is as follows. IS characteristics affect user attitude about systems (Davis, 1989; Baroudi, et al., 1986). User attitude along with other situational factors leads to an increased usage of IS (Hartwick and Barki, 1994). An increased IS usage is assumed to

〈Figure 1〉 DeLone and McLean's IS Success Model (1992)
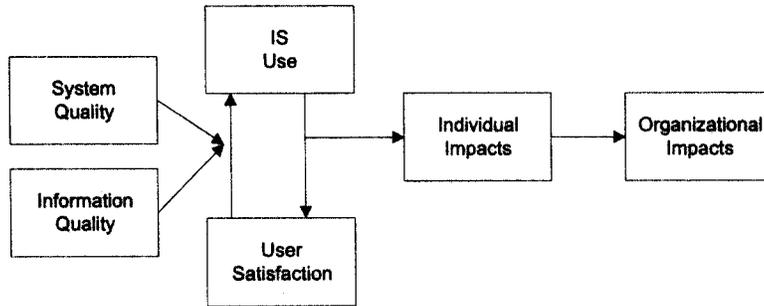
〈Figure 2〉 Technology Acceptance Model (Taylor and Todd, 1985)
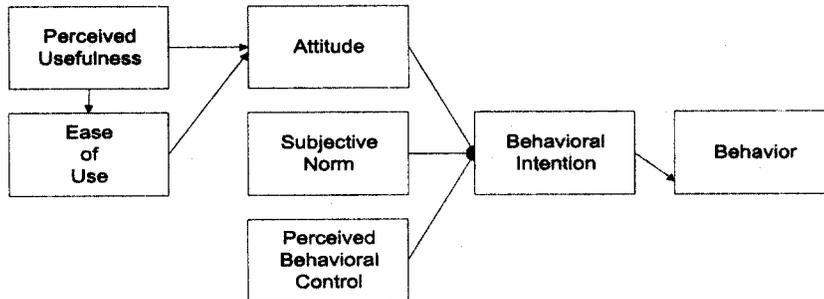
improve individual performance (Adams et al. 1992).

DeLone and McLean (1992) posited that IS success is determined by six interrelated factors shown in 〈Figure 1〉. The model states that organizational performance could be improved by improving individual performances. Two factors affecting Individual performance are IS usage and user satisfaction. IS usage and user satisfaction are affected by IS characteristics which includes system quality and information quality.

Related to this model is a technology acceptance model (Taylor and Todd, 1995).

Shown in 〈Figure 2〉, this model suggests that IS usage is a direct function of behavioral intention. Behavioral intention is, in turn, determined by attitude toward system, perceived usefulness of the system, and subjective norm. Attitude toward usage reflects feelings of favorableness toward using the technology; and perceived usefulness reflects the belief that using technology will enhance performance. Attitude is influenced by perceived usefulness and ease of system use.

Etezadi-Amoli and Farhoomand (1996) examined a direct relationship between user performance and various IS characteristics,

〈Figure 3〉 User Performance Model (Etezadi-Amoli & Farhoomand, 1996)
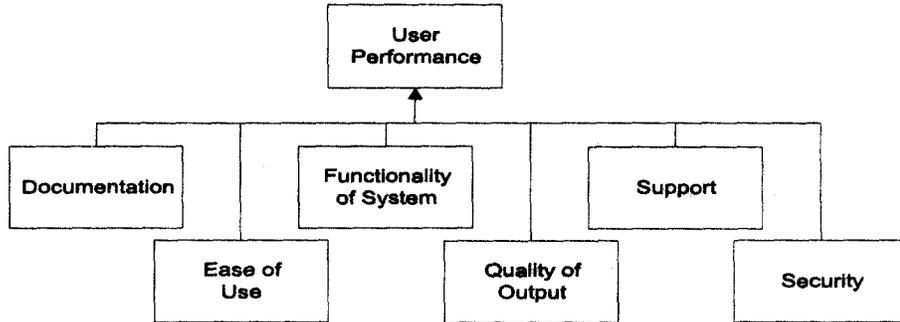
as shown in 〈Figure 3〉. They concluded that IS characteristics affecting user performance, in the order of importance, are (1) quality of output, (2) functionality of system, (3) ease of use, (4) support, (5) security, and (6) documentation.

