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Punishment, Justice, and Compliance in Mandatory IT Settings

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This paper aims to understand the influence of punishment and perceived justice on user compliance with mandatory information technology (IT) policies. Drawing on punishment research and justice theory, a research model is developed. Data collected from a field survey of enterprise resource planning (ERP) users are analyzed to test the proposed hypotheses. The results indicate that IT compliance intention is strongly influenced by perceived justice of punishment, which is negatively influenced by actual punishment. When perceived justice of punishment is considered, the effect of satisfaction on compliance intention decreases and that of perceived usefulness becomes insignificant. This paper contributes to information systems (IS) research and practice by drawing attention to the importance of punishment, particularly perceived justice of punishment, in mandatory IT settings. It delineates the relationships among actual punishment, punishment expectancy, perceived justice of punishment, and IT compliance intention, and thus provides a better understanding of user compliance behavior in mandatory IT settings.

Key words: punishment; punishment expectancy; distributive justice; procedural justice; informational justice; fairness; mandatory context; compliance

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1. Introduction

Information technology (IT) that promises to enhance organizational performance costs companies millions of dollars to implement (Kohli and Devaraj 2003). Given the huge investment, it is in the best interest of organizations to fully assimilate the IT that they have implemented into their business processes so that the promised benefits can materialize (Devaraj and Kohli 2003, Liang et al. 2007). However, after top management makes the formal decision to adopt an IT, it is up to employees to decide whether and how to integrate the technology into their job routines (Fichman 2000). An IT initiative may fail if employees refuse to use the system or use the system in unintended ways. To ensure IT success, organizations usually establish policies that specify the proper use of the technology and mandate that employees comply with these policies (Galletta and Hufnagel 1992, Ram and Jung 1991). Therefore, it is important to understand how mandatory policies influence employees' compliant IT usage.

IT acceptance research over the past two decades has increased our knowledge of the IT usage behavior of individuals by drawing from various theories such as the theory of reasoned action (Fishbein and Ajzen 1975), theory of planned behavior (Ajzen 1991), technology acceptance model (TAM) (Davis 1989, Davis et al. 1989), innovation diffusion theory (Rogers 1995), and unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al. 2003). Studies find that individuals' IT adoption intention is determined by not only technology-related beliefs such as perceived usefulness and ease of use but also social influences such as subjective norm, defined as an individual's perception that important others such as peers and supervisors think she or he should or should not use the focal technology (Venkatesh and Davis 2000). Evidence indicates that although subjective norm has a significant effect on behavioral intention in mandatory settings, its effect disappears in voluntary settings (Hartwick and Barki 1994, Venkatesh and Davis 2000, Venkatesh et al. 2003). Venkatesh and Davis (2000) believe that the effect of subjective norm on behavioral intention is largely due to the ability of significant referent others to punish noncompliance. This suggests that punishment plays an important role in influencing IT usage behavior in mandatory settings.

Previous organization research finds punishment to be an effective way to increase employees' work

motivation, performance, job satisfaction, and other desirable attitudinal and behavioral outcomes (Arvey et al. 1984, O'Reilly III and Puffer 1989, Podsakoff et al. 2006). Information systems (IS) security studies reveal that punishment can be used as a deterrent to reduce IS misuse, thus increasing compliance with IT policies (Straub 1990). Organizational policies are unlikely to be followed if violations go unpunished: imagine how many people would show up at work in a company in which employees were not disciplined for absenteeism. Punishment as a form of behavioral control is therefore universal in organizations (Arvey and Ivancevich 1980, Ball et al. 1994, Trevino 1992). Almost every formal organization has specific statements on sanctions and/or disciplinary actions in the event of violations of organizational rules and policies. Because of the highly charged nature of punishment, practitioners are probably reluctant to admit its practice, and academics tend to underestimate its prevalence. However, Arvey and Ivancevich (1980) state that, "The use of aversive stimuli has always occurred in organizational settings and probably always will" (p. 125). In mandatory IT settings, punishment is widely utilized as a coercive force to ensure that employee IT use complies with IT policies. According to recent surveys conducted by the American Management Association (AMA), 66% of United States companies monitor the web-browsing activities of their employees and 43% review employee e-mails (AMA 2008). Harsh punishment has been delivered: 28% of employers have fired employees for e-mail misuse and 30% have fired employees for Internet misuse (AMA 2008). If less severe disciplinary actions such as reprimands and warnings were counted, punishment rates would be much higher. In the context of enterprise systems, punishment is also common. For example, Boudreau and Robey (2005) find that a large American government agency mandated enterprise resource planning (ERP) usage by informing users that inertia would result in negative consequences (i.e., punishment). Specifically, users were told that if they did not use the system they could be "bumped out." Because of the importance and prevalence of punishment, we argue that it deserves to be investigated theoretically and empirically in IS research.

