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GOAL COMMITMENT IN ENTERPRISE SYSTEM LEARNING: AN EXPLORATORY EXAMINATION OF ITS ANTECEDENTS AND CONSEQUENCE

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GOAL COMMITMENT IN ENTERPRISE SYSTEM LEARNING: THE EFFECT OF WORKPLACE ENVIRONMENT FACTORS

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Abstract

The success of enterprise system (ES), to a great extent, depends on users' learning outcomes, which in turn, are determined by motivation and cognitive ability. Given the central role played by motivation, this paper applies the goal-setting theory and the expectancy theory to investigate the antecedents and consequence of users' commitment to the goal of learning how to effectively apply ES. In particular, we focus on the effects of workplace environmental factors (i.e., work overload, leader member exchange and IT support) on goal commitment, which leads to user competence. In addition to the direct, main effects, we also explore how IT support and socialization tactics moderate the relationships between antecedents and goal commitment and between goal commitment and user competence, respectively. The research model is largely supported by data collected in a two-wave survey. Theoretical contribution and implications of this study are discussed.

Key Words: goal commitment, IT support, work overload, LXM, use competence

1 INTRODUCTION

Enterprise system (ES) has strategic relevance for organizations because its integration into core business processes or strategies can directly impact organizational performance (Sambamurthy et al. 2003). It is not surprising that organizations have developed strategies focusing on IT, with ES adoption being a critical thrust (Jasperson et al. 2005; Bharadwaj 2000; Robey et al. 2002). However, approximately one-half of ES implementations fail to meet the adopting organizations' expectations (Adam and O'Doherty 2003). Most studies ascribe ES implementation failures to inadequate learning of the system (e.g., Duplaga and Astani 2003; Jasperson et al. 2005; Robey et al. 2002). In other words, learning outcomes of individual users and the organization as a whole determine the success of ES adoption (Robey et al. 2002; Cooper and Zmud 1990; Kling and Iacono 1984).

It is well established that learning outcomes are determined by cognitive ability and motivation (Kanfer and Ackerman 1989). In the extant literature, there are a plethora of studies on factors that may improve users' cognitive abilities to learn how to use a system (e.g., Kang and Santhanam 2003; Sein and Santhanam 1999; Lim and Benbasat 1997; Ahrens and Sankar 1993; Nambisan et al. 1999). In contrast, we have a dearth of research investigating motivation for system learning. Previous IS studies conducted in other contexts have endorsed the importance of motivation (e.g., Klein et al. 1997; Hunton and Price 1997; Venkatesh and Davis 2000). Given that ES is a complex integrated system and learning how to use ES is a challenging task (Sharma and Yetton 2003; Robey et al. 2002; Shang and Seddon 2002), motivation plays an even more important role in such a context (Locke and Latham 1990; Klein and Kim 1998). Indeed, Vroom (1964) indicates that when motivation is low, an individual demonstrates low performance regardless his or her cognitive ability. Therefore, research on the antecedents and consequences of motivation in end users' system learning is imperative but lacking.

To address the shortfall in the literature, we conducted research reported in this paper. Our research questions are (1) what are factors affecting users' motivation, goal commitment in particular, to learn how to use ES? (2) How does goal commitment affect user learning outcome namely competence to use the ES? To answer these questions, we draw upon the expectancy theory (Vroom 1964) and goal-setting theory (Locke and Latham 1990). In the goal-setting theory, the primary role of goal commitment is to moderate the relationship between goal difficulty and task performance (Lock and Latham 1990; Klein et al. 1999). Yet, when goals are challenging and have insufficient variances in difficulty levels, goal commitment has a direct main effect on learning outcomes (Locke and Latham 1990; Klein and Kim 1998). Also, according to the expectancy theory, goal commitment is determined by the expectancy and attractiveness of goal attainment (Vroom 1964), which in turn, are affected by workplace environmental factors, both constraints and facilitators (Klein and Kim 1998).