One of the factors affecting IS characteristics is users′ participation and involvement in IS development. While many argued that user involvement in IS development is primarily a social justice issue, they also believe it to be associated with positive organizational and economic benefits (Baroudi et al., 1986). The more end users involve in IS development, the more the IS is likely to reflect user′s requirements. An IS reflecting users′ information requirements
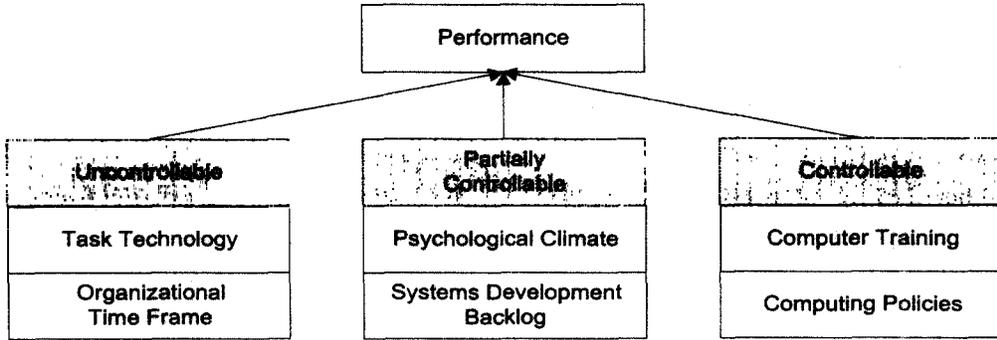
satisfactorily could satisfy the users. Thus, an increasing number of organizations have changed their systems development process to increase user involvement and user control (Lawrence and Low, 1993; Tait and Vessey, 1988).

In summary, individual performance is a function of IS usage and user satisfaction (DeLone and McLean, 1992). IS usage is affected by user attitude as well as IS characteristics (Taylor and Todd, 1985; Etezadi-Amoli and Farhoomand, 1996). One factor affecting IS characteristics is user participation and involvement in IS development (Lawrence and Low, 1993).

〈Figure 4〉 Model of Substantiality (Kettinger et al., 1994)
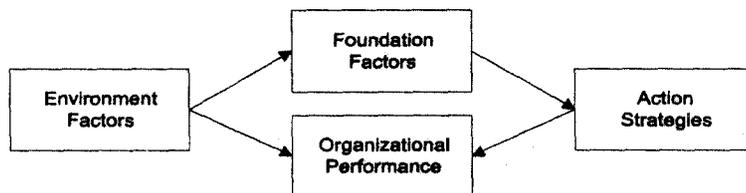
〈Figure 5〉 End-User-Computing Performance Model (Cheney et al. 1986)

Performance		
Uncontrollable	**Partially Controllable**	**Controllable**
Task Technology	Psychological Climate	Computer Training
Organizational Time Frame	Systems Development Backlog	Computing Policies

2.2. Organization-level IT Assimilation Process

Kettinger et al. (1994) identified three organizational factors affecting the performances of organizations adopting IT, as shown in 〈Figure 4〉. They found that an important prerequisite for achieving a long-term organizational performance improvement by using IT is the establishment of technological base along with substantial capital availability.

Cheney et al. (1986) stated that the organizational factors affecting the success of IT adoption can be categorized into uncontrollable, partially controllable, and fully controllable variables. For instance, task technology and organizational time frame are uncontrollable; psychological climate and systems development backlog are partially controllable; and computer training and computing policies are controllable variables

as shown in 〈Figure 5〉.

