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Problems, What Problems? An Examination of the Interactive Relationship of Technology Difficulties and Political Efficacy on Job Satisfaction

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ABSTRACT

We examined the interactive relationship between perceived technology difficulties and political efficacy on employees' job satisfaction. Technology difficulties refer to the inability to maximize usage of the technology. The sample consisted of 325 individuals employed in a wide range of work environments. We hypothesized that political efficacy, which we define as success at achieving outcomes by influencing others, would minimize the harmful effects of technology difficulties on employees' job satisfaction. Results strongly support our hypothesis. Specifically, individuals with low levels of political efficacy reported lower levels of job satisfaction as technology difficulties increased. Further, job satisfaction increased for high political efficacy individuals as technology difficulties increased. Implications of these results, strengths and limitations of this research, and directions for future research are offered.

Keywords

Innovation, Political Efficacy, Information Technology (IT) Usage, Technology Difficulties, Satisfaction

INTRODUCTION

Organizations spend considerable amounts of time, effort, and money adopting and implementing technologies. Although there are successes, many systems fail, or are under-utilized, and implementers and users alike tend not to fully understand the social reasons that distinguish the failures from the successes (Kraut, Rice, Cool and Fish 1998). Understanding the factors that contribute to the use of information systems is a central concern for the field of Management Information Systems (MIS). However, many studies ignore the activities that lead to adoption and subsequent continued usage of a technology (Karahanna, Straub and Chervany 1999).

The introduction of new technologies can force organizational members to confront their perceptions of the social aspects of their organization, such as the attitudes, beliefs and underlying assumptions of technology that may not have been considered (Schein 1985). For example, the introduction of electronic mail in one organization made managers realize that they depended on face-to-face contact, and that electronic mail would not be appropriate for the majority of their communications (Schein 1985). The use of information technology (IT) is contingent on attitudes and beliefs, social roles, and experiences (Tornatzky and Fleisher 1990). Research suggests that reasoned behaviors are preceded by a deliberate process that culminates in the decision or intention to act, but, even after an individual decides to act, barriers can prevent individuals from completing the behavior (Fishbein and Ajzen 1975). Consequently, researchers need to explore and investigate antecedents of IT usage.

The determinants of IT usage continues to be a significant area of investigation in research literature (Agarwal 2000; Lewis, Agarwal and Sambamurthy 2003). In particular, the impact of political perceptions such as political efficacy is based on the fact that perceptions represent a subjective evaluation of organizational phenomena (Ferris, Russ and Fandt 1989; Hochwarter and Treadway 2003). Therefore, individuals respond on the basis of their own constructed reality, in other words their perceptions. Thus, the intent of this paper is to examine the interactive relationship between perceived technological difficulties and political efficacy on employees' job satisfaction. The central question in this paper is: How do political factors influence the success of technology usage? We will begin with the literature framework, then discuss the research model, future research opportunities, and finally provide concluding remarks.

THEORETICAL FOUNDATION

User beliefs and attitudes are key determinants of IT usage (Bhattacharjee and Premkumar 2004). These beliefs and attitudes continually change and are impacted by social influences. The social influences, i.e. political efficacy, that either support or inhibit IT usage are important factors to research literature. Over the years, several streams of research have contributed to IT acceptance (Compeau and Higgins 1995; Davis, Bagozzi and Warshaw 1989a), implementation success at the organizational level (Leonard-Barton and Deschamps 1988), and task-technology fit (Goodhue 1995; Goodhue and Thompson 1995). We intend to look at the literature that focuses on the intention and/or usage of technology, such as Venkatesh, Morris, Davis, and Davis (2003), to understand the social influences and norms that impact IT usage.

Innovation Diffusion Theory

Diffusion and innovation of information systems is an area of sizeable and significant research that is continually linked over time (Ashry and Taylor 2000). Fichman (1999: 1) defines diffusion as the “process by which a technology spreads across a population of organizations.” Kwon and Zmud (1987: 231) define implementation as “an organizational effort to diffuse an appropriate information technology within a user community.” Based on these definitions, the similarities of these definitions are apparent (Cooper and Zmud 1990; Kwon 1996) and research continues to identify more links, such as the five characteristics of innovation (Rogers 2003) and the six-phase model of implementation (Kwon and Zmud 1987).