Following these theories, we posit that a user's commitment to the goal of learning ES, a challenging task, has a direct impact on learning outcomes namely user competence. User competence refers to a user's capability to apply the system effectively (Munro et al. 1997). Also, we explore the moderating effect of socialization tactics in this relationship since they facilitate the formulation of shared norms required by user competence, due to ES high interdependency (Sharma and Yetton 2003). Furthermore, we contend that workplace environmental factors, i.e., work overload, leader member exchange (LMX) and perceived IT support, are the antecedents of goal commitment to learning ES. Work overload is defined as an individual's perception of not being able to perform a task due to the shortage of resources (Ahuja and Thatcher 2005). LXM refers to quality of the relationship with an individual's supervisor (Graen and Uhl-bien 1995). IT support is a range of services providing assistance with the target system (Thong et al. 1994). The research model is largely supported by data

collected with users in six companies that have recently implemented the same type of ES from the same vendor.

The paper is organized into four sections. The first section presents the theoretical background and our research hypotheses. The second section describes the research method and the third section presents the results of our study. The last section discusses the contributions and implications of our paper and suggests an agenda for future research.

2 THEORETICAL BACKGROUND AND RESEARCH MODEL

Goal is a central, pervasive construct in the motivation literature that emphasizes self-regulation (Austin and Vancouver 1996). The goal-setting theory (Locke and Latham 1990) has received the bulk of this attention, gained substantial empirical support and thus become one of the most valid approach to study work motivation (Klein et al. 2001). In the goal-setting theory, goal commitment has been identified as an essential condition without which a goal can have no motivational effect (Locke et al. 1988). Goal commitment refers to one's determination to reach a goal and the unwillingness to abandon or lower that goal (Locke and Latham 1990).

Applying the expectancy theory (Vroom 1964), researchers propose that the attractiveness and expectancy of goal attainment are the most proximal antecedents of goal commitment (e.g., Hollenbeck and Klein 1987; Klein 1991; Wofford, Goodwin and Premack 1992). In particular, Hollenbeck and Klein (1987) identify workplace environmental factors namely situational constraints and LXM as antecedents of goal commitment. Situational constraints are features of a work environment that act as obstacles to performance by preventing an individual from fully translating their ability and motivation into performance (Peters et al. 1985). Examples of situational constraints include a lack of time, materials and information. Constraints make the individual frustrated since he or she cannot perform well despite having the motivation and ability to succeed. Such frustration reduces the individual's motivation by lowering expectancy perceptions (Peters et al. 1985), which, in turn, reduces goal commitment (Hollenbeck and Klein 1987; Klein and Kim 1998). The negative relationship between constraints and goal commitment has gained empirical support (e.g., Mathieu et al. 1992; Klein and Kim 1998).

In this research, we investigate the effect of work overload on user goal commitment to learning how to use ES. Overload is defined as an individual's perception that he or she cannot perform a task because of the shortage of critical resources (Ahuja and Thatcher 2005). When an individual is experiencing work overload, he or she will sense the lack of resources and reduce the expectancy of goal attainment. Therefore, work overload, as a situational constraint, has a negative impact on users' goal commitment to ES learning. We hypothesize the following:

H1 Work overload is negatively related to a user's goal commitment to learning how to use ES.

Supervisor supportiveness is another workplace environmental factor influencing goal commitment (Hollenbeck and Klein 1987). The quality of relationships betweens supervisors and employees is reflected by LMX. According to the LMX theory, leaders (supervisors) develop different relationships with their subordinates on a dyadic basis (Graen and Uhl-Bien 1995). High LMX employees are given greater status, latitude, support and rewards by their supervisors and enjoy more reciprocal influence, mutual trust, and respect than low LMX employees (Fairhurst 1993; Graen and Uhl-Bien 1995). As such, employees with high LMX tend to demonstrate a greater sense of obligation (Fairhurst 1993), perceive higher expectancy and instrumentality of goal attainment (Graen and Cashman 1975) and are more committed to collective goals than counterparts with low LMX (Graen and Uhl-Bien 1995; Vroom 1964).

This notion can be extended to the context of ES learning. In particular, these users may internalize the collective goal of deriving benefits from ES adoption and get more resources from their supervisors, which facilitate them to learn how to use ES. As such, these users will feel more competent to learn the system well, have higher expectancy of goal attainment and be more committed to the goal of learning ES. On the other hand, attaining the learning goal is more attractive to users with high LMX. The exchange currency in high LMX relationships is diffuse and unspecified. High LMX users with exemplary performance may receive special privileges and career-enhancing opportunities (Grean and Uhl-Bien 1995). As such, these users will perceive higher instrumentality of attaining the learning goal and thus be more committed to the learning goal. Hence, we hypothesize the following:

H2 The quality of the relationship between a user and his or her supervisor is positively related to his or her goal commitment to learning how to use ES.