To date, little is known about punishment in mandatory IT contexts. To the best of our knowledge, no research has explicitly examined the relationship between punishment and IT compliance. We contend that to gain an in-depth understanding of IT behavior in mandatory settings, punishment should be studied directly and explicitly. Extending IT acceptance theory by integrating punishment research and justice theory, this study addresses the following research question: How does punishment affect employee compliance intention in mandatory IT settings?

The rest of the paper is organized as follows. In the next section, we develop the research model and propose hypotheses. Then, we describe the survey research process and report the results of the data analysis. Finally, we discuss the major findings and their implications for research and practice.

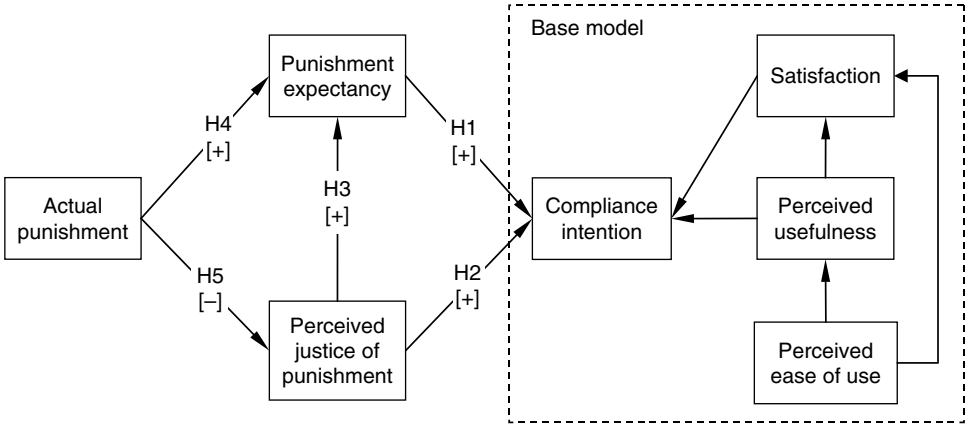
2. Theoretical Development

2.1. Research Model

As IT compliance encompasses IT usage, we extend the TAM by drawing on punishment research and justice theory to develop a research model that explains the IT compliance intention of individuals in mandatory settings (Figure 1). The TAM is selected because it has a concise structure and is the most commonly used model in the IT acceptance literature. The UTAUT is not selected for two reasons. First, it involves a number of moderating relationships, which could make our full model overcomplicated. Second, regarding predictors of behavioral intention, the only construct that the UTAUT has that the TAM does not is social influence. Since social influence operates mostly through the expectation of punishment in mandatory settings (Venkatesh and Davis 2000), it is accounted for in our model by punishment expectancy.

As Figure 1 shows, the base model posits that compliance intention is affected by perceived usefulness and satisfaction. Perceived usefulness refers to the degree to which employees believe that using a particular system would enhance their job performance (Davis 1989, Davis et al. 1989). It has been touted as the most salient belief driving IT usage (Bhattacherjee and Premkumar 2004). Satisfaction is defined as a pleasurable or positive emotional state resulting from an individual's IT usage experience (Bhattacherjee and Premkumar 2004). Satisfaction is similar to attitude in the original TAM, as both are affective factors (Bailey and Pearson 1983). We replace attitude with satisfaction because previous research shows that satisfaction is an important predictor of IT use (Bhattacherjee 2001), whereas the effect of attitude is unclear (Venkatesh et al. 2003). In addition, Brown et al. (2002) suggest that satisfaction should be fully understood in mandatory settings. Based on prior research (Rai et al. 2002), the base model also posits that satisfaction is influenced by perceived usefulness and ease of use. Perceived ease of use, which refers to the degree to which a person believes that using a system will be free of effort, is also proposed to positively affect perceived usefulness (Davis 1989, Davis et al. 1989). As the relationships in the base model have

Figure 1 Research Model



been well established in the extant IS literature, they are not explained here in detail.