Originally, Rogers (2003) derived five characteristics of innovations to discuss perceptions of adopting and diffusing technology. These five characteristics (i.e., relative advantage, compatibility, complexity, observability, and trialability) are instrumental and assisted in developing the innovation-decision process (Rogers 2003). This process is viewed as a temporal sequence of steps where an individual passes through an initial awareness of the innovation (knowledge), to a formation of favorable or unfavorable attitude (persuasion), development of a decision to reject or accept (decision) the innovation, make use of the innovation (implementation), and finally seek reinforcement (confirmation) (Rogers 2003). According to Karahanna, Straub, and Chervany (1999: 185) the key constructs in this process are “the innovation's perceived attributes, the individual's attitude and beliefs, and communications received by the individual from his/her social environment about the innovation.” Based on the key construct of perceived attributes, we intend to examine the effects of an interaction between technology difficulties and perceived political efficacy on job satisfaction.

IT Usage

Research progress has been made in understanding individual usage of IT innovations. Particularly, a research stream has emerged that uses intention-based theories such as theory of reasoned action (TRA) (Fishbein and Ajzen 1975), theory of planned behavior (TPB) (Ajzen 1991), and technology acceptance model (TAM) (Davis 1989) to predict user acceptance of IT (e.g., Hartwick and Barki 1994; Taylor and Todd 1995). According to these theories, IT usage is influenced by beliefs about IT, such as perceived usefulness, perceived ease of use, and subjective norms.

The final stage of IT implementation is viewed as infusion or increased breadth and depth of IT usage (Cooper and Zmud 1990; Grover and Goslar 1993; Winston and Dologite 1999). Breadth refers to the number of integrated IT applications and users. Depth represents the extent of individual IT use and satisfaction (Winston and Dologite 1999). Further, according to Saga and Zmud (1994, p. 67), “infusion occurs as IT applications become more deeply embedded within the organization's system.” Some factors that influence infusion include organizational: social network, organizational norms, structure and IT experience; and individual: education, experience, personality, training, and involvement. In this paper, we define IT usage as the adoption and continual use of innovation/technology in organizational and individual work processes. Therefore, we define technology difficulties as the inability to maximize usage of the technology.

Social Processes

The importance of social influences in relation to IT usage has been demonstrated by Venkatesh and Morris (2000), who extended TAM by illustrating the role of gender and politics. Social influence is defined as “the perception that most people who are important to him think he should or should not perform the behavior in question (Fishbein and Ajzen 1975, p. 302).” Research on the role of social influence in the context of the technology acceptance model is in its infancy (Venkatesh and Morris 2000). Social influence comes in a variety of sources. Individuals may experience social pressures from friends, co-workers, and supervisors. Also, studies have examined the role played by an influential individual—the technology champion (Orlikowski, Yates, Okamura and Fujimoto 1995)—and have found that IT is more likely to be adopted and used when the influential individual is promoting adoption or use (Agarwal 2000). One example of a social influence is political efficacy, which is a direct determinant of behavioral intention and defined as “the degree to which an individual perceives that important others believe he or she should use the new system (Venkatesh, et al. 2003, p. 451).”

TECHNOLOGY DIFFICULTIES AND POLITICAL EFFICACY

Organizational politics is prevalent throughout work environments and continues to thrive in organizations (Hochwarter and Treadway 2003). This commonness has implemented an “acceptance of politics as a significant aspect of organizational life led (Mintzberg 1985) to classify work settings as ‘political arenas’ (Hochwarter and Treadway 2003: 553).” Organizational politics can be viewed as an influence process that is exercised within work settings. In this view, politics includes a very general set of social behaviors (Cropanzano, Howes, Grandey and Toth 1997). In the more specific definition, “the term politics is limited to behavior that is strategically designed to maximize short-term or long-term self-interest,” (Cropanzano, et al. 1997, p. 161). Further, Pfeffer (1981, p. 7) defined organizational politics as “the study of power in action.” By adopting this definition, we are able to examine the effects of political efficacy on the relationship between technology difficulties and job satisfaction.