It is well established in the IS literature that IT support is a critical facilitator for system implementation (e.g., Thong et al. 1994; Somers and Nelson 2001; Robey et al. 2002). IT support refers to a range of services providing assistance with the target system. These services attempt to help the user solve specific problems with the system. Sources of IT support include the organization's internal IT staff, the experts from the vendors and/or consulting firms, the organization's knowledge repository and users' social networks. Since users typically are not IT experts, IT support helps users jump start interacting with the system. Given that ES is a large-scale and complex system, IT support is even more critical for users (Robey et al. 2002; Volkoff and Sawyer 2001). Therefore, when a user perceives high level of IT support, he or she will be more confident about the learning process (Robey et al. 2002; Umble et al. 2003; Akkermans and Helden 2002), have a higher expectancy of attaining the goals of learning ES, and thus have a higher level of goal commitment.

H3 Perceived IT support is positively related to a user's goal commitment to learning how to use ES.

In addition to the direct, main effect on goal commitment, perceived IT support interacts with other environmental factors to affect user goal commitment. In particular, it makes users with high LMX expect to get ample resources required to develop their IT skills and therefore further increase their expectancy of goal attainment. Similarly, perceived IT support moderates the overload-goal commitment relationship. Perceived IT support may make users expect to learn more easily and quickly as they expect that IT experts will share their expertise, diagnose problems encountered in the learning process and help them master hands-on skills. Also, the knowledge repository and users' social networks allow users to learn how to use ES at their convenient time. As such, work overload may have less constraint on users' ES learning. In other words, given the same level of work overload, perceived IT support allows users to be more optimistic about their learning process and thus be more committed to the learning goal. Therefore, we hypothesize the following:

H4a Perceived IT support mitigates the relationship between work overload and a user's goal commitment to learning how to use ES.
H4b Perceived IT support strengthens the relationship between LMX and a user's goal commitment to learning how to use ES.

According to the goal-setting theory, goal commitment has a direct effect on performance when the goal is challenging, such as the case of ES learning (e.g., Harrison and Liska 1994; Johnson and Perlow 1992; Klein and Kim 1998). When everyone has the same difficult goal, individuals with higher commitment to the goal will outperform those with lower commitment (Klein et al. 1999). The positive goal commitment-performance relationship has received consistent empirical support (e.g., Harrison and Liska 1994; Johnson and Perlow 1992; Klein and Kim 1998). In the context of ES learning, user competence to use the system after training is an appropriate construct reflecting learning outcomes (Munro et al. 1997). User competence is defined as a user's ability to apply features and function of the system to perform job tasks. We expect that a high level of goal commitment keeps users persistently working hard on the learning tasks and eventually enhances their competence to use the system. Therefore, we propose the following:

H5 A user's goal commitment to learning how to use ES is positively related to his or her competence to use the system.

In the process of organizational socialization, employees and organizations learn about and influence one another (Argris 1957; Perrow 1986). Individuals are particularly susceptible to influence during role transitions, such as being redeployed to job posts as a consequence of ES implementation, because of the great uncertainty regarding role requirements and how to collaborate with others (Ashforth and Saks 1996). Socialization tactics offer employees the opportunity to "learn the beliefs, values, orientations, behaviours, skills and so forth necessary to fulfil their new roles and function effectively within an organization's milieu" (Ashforth and Saks 1996, p. 149). As a result, socialization provides employees with specific information and encourages them to interpret and respond to situations in a predictable way (Jones 1986; Van Mannen 1979).

We expect that socialization tactics applied by the organization in users' ES learning process may moderate the goal commitment-competence relationship, especially when the organization applies collective and serial socialization tactics (Jansen et al. 2005). The tactic of collective socialization refers to grouping individuals and putting them through a common set of experiences. When users learn ES as a group, they can more easily perceive and understand the interdependencies among their tasks and their effects upon the system (Kang and Santhanam 2003). As such, they are able to develop a shared better understanding of how the collaborative system is to be used (Orlikowski and Gash 1994). In contrast, a serial socialization tactic is one in which the individual is socialized by experienced member, compared to a process in which a role model is not utilized. Empirically, it is found that when users learn to use a system by observing another person was most effective in improving these users' system proficiency skills (Compeau and Higgins 1995). Indeed, prior studies provide empirical support for socialization tactics' positive effect on learning outcomes (e.g., Nelson et al. 1995; Cohen and Bacdayan 1994). Therefore, given the same level of goal commitment, users tend to have a higher level of competence to use ES when socialization tactics are applied in their ES learning process.