In this study, compliance intention is defined as the extent to which employees follow organizational IT policies to use the target IT in their job. Following Galletta and Hufnagel (1992), IT policies refer to the rules, guidelines, standards, and procedures that restrict user choices in IT usage. Prior research argues that usage intention is not a meaningful dependent variable when IT usage is mandatory (Brown et al. 2002). Hence, we focus on compliance intention, because we believe compliance is the real issue in mandatory IT contexts. Compliance is a higher level concept that encompasses both usage and elements mandated by policies. Usage is a necessary but not sufficient condition for compliance. That is, to be compliant, one must use IT. Yet, a high level of IT usage can be associated with a low level of compliance if the usage flouts IT policies. Given the structure of compliance, the absence of either component could lead to noncompliance, which is manifested as nonuse and work-around (absence of usage) or misuse and inappropriate use (lack of obedience to mandatory elements). McAfee (2003) shows that both nonuse and misuse are common pitfalls in a variety of IT implementations. It should be noted that compliance and noncompliance are not dichotomous. IT policies can specify which noncompliant behavior will be punished. However, as IT is complex and the language used in IT policies is open to interpretation, the determination of noncompliance is difficult and prone to controversy. Hence, the base model that is traditionally used to explain IT usage may be insufficient to explain IT compliance. We extend it by including three constructs that are specific to mandatory IT settings: punishment expectancy, actual punishment, and perceived justice of punishment. Their theoretical basis is discussed as follows.

2.2. Why Punishment Is Needed

Punishment is defined as the application of negative consequences to or withdrawal of positive consequences from employees (Trevino 1992). Negative consequences include verbal reprimands, fines, suspensions, and terminations, while the withdrawal of positive consequences includes removing privileges, withholding pay raises, and delaying promotions (Arvey and Ivancevich 1980). The purpose of punishment is to stop or decrease the frequency of undesirable employee behavior or increase employee compliance with the organization's desired behavioral standards.

The necessity of punishment stems from the notion that the employer-employee relationship is essentially a principal-agent relationship (Jensen and Meckling 1976). The principal and agent have incongruent goals, and each tries to maximize its own interests (Eisenhardt 1989). As selfish agents, employees may engage in opportunistic behaviors that undermine the benefits of their organization (the principal), leading to agency problems (Jensen and Meckling 1976). Organizations regulate employees' agent behavior by implementing various control measures (Ouchi 1979). Punishment has long been an essential control measure widely used by organizations to protect themselves from uncooperative employees (Ball et al. 1994).

In the IT context, the organization and its employees also have different interests. The interest of the organization is to reap benefits from its IT investment, which requires that employees assimilate the IT into their work (Liang et al. 2007). In contrast, the interest of employees is often to do what they are paid to do without expending extra effort, which may lead to resistance to IT use due to certain characteristics of the IT. For example, ERP systems have "best practices" embedded in their design and can profoundly impact the existing business processes in adopting organizations (Davenport 1998). To unpack the "best

practices" into organizations, ERP systems are often implemented in tandem with certain types of business process redesign, which requires employees to change their habitual work routines and adapt to the new procedures prescribed by the ERP systems (Liang and Xue 2004). This change tends to cause internal clashes and conflicts, leading to resistance to using the ERP systems at the individual level (Lapointe and Rivard 2005, Robey et al. 2002, Soh et al. 2000, Xue et al. 2005). Boudreau and Robey (2005) find that employees attempted to avoid using an ERP system initially and later reinvented unintended ways to use the system so that they could work around system constraints. Such improvisation is often the sign of a problem. Hence, organizations usually establish policies to specify the appropriate way to use the system (Chae and Poole 2005, Galletta and Hufnagel 1992), and often use a heavy hand to ensure employee compliance with the policies (Boudreau and Robey 2005, McAfee 2003). Without punishment, it would be extremely difficult, if not impossible, to enforce IT policies.

2.3. How Punishment Works

A social cognitive perspective offers an in-depth understanding of punishment's effect on compliance with mandatory IT usage. Research reveals that punishment influences employee behavior through punishment expectancy, which in this paper refers to the expectation that noncompliant IT usage behavior will be punished. Punishment expectancy can be developed in two ways. First, it results from a dyadic punishment event between the supervisor and subordinate, and deters the punished subordinate from future noncompliant IT use. Research into punishment expectancy dates back to the 1920s, when psychologists posited that individuals learn from the consequences of their past behavior and modify their future behavior accordingly (Steers et al. 2004). According to the law of effect (Thorndike 1911), an individual tends to repeat past actions that lead to positive outcomes and not to repeat actions that produce negative outcomes because he or she expects similar outcomes to occur. Based on these principles, reinforcement theorists (Komaki 2003, Skinner 1953) argue that individuals learn that there is a contingent relationship between behaviors and their consequences; this provides a guide for future behavior, so that they are likely to repeat appropriately rewarded behavior and refrain from punished behavior. Leadership research shows that effective leaders can use punishment as a negative stimulus to reduce employee underperformance, as developing punishment expectancy among employees can help to improve their job performance (Bass 1985, Podsakoff et al. 2006).