Affect Dispositions in Organizational Settings

Substantial research has examined the relationships of attitudes and behaviors (Fulk 1993; Karahanna, et al. 1999), perceived usefulness and subjective norms (Davis, Bagozzi and Warshaw 1989b), self-efficacy (Compeau and Higgins 1995), and other related variables in reference to technology. Evidence has shown personality dimensions as an ingredient to the employees’ acceptance of an innovation. Specifically, negative affect (NA) and positive affect (PA) are important predictors of several work outcome variables (George 1992). It is also important to note that NA and PA are independent personality dimensions, indicating that an individual can score high or low on both or any combination of the two (George 1992; Watson, Clark and Tellegen 1988).

According to Watson, Clark, and Tellegen (1988), individuals high on NA are generally perceived as having a negative orientation towards themselves and the world. Individuals with low NA are more likely to be stressed and in unfavorable conditions, but are less likely to see the world in a negative state such as high NA.

Individuals high on PA have an overall positive outlook and view themselves as active, self-efficacious, and pleasurable to be around (Perrewé and Spector 2002; Watson, et al. 1988). On the contrary, an individual low on PA is less-active and has a lower well-being and low self-efficacy. In addition, low PA levels indicate possible depression due to the inability to think in supportive positive affective states (George 1992).

Research has associated NA (inversely) and PA (directly) with job satisfaction since majority of jobs encompass a range of positive and negative elements (Arvey, Bouchard, Segal and Abraham 1989; Staw, Bell and Clausen 1986). Emotions are common in the workplace and they generate both positive and negative work outcomes. An employee’s affect can be responsive to specific stimuli and environments. Hochwarter and Treadway (2003) found that affect dispositions interact with political perceptions to predict job satisfaction. Specifically, they found that individuals with high negative affect (NA) are more perceptive to political perceptions than low NA individuals and individuals high in positive affect (PA) are also extremely susceptible to the effects of perceived politics on job satisfaction. Consequently, NA and PA interact with political perceptions to affect job satisfaction.

Relationship between Technology Difficulties and Political Efficacy

Over the years, we have spent a great deal of time discussing the adoption and diffusion of technology, but little has been discussed about the effects after implementation of an innovation (Karahanna, et al. 1999). Many innovations are accepted and used overtime regardless of advantages or disadvantages to the performance and satisfaction of the employees. The usage of the technology by an employee impacts the job satisfaction. Hence, if the technology is well designed and implemented there is little reason for concern, but what if the technology is difficult.

Technological difficulties are negative aspects of adopted innovations which influence the employee’s satisfaction. In general, when an employee encounters several problems with innovation (i.e., high technology difficulties), the individual is more likely to be dissatisfied. Conversely, low technology difficulties will have neutral or minimal influence on job satisfaction. The influence of a perceived behavior will modify the relationship between technological difficulties and job satisfaction. We argue that high political efficacy will positively influence the relationship between technology difficulties and job satisfaction. Equally, low political efficacy will negatively influence job satisfaction as technology difficulties increases.

Hypothesis 1: Political Efficacy will moderate the relationship between technology difficulties and job satisfaction. Technology difficulties will be positively associated with job satisfaction when political efficacy is low. Conversely, technology difficulties will be negatively associated with job satisfaction when political efficacy is high.

METHODOLOGY

Participants and procedures

Students in two undergraduate courses at a university in the Southeastern United States were given surveys to be completed by employees working full-time. Course credit was given for completion of the assignment. A total of 385 questionnaires were initially distributed and 368 usable surveys were returned within a three-week period. The sample consisted of 210 women (i.e., 57%), while the average age was approximately 40 years. Respondents reported working in their organization for roughly 9 years while supervising an average of 8 employees. A wide range of occupations was included in the sample including human resources manager, salesperson, and nurse. All employees reported at least a moderately level of interaction with some form of technology at work.

Measures

AFFECTIVE DISPOSITION

We used Watson, Clark, and Tellegen's (PANAS, 1988) scale to measure negative (NA, $\alpha = .85$) and positive affect (PA, $\alpha = .87$). Respondents were asked to indicate the extent to which they experienced 10 positive (e.g., interested and determined) and 10 negative (e.g., distressed and hostile) emotions. A five-point response format was used (1 = *very little or not at all* to 5 = *extremely*).

POLITICAL EFFICACY

We developed a four-item scale to measure political efficacy ($\alpha = .73$). Items included, "I am able to detect when others are acting politically at work", "When the situation requires politicking, I am good at it", "I am able to cut those off at the pass when they are acting in self-serving ways", and "I am good at playing politics at work when needed." A five-point response format was used (1 = *strongly disagree* to 5 = *strongly agree*).