Markus and Soh (1993) suggested that the theory linking IT investment to organizational performance should consider structural factors that create differences in the ability of firms to derive benefits from IT investment and internal managerial processes that influence the degree to which IT expenditures pay off. Leifer (1988) indicated that matching IS structure and organizational structure is a key to IS success. Weber and Pliskin (1996) maintained that organizational culture is a critical success factor in IS implementation. Because organizational culture is the set of assumptions that members of communities share in common, it may affect practically all aspects of the way people of a group interact with each other. Jarvenpaa and Ives (1991) asserted that the success of IS development is determined by leadership and executive support.

In summary, organizational factors that influence IT assimilation process include both structural and dynamic factors that can be uncontrollable, partially controllable, or fully controllable. Organizational structure, leadership, and culture have been suggested to have significant impacts on the success of IT assimilation process.

III. A Research Model and Hypotheses

The purpose of this research is to examine the effects of organizational factors on individual-level IT assimilation process. Particularly, the effects of two organizational factors—organizational culture and leadership style—on user's IT assimilation process are examined.

This research focuses on organizational culture and leadership for the following reasons. First, organizational culture is an important "foundation factor," because it influences almost every aspects of organizational behavior (Weber and Pliskin, 1996). On the other hand, leadership is a critical determinant of "action strategy," because leaders can greatly impact the plans and directions of IT assimilation process (Raghunathan, 1992). Second, organizational culture is a relatively "uncontrollable" factor, as it cannot be changed in a short time. In contrast, leadership is a controllable factor, because leaders may alter their behaviors and styles, and because stockholders may change the leaders of an organization, and thus, the leadership. Therefore, this research, to a certain extent, examines the effects of an uncontrollable foundation factor and a controllable action strategy factor on individual IT assimilation process.

Four factors being used to model individual user's assimilation process include (1) users' involvement in IS development, (2) user satisfaction, (3) IS usage, and (4) user

〈Figure 6〉 Research Model
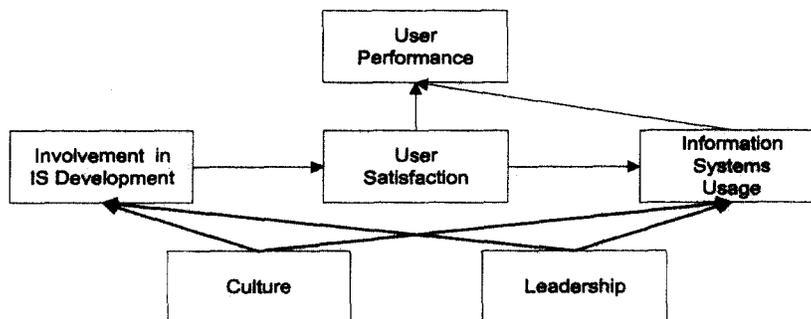
performance. Individual IT assimilation process described in the literature can be summarized as follow. User involvement in IS development process can affect user satisfaction (Lawrence and Low, 1993). User satisfaction affects IS usage (DeLone and McLean, 1992) and user performance (Chin and Todd, 1995). An increased IS usage will result in an improvement in user performance (DeLone and McLean, 1992). Reflecting the elements and their relationships, 〈Figure 6〉 shows the research model.

This research examines four hypothesized relationships between organizational factors and users' attitudinal/behavioral factors. The relationships stated in the alternative form are:

H1: Organizational culture has an impact on user involvement,

H2: Leadership has an impact on user involvement,

H3: Organizational culture has an impact on information systems usage,

H4: Leadership has an impact on information systems usage.

User involvement reflects user's attitude; and IS usage reflects user's behavior. Direct influences of organizational factors on user satisfaction are not examined, because user satisfaction is very much dependent upon the characteristics of IS

being used (Etezadi-Amoli and Farhoomand, 1996).

Two additional hypotheses were formulated to examine whether organizational culture and leadership have impacts on user performance ultimately. The impacts are indirect in nature, because the focus of this research is on the effects of organizational culture and leadership on user performance through leveraging the degrees of user involvement, user satisfaction, and IS usage. Stated in the alternative form, these hypotheses are:

H5: Organizational culture has an indirect impact on user performance

H6: Leadership culture has an indirect impact on user performance.