Second, the effect of punishment expectancy on IT usage is realized through social learning (Bandura 1971). Punishment influences not only the punished person but also other organizational members who observed the punishment event (Atwater et al. 2001, Liden et al. 1999, Trevino 1992). Observers develop a perception of risk regarding the inappropriate IT usage behavior that led to the negative consequences. This cognitive process is similar to outcome expectancy formation in vicarious learning (Bandura 1986). The expectancy of punishment results from the observation of the punishment event and inhibits the observer from performing the punished behavior. Deterrence theory (Zimring and Hawkins 1973) suggests that the perceived certainty of a misconduct being punished and perceived severity of the punishment will reduce the likelihood of employees committing the misconduct. Punishment is a form of social control and helps to establish group norms specifying acceptable and unacceptable behaviors (O'Reilly III and Puffer 1989). Thus, it helps to regulate the behavior of a large group of people by deterring members from misbehavior. In addition, while it discourages unacceptable behavior of observers by constructing punishment expectancy, failure to punish increases the unacceptable behavior of observers by diminishing punishment expectancy (Trevino 1992).

Punishment expectancy is akin to punishment certainty, which deterrence theory defines as the perceived probability of being punished. Punishment certainty is found to have a negative relationship with inappropriate or criminal behavior (Freeman and Watson 2006, Pogarsky et al. 2005). Previous IS research based on deterrence theory shows that punishment certainty significantly reduces computer misuse (Straub 1990). This suggests that punishment expectancy will help employees to associate potential punitive outcomes with noncompliant IT behavior, and lead them to choose to comply with mandatory IT policies to avoid being disciplined.

Hypothesis 1 (H1). *Employees' punishment expectancy is positively related to their compliance intention in mandatory IT settings.*

2.4. Justice of Punishment

As the effect of punishment depends on an individual's cognitive evaluation of the disciplinary event, the manner through which punishment is administered is likely to influence the individual's reaction to punishment. Previous research has investigated punishment from a justice perspective and found that justice perceptions of organizational events significantly affect dependent variables such as employee performance, satisfaction, and organizational citizenship behavior (Ball et al. 1994, Bennett and Cummings 1991, Cohen-Charash and Spector 2001, Colquitt et al.

2001). It is suggested that justice perceptions mediate the effects of punishment on employee attitudes and behaviors (Podsakoff et al. 2006, Trevino 1992). Therefore, in the mandatory IT context, it is important to understand what constitutes perceived justice of punishment and how it affects employee compliance intention.

The last two decades have witnessed a substantial amount of justice research in organizational settings. It is generally accepted that there are three types of justice: distributive, procedural, and interactional (Ambrose 2002). Research suggests that interactional justice can be further divided into two categories: interpersonal and informational (Colquitt 2001). Distributive justice refers to the perceived fairness of outcome distributions (Adams 1965); procedural justice refers to the perceived fairness of decision-making processes (Leventhal 1980, Thibaut and Walker 1975); interpersonal justice refers to the perception of fairness arising from being treated with respect, dignity, truthfulness, and propriety (Greenberg 1990); and informational justice refers to the perception of fairness resulting from being provided with explanations for the decision (Bies and Moag 1986).

When evaluating punishment, distributive justice is concerned with how fair punishment is allocated (Ball et al. 1994, Trevino 1992). It is shaped by the severity appropriateness and consistency of punishment (Trevino 1992). First, employees' perceptions of fairness are based on their appraisal of the fit between the harshness of the punishment and the misconduct. The punishment is considered to be fair when it is seen to be appropriate for the specific misconduct being punished. Second, employees compare punishments imposed on different individuals who have committed similar infractions and expect to see equity in the allocation of punishment. Consistently administered punishment across individuals with different social status and hierarchical positions in the organization tends to foster the perception of fairness.