H6 Socialization tactics strengthen the relationship between a user's goal commitment and his or her competence to use the ES.

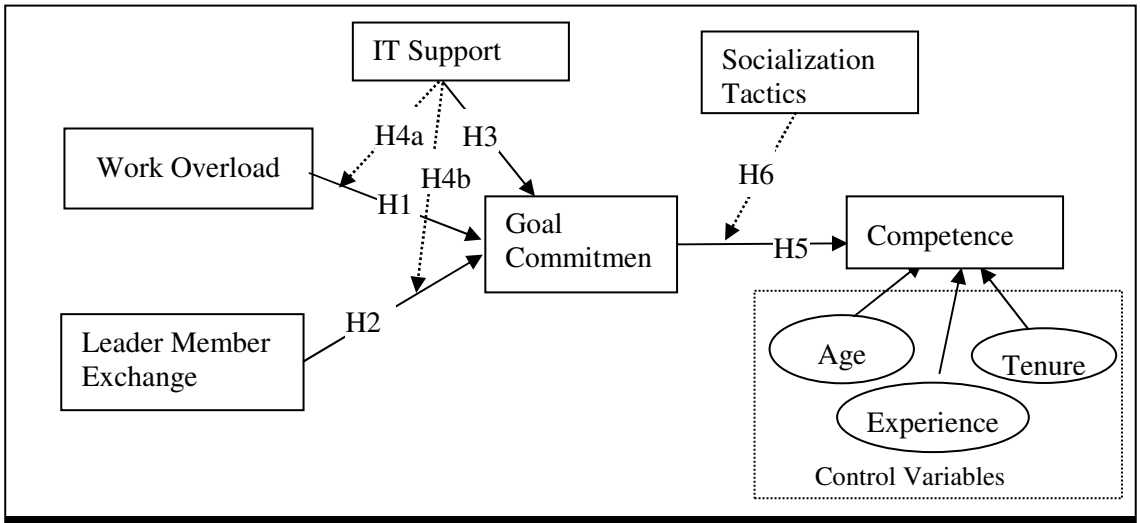

Figure 1. Research Model

To account for the differences among individual users, we also consider three control variables. These variables include users' age, tenure with the organization and prior experience with a similar system. We selected these variables because they may have impact on competence to use the ES. For example, users' age and years of experience with the organization, to a certain extent, manifest their adaptability to new business process. In the view that business process reengineering is an unavoidable component of ES adoption, getting adapted to new business processes, in addition to being able to interact with the technical system, becomes part of job requirements.

3 RESEARCH METHODOLOGY

A two-wave survey is conducted to collect data from employees of six manufacturing companies that have recently implemented the same type of ES from the same vendor. We randomly selected 800 respondents from the employee lists of these organizations. While the survey respondents were anonymous, we required the respondents to generate their own participation code through a coding system so that we could link their responses for two waves of survey. In the first wave of the survey, respondents were required to provide information on their demographics, perceived work overload, relationships with their supervisors, perceived IT support and their goal commitment. We received a total of 286 returned questionnaires, with a response rate of 35.75%. Right after the respondents finished their training, we sent them the second-wave of survey to collect data on user competence. We received a total of 254 returned questionnaires in the second-wave of survey, with a response rate of 31.75%. Among the returned questionnaires from these two rounds of survey, we got 234 pairs of matched questionnaires. Five pairs of matched questionnaires were incomplete and were discarded. We tested the non-response bias by the method suggested by Armstrong and Overton (1977) and the results showed that there was no non-response bias.

The measurement items in our questionnaire were adapted from existing validated and well-tested scales in the extant literature. These scales had been proved to have good validity and reliability. In the questionnaire, all items were measured with 5-pont Likert scales, ranging from "strongly disagree" to "strongly agree". Measurement items for work overload were adapted items from Ahaja and Thatcher (2005). The measurement scales for LXM and perceived IT support were adapted from Settoon et al (1996) and Nambisan (1999), respectively. Also, we adapted items for socialization tactics from Van Maanen and Schein (1979). The instrument for goal commitment was adapted from Hollenbeck et al. (1989) and scales for competence to use the system were adapted from Lester et al. (2002).