IV. Methodology

A questionnaire survey was conducted to test the hypotheses. Measurement of the constructs is based on existent management research and MIS research.

4.1. Sample

The sample included 512 users working in 168 departments from 25 randomly-selected manufacturing companies of which

headquarters are located in and near Pusan, Republic of Korea. Middle-level managers were asked to participate in the study, because they are believed to receive most propound effects from IT (Drucker, 1988; Pinsonneault and Kraemer, 1993). A total of 630 questionnaires were distributed, resulting in a 81.3 percent response rate. The high response rate was possible, because most of the selected firms were visited for data collection.

4.2. Measures

Culture is defined as values, beliefs, norms, customs, and behavioral patterns that the members of an organization share, serving as a basic premise for member's behavior. Quinn and Rohrbaugh (1983) showed that organizations could be distinguished along two axes reflecting different value orientations. One axis is a flexibility-control dimension. Flexibility means decentralization and differentiation; and control means centralization and integration. The other axis is an internal-external focus dimension that reflects whether the value

systems emphasize the maintenance of a sociotechnical system or the improvement of its competitive position. As shown in ⟨Figure 7⟩, the resulting four quadrants are named as the group value, the developmental value, the hierarchical value, and the rational value systems.

This research adopted the competing values instrumentation developed by Quinn and Spreitzer (1991), and modified by Zammuto and O'connor (1992). The respondents were asked to indicate the extent to which their organization evidenced characteristics associated with each of the four value systems along six dimensions: organizational character, organizational leadership, organizational cohesion, organizational emphases, performance evaluation criteria, and management style.

To measure the internal validity of the constructs, Cronbach's alpha coefficients were calculated. Alpha coefficient for the group value was 0.7844, for the development value was 0.6939, for the hierarchical value was 0.7728, and for the rational value was 0.7138.

Leadership is defined as the interpersonal

⟨Figure 7⟩ The Competing Value Model (Quinn and Rohrbaugh, 1983)

		Flexibility	
Internal	Group Value	Development Value	External
	Hierarchical Value	Rational Value	
		Control	
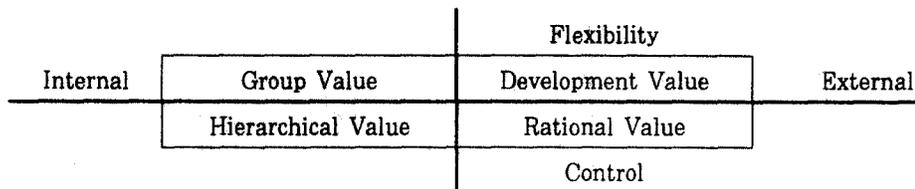
influences that a formal leader of an organization exercises to achieve organizational objectives. Leadership is measured along two dimensions(Fleishman and Harris, 1962).

First, initiating structure is a task-oriented leadership behavior to effectively utilize organizational resources. Initiating structure was measured by five questions asking how well a leader evaluates subordinates' performance, directs work process, presents work schedule, emphasizes timeliness, and makes the subordinates to abide by the regulations and procedures. Alpha coefficient for initiating structure was 0.6803.

Second, consideration is a human- oriented leadership behavior to establish and maintain a good relationship with subordinates. Consideration was measured by another five questions asking how well the leader respects subordinates, trusts and helps, concerns about the wellbeing of subordinates, considers suggestions and requests made by subordinates, and opens up information. Alpha coefficient for consideration was 0.8492.

Involvement in IS development is measured by two questions asking how voluntarily a user has participated and how favorable attitude the user has toward participating in IS development. User involvement denotes a subjective psycholog-

ical state reflecting an attitude to the development of IS (Barki and Hartwick, 1989). The correlation coefficient between the questions was 0.45781. The p-value for the significance of the coefficient was 0.0001.

IS satisfaction is measured by asking how satisfied with characteristics of IS and with IS capabilities in supporting users' works. The correlation coefficient between the two variables was 0.4142 with a p-value of 0.0001.

IS usage is estimated by asking a user how often the user utilizes the reports generated by IS and accesses the system on-line. The correlation coefficient between the variables was 0.63702, and its p-value was 0.0001.