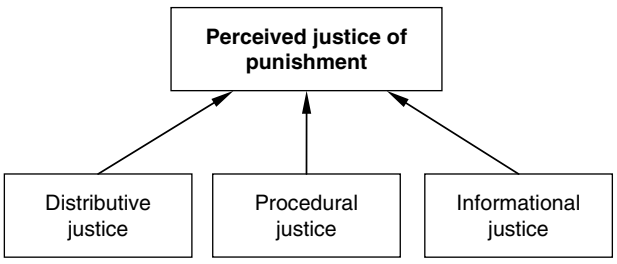
Whereas distributive justice focuses on the punishment outcome, procedural justice is concerned with the punishment decision process (Trevino 1992). According to Thibaut and Walker (1975), procedural justice consists of two components: process control (whether people have a voice in the process) and decision control (whether people are given any say in the rendering of the decision). Previous studies show that voice and appeal opportunities contribute to procedural justice in organizational settings (Ambrose 2002). In the punishment context, Ball et al. (1994) use subordinate control to represent procedural justice. Subordinate control refers to the extent to which a subordinate can influence the procedures employed in the punitive event and the actual punishment imposed. It concerns whether employees have the opportunity to voice their views and provide evidence for their defense before being punished (process control) and whether they can provide input to influence the type and level of punishment (decision control). Thus, subordinate control reflects the two-component structural view of procedural justice.

Informational justice is particularly important in the punishment context, because punishment is a highly charged act (Arvey and Ivancevich 1980). Employees need to know not only why they are punished, but also how to change their behavior to avoid being punished again. Thus, the information provided during punitive events should be constructive and developmental, involving coaching, specifying expected behaviors, and explaining why the punishment is being administered (Ball et al. 1994, Tyler and Bies 1990). Employees tend to perceive the punishment as just when they receive such detailed information.

Finally, interpersonal justice acknowledges the sensitive nature of punishment and suggests that employees be treated with courtesy and respect when being punished. However, recent justice research finds that interpersonal justice has no direct effect on employee rule compliance (Colquitt 2001). Although it is found to influence employees' helping behavior and evaluation of supervisors, there is no theoretical or empirical evidence that these two variables contribute to rule compliance. In addition, punishment research (Ball et al. 1994) reveals that supervisor demeanor in punishment events has no significant effect on employee behavioral outcomes. Therefore, in this research, we do not consider interpersonal justice to be part of perceived justice of punishment.

Colquitt and Shaw (2005) recommend that overall justice be modeled as a latent construct. Ambrose et al. (2007) suggest that it is legitimate to aggregate the effects of different types of justice using a second-order construct. Therefore, we propose that perceived justice of punishment can be conceptualized as a formative second-order construct consisting of three first-order constructs: distributive, procedural, and informational justice (Figure 2). Rather than being determined by the second-order construct, as

Figure 2 The Second-Order Nature of Perceived Justice of Punishment



in a reflective model, each first-order construct represents a unique aspect that contributes to the higher order construct (Jarvis et al. 2003, Petter et al. 2007). A formative model is appropriate in this case because the three justice perceptions are theoretically independent and their joint effect can be examined at the second-order construct level. This conceptualization contributes to theoretical conciseness and clarity.

There is ample evidence that justice perceptions significantly affect employee attitudes and behaviors (Cohen-Charash and Spector 2001, Colquitt et al. 2001). Trevino (1992) proposes that justice perceptions mediate the effect of punishment on subsequent misconduct. Podsakoff et al. (2006) suggest that justice is a mediator between leader punishment behavior and employee attitudes and behaviors. When employees believe that the organization is a fair place where people get what they deserve, their motivation to comply with organizational rules and policies is enhanced. The positive relationship between individuals' justice perceptions and their compliance with group rules and laws is well supported by previous justice research (Colquitt et al. 2001, Tyler et al. 1996). When individuals feel that they are fairly treated, they perceive themselves to be valuable group members and are more likely to identify with their group (Tyler et al. 1996). This social identity leads them to align their self-interests with those of the group and to internalize group norms and values (Brewer and Kramer 1986). As a result, they are more likely to comply with group rules. In the mandatory IT context, employees' perception of punishment justice reinforces their belief that noncompliant IT behavior will result in appropriate punishment that is applied equitably to every organizational member, that they will have a voice in the punishment decision process, and that they will be told why they are punished and how to avoid punishment in the future. These beliefs make employees feel that they are valuable members of the company and encourage them to comply with the company's mandatory IT policies.