TECHNOLOGY DIFFICULTIES

Perception of technology difficulties was measured using a four-item scale developed for this study ($\alpha = .89$). Items included, "The technology at work cannot be counted on to work", "Our equipment is so outdated, that I just don't know if it will work when I try to use it", "If the technology at work were more reliable, everyone would be more effective", and "The technology I must use at work is terrible". A five-point response format was used (1 = *strongly disagree* to 5 = *strongly agree*).

JOB SATISFACTION

Job satisfaction ($\alpha = .86$) was measured using a five-item subscale of Brayfield and Rothe's (1951) index (Judge, Locke, Durham and Kluger 1998). "Each day of work seems like it will never end (reversed coded)", and "Most days I am enthusiastic about my work" are two representative items. (1 = *strongly disagree* to 5 = *strongly agree*). A five-point response format was used (1 = *strongly disagree* to 5 = *strongly agree*).

Data Analysis

Moderated regression analyses were conducted to determine the influence of the political efficacy – technology difficulties interaction. In the first step, demographic variables (i.e., age, gender, and organization tenure), employees supervised and affective disposition (i.e., negative and positive affect) were entered. The predictor variables (i.e., political efficacy and technology difficulties) were entered in step 2, while the interaction term was included in the final step. An incremental change in criterion variance (i.e., ΔR^2) in the third step indicates a significant interaction term (Cohen and Cohen 1983).

Results

Means, standard deviations, and intercorrelations are presented in Table 1. Table 2 reports results of the moderated regression analyses. As expected, NA ($\beta = -.24, p < .01$) and PA ($\beta = .45, p < .01$) predicted job satisfaction, as did organizational tenure ($\beta = -.01, p < .05$). Technological difficulties predicted job satisfaction in Step 2 (e.g., higher levels of technology difficulty were associated with lower levels of job satisfaction). Finally, the technology difficulties – political efficacy interaction term was significant explaining incremental variance in job satisfaction ($\beta = .12, p < .05, \Delta R^2 = .03$). The amount of explained variance for the interaction term is within the range expected (i.e., 1 – 3%) for moderator effects in field studies (Champoux and Peters 1987; Chaplin 1991).

Variable	M	SD	1	2	3	4	5	6	7	8
1. Age	40.33	12.09								
2. Gender	--	--	-.03							
3. Organizational Tenure	8.67	9.59	.55*	-.07						
4. Employees Supervised	8.32	23.03	.04	-.04	.02					
5. Negative Affect	1.66	.54	-.17*	.01	-.04	.01				
6. Positive Affect	3.69	.63	.05	.07	.01	.14*	-.23*			
7. Political Efficacy	3.24	.63	.01	-.05	.08	.15*	-.03	.21*		
8. Technology Difficulties	2.36	.83	-.14*	-.06	-.12*	.04	.22*	-.21*	.01	
9. Job Satisfaction	3.75	.72	.14*	.01	-.02	.13*	-.31*	.44*	.12*	-.21*

N = 368
* $p < .05$

Table 1. Means, Standard Deviations and Intercorrelations Among Study Variables

Step and Variable	Step 1		Step 2		Step 3	
	β	se	β	se	β	se
Step 1:						
Age	-.01	.01	-.01	.01	.01	.01
Gender	-.01	.06	-.01	.06	-.01	.01
Organization Tenure	-.01*	.01	-.01**	.01	-.01**	.01
Employees Supervised	.01	.01	.01	.01	.01	.01
Negative Affect	-.24**	.06	-.23**	.06	-.23**	.06
Positive Affect	.45**	.05	.42**	.04	.43**	.05
Step 2:						
Political Efficacy (A)			.05	.05	-.17	.14
Technology Difficulties (B)			-.08*	.02	-.39*	.06
Step 3:						
A x B					.12*	.04
ΔR^2	.27		.02*		.02*	

N = 368, * $p < .05$, ** $p < .01$

Table 2. Moderated Regression Analyses Predicting Job Satisfaction

A procedure outlined by Stone and Hollenbeck (1989) was used to graphically depict the significant interaction terms. Three levels of political efficacy were plotted: at one standard deviation below the mean, at the mean, and at one standard deviation above the mean. As shown in Figure 1, high levels of technology difficulty were coupled

with lower job satisfaction scores for those reporting lower levels of political efficacy. Conversely, politically efficacious individuals reported higher levels of job satisfaction in environments with high levels of technology difficulty.