User performance is measured by asking how much IS improved the efficiency of task performance and how much the systems helped a user in performing his or her tasks. To be noted is that "perceived performance improvement" was measured instead of "actual performance improvement." This surrogate concept is commonly used in MIS research (Gartin, 1994). The correlation was 0.81115 with a p-value of 0.0001.

〈Table 1〉 Canonical Correlations and p-values of Wilk's Lambda Tests

	Leadership	Involvement	User Satisfaction	IS Usage	Performance
Culture	0.231 (0.4956)	0.192 (0.6576)	0.196 (0.5395)	0.382* (0.0021)	0.166 0.7946)
Leadership		0.362** (0.0008)	0.214 (0.1738)	0.363** (0.0009)	0.208 ·0.2035)
Involvement			0.607*** (0.0001)	0.589*** (0.0001)	0.546*** (0.0001)
User Satisfaction				0.693* (0.0061)	0.887*** (0.0001)
IS Usage					0.543*** (0.0001)

* significant at α = 0.01 level   ** at α = 0.001 level   *** at α = 0.0001 level

V. Results

As stated, the sample consists of 512 users in 168 departments from 25 firms. Department is used as the base unit of analysis. Thus, organizational culture, leadership, and IS user-related data are averaged for each department. Individual user is not considered to be an appropriate analysis unit, because users in a department may experience the same culture and leadership. The data is summed up for each department, because there can exist subcultures within an organization.

First, canonical correlation analyses were performed in a pair-wise fashion. For all analyses conducted, only the first canonical correlation coefficients were significant. 〈Table 1〉 shows the coefficients and their corresponding p-values within parentheses.

The relationships established in the research model are presented in the white cells. Grayed cells are for the reference purpose only. All the relationships established for the individual IT assimilation process were significant at α = 0.01 level. However, not all of the relationships between organizational factors and individual factors were significant.

Second, a structural equation model was fitted with a maximum likelihood estimation for the research model presented in 〈Figure 6〉 using LISREL software package. Structural equation modeling estimates a series of separate, but interdependent, multiple regression equations simultaneously. Overall, the goodness of fit statistics indicated that the research model provides a marginally adequate to adequate fit to the data. Chi-square with 70 degree of freedom was 147.198 with a p-value less than

⟨Table 2⟩ Coefficients of Direct, Indirect, and Total Impacts

affects ＼ affected	Involvement	User Satisfaction	IS Usage	Performance
Culture	0.033 . 0.033	- 0.017 0.017	-0.136° 0.020 -0.114	. 0.031 0.031
Leadership	0.478** - 0.478**	- 0.258* 0.258*	0.379** 0.294** 0.673***	- 0.434** 0.434**
Involvement		0.539*** - 0.539***	- 0.620*** 0.620***	- 0.922*** 0.922***
User Satisfaction			1.151*** - 1.151***	1.732*** -0.020 1.711***
IS Usage				-0.018 - -0.018

o significant at α = 0.05 level   * significant at α = 0.01 level
** significant at α = 0.001 level   *** significant at α = 0.0001 level

⟨Table 3⟩ Factor Loadings on Exogenous Constructs

variables ＼ constructs	Organizational Culture	Leadership
Group Value	1.0[x]	
Development Value	0.492**	
Hierarchical Value	1.246*	
Rational Value	0.840**	
Initiating Structure		1.0[x]
Consideration		0.963***
x significance level unavailable * significant at α = 0.01 level		
** significant at α = 0.001 level *** significant at α = 0.0001 level		

0.001; RMSEA(Root Mean Square Error of Approximation) was 0.0920; GFI(Goodness of Fit Index) was 0.873; RMR(Root Mean square Residual) was 0.0784. The fit is marginally adequate in the sense that a good model typically has a p-value greater than 0.1 for the chi-square test, GIF greater than 0.9, and RMSR less than 0.08 (Hair et al., 1995). An IT usage model with fit statistics very similar to this research (chi-square d.f=200 = 1003.66, p < 0.001; RNI = 0.86; RMSEA = 0.097) was labeled as "adequate" (Taylor and Todd, 1995), because RMSEA was below the 0.10 cutoff level.