Hypothesis 2 (H2). *Employees' perceived justice of punishment is positively related to their compliance intention in mandatory IT settings.*

Extant research shows that the perception of the justice of punishment is positively related to punishment expectancy. Punishment expectancy reflects employees' cognitive evaluation of the association between punishment and undesirable behaviors (Komaki 2003). It is shaped by punishments administered contingently (fairly) upon undesirable behaviors that violate organizational policies (Podsakoff et al. 2006). Reinforcement theory posits that if individuals are consistently punished for a behavior, they will make the association between the punishment and the behavior (i.e., punishment expectancy) and reduce the behavior to avoid future punishment (Skinner 1953). Punishment imposed unfairly will impede the establishment of punishment expectancy. Trevino (1992) suggests that failure to punish an undesirable behavior can increase that behavior because employees do not expect to be punished for their undesirable behavior. Thus, punishments need to be administered fairly and consistently so that employees are able to cognitively associate noncompliant IT behavior with punishment. There is empirical evidence of a positive relationship between contingent punishment and justice perceptions (Podsakoff et al. 2006). In the mandatory IT context, when employees perceive punishment as just, they develop a reference framework within which they can predict what will happen if they do not comply with IT policies. If punishment is unfairly practiced (e.g., a minor misbehavior is harshly punished whereas a serious misbehavior incurs only mild punishment, or one employee is punished for a certain behavior whereas another employee gets away with the same behavior), employees are likely to become confused and unlikely to develop the reference framework. As a result, they may not be able to recognize the association between punishment and noncompliant IT behavior. Thus, we contend that the employees' perceived justice of punishment positively influences their punishment expectancy.

Hypothesis 3 (H3). *Employees' perceived justice of punishment is positively related to their punishment expectancy in mandatory IT settings.*

2.5. Actual Punishment

To make IT policies effective, organizations need to impose actual punishment on violators (Straub 1990). In this study, actual punishment refers to the frequency and magnitude of aversive stimuli or negative consequences for employees as a result of noncompliant IT behavior. According to reinforcement theory (Skinner 1953), an undesirable behavior can be reduced by applying aversive stimuli after the behavior occurs. The logic is that actual punishment triggers cognitive processing of the situation, which leads to punishment expectancy. It should be noted that punishment cannot be effective if it is only applied to one episode of the undesirable behavior. The undesirable behavior should be punished repeatedly so that the individual makes the association between the punishment and his or her undesirable behavior; that is, punishment expectancy is established (Skinner 1953). Organization research also posits that to be effective, actual punishment should consistently occur after every undesirable behavior (Arvey and Ivancevich 1980). This suggests that employees who received more punishment are likely to have stronger punishment expectancy.

Hypothesis 4 (H4). *The actual punishment that employees receive is positively related to their punishment expectancy in mandatory IT settings.*

After being punished, employees tend to experience emotional and behavioral side effects (Arvey and Ivancevich 1980). The negative effects of actual punishment are supported by the theory of classical conditioning (Pavlov 1927), which posits that punishment, as an unconditioned stimulus, is unpleasant in nature and naturally leads to negative responses such as anxiety, anger, retaliation, and withdrawal. These negative responses are subconscious, innate, and independent of the cognitive evaluation of the punishment (Pavlov 1927). Therefore, we contend that actual punishment gives rise to two distinct processes—a cognitive process, which helps individuals establish rational punishment expectancy and avoid future punishment, and an emotional process, which is beyond the control of individuals and leads to negative effects.

Prior research suggests that most emotions surrounding punishment are negative (Ball and Sims 1991). Negative emotions are found to influence the recognition, interpretation, and memory of external stimuli as well as the appraisal of coping strategies (Judge et al. 2000, Rusting 1999). In a recent meta analysis, Barsky and Kaplan (2007) analyze previous studies of affect and organizational justice and find that negative moods such as anger, guilt, fear, nervousness, and subjective stress reduce distributive, procedural, and interactional justice. They conclude that "if you feel bad, it's unfair." Given that few people can refrain from "feeling bad" after being punished, we predict that actual punishment is negatively related to the justice perceptions of punished employees. From the organization's perspective, it is necessary to practice punishment as a behavioral control mechanism; however, employees may respond to punishment emotionally and perceive it as unethical and nonhumanitarian (Arvey and Ivancevich 1980). Punished employees may disagree with the punishing supervisor about how and when the punishment should be done and what aversive stimuli should be administered, which leads to the perception of being treated unfairly. In the IT context, the complexity of IT usage makes the perception of justice more elusive. For example, if employees are punished because of their unintentional IT misuse and the system does not provide an easy way to correct the mistake, they are likely to feel that they have been unfairly punished.