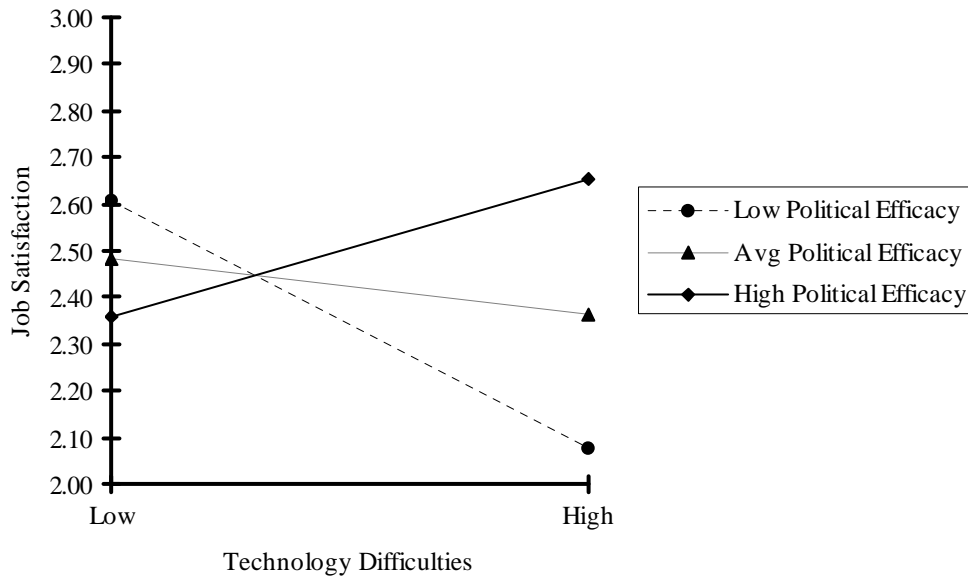


Figure 1. The Interactive Effects of Technology Difficulty and Political Efficacy on Job Satisfaction

DISCUSSION AND FUTURE RESEARCH

The present study provides an extension of the current diffusion literature. Due to space limitation, we will only highlight the most important findings without discussing other specific results. In general, the results suggest that political efficacy is a significant factor that affects job satisfaction in environments with high levels of technology difficulties. As a mechanism for the interaction of political perceptions and technology usage, this finding is consistent with the findings of Venkatesh et al. (2003), who suggest that social influences impact IT usage. Moreover, our understanding of the role of technology in the political perceptions-outcomes relationship is limited despite the volume of technology usage research. This study sought to address this oversight by evaluating the interactive effects of affective dispositions on the link between perceptions of politics and its most empirically supported consequence, job satisfaction (Hochwarter and Treadway 2003). The results were supportive of the main hypotheses that an individual's perceptions of politics will interact with technological difficulties to determine the degree of job satisfaction experienced by the employee.

Following from previous extensions of technology diffusion literature, future research should focus on identifying constructs that can add to the prediction of intention and behavior above and beyond what is already known and understood. In the study of information technology usage in organizations, there has been a proliferation of competing explanatory models of individual acceptance of information technology. The present work advances individual acceptance research by empirically testing a facet of the social influence constructs impacting technology use. Future research should further explore the different facets of the social influence construct.

Limitations of this study

This study is not without limitations. First, students were used as a means to gather data. Students were instructed to have full-time employees, regardless of job type or title, complete surveys. In spite of this, we cannot rule out the possibility that some form of selection bias was present. Second, a survey methodology was employed to capture respondents' perceptions exclusively without the use of other data collection methods. Consequently, the potential for common method bias (CMB) exists.

PRACTICAL IMPLICATIONS

We believe our study has important theoretical and practical implications. It contributes to the IT innovation and the intention-based theories by providing empirical evidence that perception of politics is an important variable that influences the formation and change over time of user evaluation and use of IT innovation. Our results suggest that the strong documented association between social influence and technology acceptance can result in increased employee satisfaction. In addition to the scholarly interest of this study, our results suggest that managers need to understand that social influence, i.e. perceptions of politics, can have serious repercussions for technology use and overall job satisfaction.

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