⟨Table 2⟩ shows the results of the

<Table 4> Factor Loadings on Endogenous Constructs

variables \ constructs	User Involvement	User Satisfaction	IS Usage	User Performance
Voluntary participation Favorable attitude	1.000x 0.992***			
About IS characteristics About IS capabilities		1.000x 1.775***		
Report usage On-line access			1.000x 0.769***	
Efficiency Improvement Supporting Task				1.000x 0.873***
x significance level unavailable ** significant at α = 0.001 level		* significant at α = 0.01 level *** significant at α = 0.0001 level		

Multivariate Statistics and F Approximations

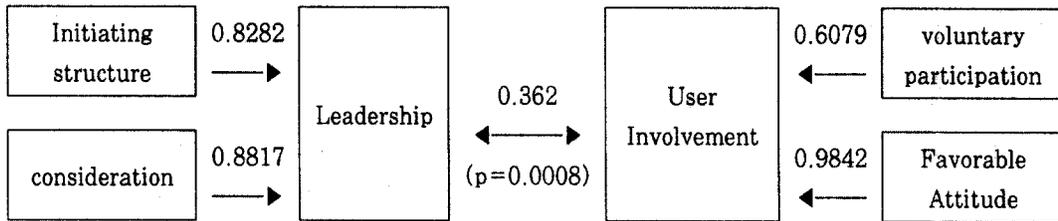| Statistic	Value	F	Num DF	Den DF	Pr > F
Wilks' Lambda	0.95606868	0.7383	8	260	0.6576
Pillai's Trace	0.04420030	0.7401	8	262	0.6560
Hotelling-Lawley Trace	0.04566861	0.7364	8	258	0.6593
Roy's Greatest Root	0.03832807	1.2552	4	131	0.2910

structural equation model analysis. The table shows direct effects on the top of cells, indirect effects at the middle, and total effects at the bottom. <Table 3> shows the factor loadings on the exogenous constructs. <Table 4> shows the factor loadings on the endogenous constructs.

5.1. Organizational Culture and User Involvement

The first null hypothesis stating that there is no significant relationship between organizational culture and user involvement cannot be rejected based on the canonical correlation analysis, as shown by the various test statistics presented below.

The results of the structural equation model also indicate that organizational culture does not have a significant direct impact on user involvement. The structural coefficient is 0.033 with a p-value of 0.5686. Therefore, it can be concluded that, although organizational culture is a shared value and belief system, it may not affect users' involvement in IS development. That is, an organization may not be able to ensure its members more or less likely involve in IS development based on the mix of value systems they share.

| Initiating structure | 0.8282 ──▶ | | | | 0.6079 ◀── | voluntary participation |
| consideration | 0.8817 ──▶ | Leadership | 0.362 ◀──▶ (p=0.0008) | User Involvement | 0.9842 ◀── | Favorable Attitude |