Hypothesis 5 (H5). *The actual punishment that employees receive is negatively related to their perceived justice of punishment in mandatory IT settings.*

3. Methodology

3.1. Data Collection

A survey was conducted to test the research hypotheses at one of China's top 500 enterprises, which controls 14 subsidiaries, has 30,000 employees, and generates $2.3 billion in annual sales. The company implemented a large-scale ERP system and was well known for using an "iron fist" to mandate ERP usage. It provided, therefore, an ideal test bed for punishment theory. To ensure that the ERP system was appropriately assimilated into its business processes, the company created a detailed ERP operating standard and established reward and punishment policies to motivate employees to comply with the standard. About 100 items specify the appropriate ERP usage and each item corresponds with a specific fine. Fines range from ¥20 (about $3) to ¥500 (about $74).[1] Both nonuse and misuse of the ERP system are penalized. For example, a sales accountant who fails to use the ERP system to record in-transit fund information before the fund's arrival will be fined ¥100 for each affected fund (nonuse), and an accountant who enters several international trade contracts into the ERP system as a single contract rather than multiple contracts will be fined ¥50 for each affected contract (misuse). Although other companies are unlikely to practice similar mandatory IT policies, this company definitely presents an interesting and valuable context to scrutinize the effects of punishment.

We developed an English questionnaire and translated it into Chinese. Following the conventional back-translation method (Brislin 1980), we asked a translator who was unaware of the research context to translate the Chinese version back into English. The two English questionnaires were compared and changes were made to ensure that the Chinese version was equivalent to the original English questionnaire.

A large number of items in the ERP standard specify accounting procedures in purchasing, billing, sales, and inventory management, which require little creativity. The company wanted these accounting procedures to be strictly followed. Thus, we decided to survey accounting professionals. At the time of this study, the company's headquarters and eight subsidiaries had completed the ERP system implementation. These subsidiaries are distributed across five industries, including air conditioners, electronic meters, energy transformers, telecommunications, and real estate. Each subsidiary has its own accounting department, and the company has about 200 accounting professionals in total. Therefore, we narrowed the survey scope to these professionals.

[1] China's annual income per capita was $1,740 in 2005 according to the World Bank.

A total of 200 questionnaires were distributed to the potential respondents with support from the company's chief financial officer (CFO). A note at the beginning of the questionnaire explained the purpose of the study and the procedure for handling the data. It was emphasized that the data would be kept confidential and used only for research purposes. Except for actual punishment, all of the constructs were measured using the questionnaire. To track respondents, each questionnaire was assigned a unique code and respondents did not need to provide their identity on the questionnaire. A list of codes that matched the names of respondents was created to which only the CFO had access. The actual punishment data were obtained from the company's central computer database based on the list. After the questionnaires and punishment records were matched, all personally identifiable information was removed to ensure confidentiality.

Of the 200 questionnaires distributed, 118 were completed and returned, resulting in a 59.0% response rate. The respondents ranged in age from 20 to 45 (mean = 29.2, SD = 5.1), and had, on average, 7.8 years of computer experience (SD = 2.6). Of respondents, 51.7% were female, and 76.3% had received at least some college education. Their positions included accounting manager, senior accountant, assistant accountant, planning accountant, logistic accountant, auditor, and cashier, and their work experience ranged from three months to 26 years (mean = 6.7, SD = 4.7). To evaluate nonresponse bias, we compared the respondents and nonrespondents based on demographic variables including age, gender, education, and computer and work experience. Chi-square and T tests did not show significant differences between the two groups, which suggests that nonresponse bias is unlikely to be a serious concern.

3.2. Measurement Development

Nine reflective constructs were measured in this study. Actual punishment was determined based on the company's employee records. The company keeps track of all of the monetary punishments imposed on employees because of noncompliant IT behavior. We extracted two values to measure actual punishment from the punishment record of the year preceding this study—the number and monetary value of the fines. On average, each respondent was fined 0.36 times for a total of ¥16.7 ($2.5), and 17% of them were fined at least once. The average number of times being fined was 2.7, ranging from one to 11, and the average total fine amount was ¥131 (about $19.6), ranging from ¥20 (about $3) to ¥560 (about $83). The other eight constructs were measured using the questionnaire. The satisfaction items were measured using a seven-point semantic differential scale. All of the remaining constructs were measured using a seven-point Likert scale anchored at 1 = strongly disagree and 7 = strongly agree. Appendix A shows the measurement items.

Punishment expectancy was measured using four items adapted from the scale of compliance-based control of Weaver et al. (1999). The scales of perceived usefulness and perceived ease of use, both of which contained four items, were adapted from a study of Venkatesh (2000). The satisfaction and IT compliance intention scales were based on a study of Bhattacherjee (2001) on four-item satisfaction scale and three-item IT continuance intention scale, respectively. In the context of our study, compliance intention refers to following the ERP operating standards of this particular company. The items were modified to fit the research context. Although some may argue that measures for intention should indicate a timeframe for the intended behavior, many IS studies measure intention without a timeframe (e.g., Bhattacherjee 2001, Bhattacherjee and Premkumar 2004, Venkatesh and Davis 2000). In our research context, the timeframe is the immediate future and the respondents understood that. Hence, we did not specify a timeframe in the compliance intention measures. The scales for the three first-order constructs of perceived justice of punishment were adapted from Ball et al. (1994) measures of perceived characteristics of the punishment event. We used the constructiveness items to measure informational justice and the subordinate control items to measure procedural justice. The three items of distributive justice reflect the severity appropriateness and consistency of punishment. All of the scale items were reworded to relate specifically to the context of ERP use.