4 DATA ANALYSIS AND RESULTS

4.1 Reliability and Validity of the Scales

We examined the reliability and validity of all constructs and the results were shown in Table 1 and 2. Cronbach's alpha ranged from 0.691 to 0.846 and indicated satisfactory reliability (Kerlinger 1986). The values of composite reliability ranging from 0.831 to 0.908 were higher than the benchmark of 0.6. Thus our measurement model had good convergent validity. In addition, we assessed discriminant validity by average variance extracted (AVE) values and correlation matrix. As shown in Table 1, the AVE scores ranged from 0.518 to 0.768 and exceeded the benchmark of 0.5. According to Fornell and Larcker (1981), discriminant validity could be established when the square root of AVE for each construct was greater than the correlations with other constructs. As Table 2 shown, this condition was met by all constructs.

Table 1. Results of Confirmatory Factor Analysis

Construct	Cronbach Alpha	Composite Reliability	AVE
LXM	0.832	0.889	0.667
Overload	0.846	0.908	0.768
IT Support	0.758	0.84	0.518
Goal Comm.	0.821	0.883	0.608
Soc. Tactics	0.750	0.900	0.693
Competence	0.691	0.831	0.621

Table 2. Correlation between Constructs

	LMX	OL	ITS	GCO	SOT	COM	AGE	TEN	EXP
LXM (LMX)	***0.817***								
Overload (OL)	-0.156*	***0.876***							
IT Support (ITS)	0.262**	0.122	***0.72***						
Goal Comm. (GCO)	0.248**	-0.038	0.234**	***0.78***					
Soc. Tactics (SOT)	0.214**	-0.023	0.264**	0.249**	***0.832***				
Competence (COM)	0.214**	-0.049	0.183**	0.315**	0.291**	***0.788***			
Age (AGE)	-0.052	0.016	0.043	0.065	-0.012	0.109	***NA***		
Tenure (TEN)	-0.049	-0.069	0.077	-0.019	-0.009	-0.065	0.673**	***NA***	
Experience (EXP)	-0.006	-0.124	-0.204**	0.04	0.150*	-0.143*	-0.123	-0.034	**NA**

Note: The diagonal elements are the square root of AVEs.
* Correlation is significant at the 0.05 level (2-tailed). ** is significant at the 0.01 level (2-tailed).

4.2 Hypotheses Testing

To test the hypotheses, we followed Lee and Kim (1999) procedure and run a multiple regression analysis. Following Cohen and Cohen (1983), we centred all independent variables and moderators prior to creating the interaction terms. As shown in Table 3, LMX (b=0.170, p<0.01) and perceived IT support (b=0.361, p<0.05) were positively related to goal commitment, and therefore H2 and H3 were supported. In contrast, the overload-commitment link was not significant (b=-0.001) and thus H1 was not supported. In addition, the results indicated that perceived IT support moderated the negative relationship between user goal commitment and work overload (b_{OL*ITS}=-0.392, p<0.01), which supported H4a, but in an opposite direction. Perceived IT support did not moderate the LMX-commitment relationship (b=0.134) which indicated that H4b was not supported. The interaction terms in Model 1 led to a significant increase of R^2 term (change in R^2 equal to 0.233, with F change equal to 15.852, p<0.01), which further indicated the significant moderating effects of IT support on overload-goal commitment relationship.

Table 3. Regression tests of H1–4a, b

	Basic Model	Model 1
	Std. Beta	Std. Beta
Overload (OL)	0.017	0.001
LMX	0.187***	0.170***
IT Support (ITS)	0.219***	0.361**
LME*ITS		0.134
OL*ITS		-0.392***
R^2	0.101	0.334
R^2 change		0.233
F Change		15.852***
*p<0.10; **p<0.05; ***p<0.01		

Table 4. Regression tests of H5–6

	Model 0	Model 1	Model 2
	Std. Beta	Std. Beta	Std. Beta
age	0.256***	0.210**	0.221***
tenure	-0.241***	-0.205**	-0.210***
Previous Experience	-0.119*	-0.136**	-0.173***
Goal Comm. (GCO)		0.303***	0.287***
Soc.Tactics (SOT)			0.288***
GCO*SOI			0.166***
R^2	0.061	0.212	0.236
R^2 change		0.151	0.024
F Change		11.990***	11.404***
*p<0.10; **p<0.05; ***p<0.01			