5.2. Leadership and User Involvement

The second null hypothesis stating that there is no significant relationship between leadership and user involvement is rejected. The canonical coefficient is 0.362 with a p-value of 0.0008.
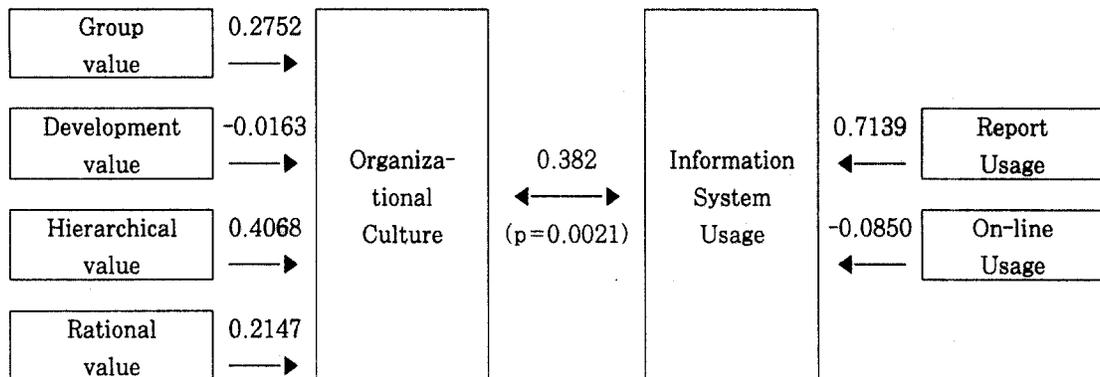
The canonical loadings on leadership are 0.8282 for initiating structure and 0.8817 for consideration. The loadings on user involvement are 0.6079 for voluntary participation and 0.9842 for favorable attitude. The canonical correlation analysis indicates that leaders who focus on not only the structural aspects of an organization but also the human aspects are likely to make their subordinates more actively participate and involve in an IS development process.

The results of the structural equation model also indicate that leadership has a significant direct impact on user involvement. As shown in ⟨Table 2⟩, the structural equation coefficient is 0.478 with a p-value of 0.0018. Therefore, concluded is that an organization attempting to initiate a new IS development should actively exercise leadership rather than relying on the cultural factors.

5.3. Organizational Culture and IS Usage

The third null hypothesis stating that there is no significant relationship between organizational culture and IS usage can be evaluated as follows.

Group value	0.2752 ──▶					
Development value	-0.0163 ──▶	Organizational Culture	0.382 ◀──▶ (p=0.0021)	Information System Usage	0.7139 ◀──	Report Usage
Hierarchical value	0.4068 ──▶				-0.0850 ◀──	On-line Usage
Rational value	0.2147 ──▶					

According to the canonical correlation analysis results presented above, organizational culture has a statistically significant relationship with individual users' IS usage. The canonical correlation coefficient is 0.382 with a p-value of 0.0021. Users in an organization sharing more hierarchical values are likely to use more reports generated by IS. Because organizations having higher hierarchical values tend to put an emphasis on internal operations over external operations and control over flexibility, it is understandable that more IS-generated reports are to be required for controlling the internal operations.
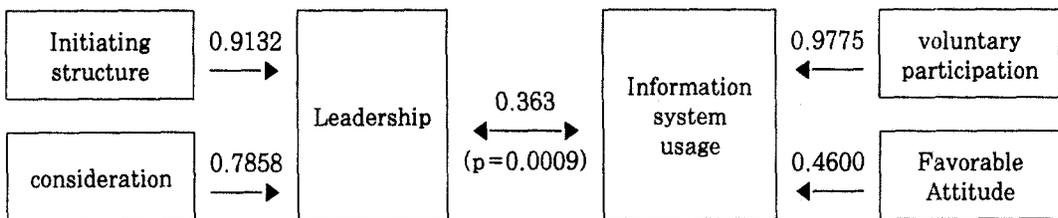
The structural equation coefficient for the direct impact of organizational culture on IS usage is -0.134 with a p-value of 0.045. As stated, the canonical correlation coefficient between them was 0.382. The difference in the signs of the coefficients, however, should be examined together with the factor loadings. According to the results shown in 〈Table 3〉, organizations sharing more of hierarchical, group, and rational values and relatively less of development values tend to have users less frequently utilizing both IS-generated reports and on-lines IS access.

A conclusion possibly made for the third hypothesis is that organizational culture may have some sort of direct impacts on IS usage, although clearly grasping the nature of the impact may require further studies. However, the indirect effect as well as the total effect of organizational culture on IS usage is not significant in the structural equation model. Thus, organizational culture may probably influence IS usage directly; however, its total impact on IS usage is negligible when other factors such as leadership, user involvement, and user satisfaction are employed to explain IS usage.

5.4. Leadership and IS Usage

The fourth null hypothesis stating that there is no significant relationship between leadership and IS usage is rejected. The canonical correlation coefficient is 0.363 with a p-value of 0.0009.

According to the results of a canonical correlation analysis shown above, leaders who pursue higher degree of initiating structure and human relationships are likely to make their subordinates use more

IS reports and access on-line IS more often.

The structural equation model reports similar results. As shown in 〈Table 2〉, the direct effect of leadership on IS usage is 0.378 with a p-value of 0.0058. The indirect effect that leadership has on IS usage through user involvement and user satisfaction is also significant at 0.294 with a p-value of 0.002. The total effect is significant with a coefficient of 0.675 at a p-value of 0.0001. Therefore, we can conclude that leadership does have an impact on IS usage.

5.5. Organizational Culture and User Performance

The fifth null hypothesis stating no indirect impact of organizational culture on user performance cannot not be rejected as shown in 〈Table 2〉. The indirect effect is 0.031 with a p-value of 0.5656. Having a certain mix of organizational values does not influence its members to achieve higher performances by using IT. To be noted is that a direct canonical correlation analysis between organizational culture and user performance shown in 〈Table 1〉 is not significant either. In summary, organizational culture can have a weak impact on user behavior in IS usage. However, it cannot affect user performance.

5.6. Leadership and User Performance

The sixth null hypothesis stating no indirect impact of leadership on user performance is rejected. The impact is significant with a coefficient of 0.434 at a p-value of 0.0026 as shown in 〈Table 2〉. To be noted is that a direct canonical correlation analysis between leadership and user performance is not significant with a p-value of 0.2035 as shown in 〈Table 1〉. These results indicate that although leadership does not have a significant correlation with user performance, it can still significantly affect user performance through influencing various variables related to the individual IT assimilation process, such as user involvement and user satisfaction. In summary, leadership affects user involvement, consequently and directly influences IS usage, and ultimately impacts on user performance. Both structure-oriented and human-oriented leaderships are equally important to motivate users to seriously participate in IS development, to utilize information systems, and to improve user performance by using IS.

Finally, an interesting point is that although the canonical correlation between IS usage and user performance is very significant (p-value < 0.0001), the indirect effect of IS usage on user performance in the structural equation model is not

significant (p-value > 0.90). Although this relationship is beyond the scope of this research, it strongly implies that forcing users to use IS by itself may not improve user performance.

VI. Conclusions

MIS literature repetitively has emphasized the importance of user involvement in information system development process for the success of the system. The findings of this research suggest that managers should actively exercise their leaderships, and not passively rely on the organizational culture to induce users' participation and involvement in IS development process. To increase user involvement, managers need to have not only a task-oriented leadership but also a human-oriented leadership. Consistent with existent MIS literature, this research showed that a higher degree of user involvement tends to result in a greater user satisfaction with the system, and a more frequent use of the system, and ultimately a better user performance.

An ad-hoc analysis of the survey data collected in this research showed that different mixes of organizational culture do not result in different levels of user satisfaction with information systems. How-

ever, a stronger task-oriented and human-oriented leadership can result in a better user satisfaction through promoting user participation and involvement during the system development process. Another ad-hoc analysis indicated that a higher level of user satisfaction tended to result in a more frequent IS usage and an improved user performance.

This research found that not only user satisfaction but also organizational culture and leadership can affect individuals' IS usage directly. Although organizational culture seems to affect IS usage directly somehow, it has a negligible total impact on IS usage. Leadership, on the other hand, affects individuals' IS usage both directly and indirectly.

Pair-wise canonical correlation analyses conducted in this research indicated that neither organizational culture nor leadership has a significant correlation with user performance. However, further analyses revealed that leadership can positively affect user performance through improving user involvement, user satisfaction, and IS usage. This research also showed that a more frequent IS usage by itself does not necessarily improve user performance, even though the correlation between them is significant.

In summary, this research provides a strong indication that leadership can

significantly affect individual-level IT assimilation process. Both structure-riented and human-oriented leadership are required to improve user involvement, IS usage, user satisfaction, and ultimately user performance. This research found no strong indication that organizational culture can affect IT assimilation process significantly.

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