In the second stage, we tested the direct effect of goal commitment on user competence and the moderating effect of socialization tactics on the association of goal commitment and user competence, together with the effects of control variables (i.e., age, tenure with the organization, prior experience with a similar system). The results shown in Table 4 indicated that users' goal commitment (b=0.287, p<0.01) had a significant positive relationship with competence to use the ES. As such, H5 was supported. In addition, the results indicated that socialization tactics (b=0.166, p<0.01) positively moderated the relationship between users' goal commitment and competence to use the ES, which supported H6. Compared with the basic model (Mode 1), the interaction terms in Model 2 led to a significant increase of R2 (change in R^2 equal to 0.024 with F change equal to 11.404, p<0.01), which indicated the significant

moderating effects of socialization tactics on the relationship between users' goal commitment and competence to use the system.

5 DISCUSSION AND CONCLUSION

The findings of this study are largely consistent with the proposed theoretical foundation. Findings show that LMX and perceived IT support serve as antecedents to users' commitment to the goal of learning ES. Also, users' goal commitment at the beginning of training affects their competence to use the system after the training. It is also indicated that, more socialization tactics applied leads to higher use competence, given the same level of goal commitment. This finding is consistent with what is found by previous studies (e.g., Nelson et al. 1995).

Work overload is not found to be an important antecedent to goal commitment. A possible explanation is that users with high work overload tend to be self-motivated. Therefore they have high commitment to the system learning goal. They may treasure the ES training opportunities and make good use of the time, rather than using high overload as an excuse for avoiding learning. It is found that perceived IT support has a significant negative effect on goal commitment, given the same level of work overload. This is contrary to what we hypothesize. An explanation is that, perceiving the availability of IT support, users may choose to rely on supporting staff when they encounter problems and thus are not committed to learning how to use the system themselves. In addition, the results show that perceived IT support does not moderate the LMX-goal commitment relationship. A possible explanation is that IT support is available across the organization. A user with high LMX does not get more access to IT support than a user with low LMX. Therefore, the relationship between LMX and goal commitment is not affected by perceived IT support. Since this is the first study exploring how IT support moderates the relationships between goal commitment and work overload, and between goal commitment and LMX, our findings should be taken with caution. We urge researchers to further investigate the interaction effect of perceived IT support with other workplace environmental factors.

It is important to evaluate the current study's results and contributions in light of its limitations. First of all, there are other workplace environmental factors such as top management support that can affect user acceptance of the goal of learning how to use ES. Future research can extend our study by examining other factors' effects. Second, we collected data with a single source. All major constructs were measured by respondents' perceptions, which are subjective. Although we followed Harman's one-factor test and found that common method bias was not a serious concern for this study, we urge that future research will use multiple data sources.

Our study makes three major theoretical contributions. First, this study enriches the research investigating motivation in system learning in general and enterprise system learning in

particular. This is the first study that examines the effect of goal commitment on the implementation of a large-scale, complex system at an individual level. The findings highlight the critical role of goal commitment in affecting users' learning outcomes and extend our understanding of workplace environmental factors affecting users' commitment to the goal of ES learning. Second, this research assesses the moderating effect of socialization tactics in the goal commitment-use competence relationship, which has not been studied by IS research. This study serves as a call for future research to investigate the role played by socialization tactics in system implementation. Third, our new finding on the non-significant direct effect of work overload on goal commitment and its interaction effect with perceived IT support challenges our current wisdom of overload's effect. It provides new avenues for future research to investigate the role played by work overload in large-scale system implementation.

This research also has practical implications for organizations implementing ES. First, our research provides insights into how managers can help users formulate a strong commitment to the goal of learning ES. In particular, managers should improve the quality of relationships with their subordinate users and provide IT support to motivate users. But managers should be cautious about the confluence of IT support and work overload. Second, our results suggest that managers can help to enhance users' competence to use the system by encouraging users and providing them with necessary resources so that users can be committed to the learning goal. Third, the results indicate that managers should apply socialization tactics to enhance individuals' use competence. In other words, having users learn as a group helps them understand the interdependency of their operations on the system and having users learn from experienced co-workers helps them overcome the learning curve and pick up hands-on skills more easily.

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