4. Data Analysis and Results

We used partial least squares (PLS) to validate the measurements and test the hypotheses. PLS employs a component-based approach for model estimation, and is not highly demanding on sample size and residual distribution (Chin 1998). It is best suited for testing complex structural models as it avoids two problems: inadmissible solutions and factor indeterminacy (Fornell and Bookstein 1982). Both reflective and formative constructs can be estimated by PLS (Chin 1998). Hence, we chose this method to accommodate the formative second-order construct (perceived justice of punishment) as covariance-based structural equation modeling (SEM) techniques do not allow formative constructs to be estimated easily.

4.1. Measurement Validation

The reliability of the measurements was evaluated using Cronbach's alpha and the composite reliability scores. The reliability scores of all of the principal constructs are considered adequate as they exceed

Table 1 Construct Reliability, AVE, and Correlations

Construct	Cronbach's alpha	Composite reliability	AVE	1	2	3	4	5	6	7	8	9
1. Actual punishment	0.99	0.99	0.99	**0.99**								
2. Punishment expectancy	0.94	0.96	0.86	−0.04	**0.93**							
3. Perceived usefulness	0.84	0.90	0.68	0.02	0.53*	**0.82**						
4. Informational justice	0.93	0.96	0.88	−0.29**	0.30**	0.44**	**0.94**					
5. Procedural justice	0.84	0.90	0.76	−0.09	−0.17	−0.04	0.30**	**0.87**				
6. Distributive justice	0.78	0.87	0.70	−0.23*	0.38**	0.39**	0.53**	0.19*	**0.84**			
7. Satisfaction	0.96	0.97	0.90	0.09	0.30**	0.57**	0.29**	0.16	0.38**	**0.95**		
8. Compliance intention	0.85	0.92	0.79	−0.22*	0.33**	0.43**	0.39**	0.09	0.40**	0.39**	**0.89**	
9. Perceived ease of use	0.90	0.93	0.76	−0.09	0.08	0.28**	0.21**	0.35**	0.20*	0.39**	0.18	**0.87**

Notes. The diagonal elements (in bold) are square roots of AVE.
*$p < 0.05$; **$p < 0.01$.

0.78, well above the recommended cutoff of 0.70 (Nunnally 1978).

The convergent and discriminant validity of the measurements were confirmed by four tests. First, as Table 1 shows, the square root of the average variance extracted (AVE) of each construct is much larger than all cross-correlations between the construct and other constructs (Chin 1998). Second, all AVEs are well above 0.50, which suggests that the principal constructs capture much higher construct-related variance than error variance (Hair et al. 1998). Third, the correlations among all of the constructs are well below the 0.90 threshold, suggesting that the constructs are distinct from each other (Bagozzi et al. 1991). Fourth, PLS analysis shows that each item's loading on its underlying construct is above the recommended 0.70 level (Chin et al. 2003) and significant at the 0.01 level (Appendix B). Jointly, these tests suggest adequate convergent and discriminant validity of the measurements.

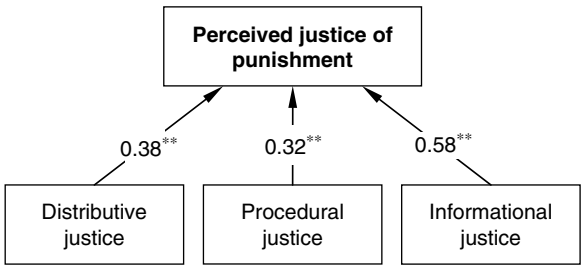
The formative second-order construct of perceived justice of punishment was estimated using PLS (Chin 1998). All three path weights are significant, indicating that each first-order construct makes a unique contribution to the second-order construct (Figure 3). As Table 1 shows, the three subconstructs are not highly correlated ($r < 0.60$), which supports the formative nature of perceived justice of punishment.

Although we used objective data to measure actual punishment, all remaining constructs were measured using the self-reported survey data of the respondents. Therefore, common method variance might have introduced bias into our data analysis. The extent of common method bias was assessed using Harmon's one factor test, a marker variable test, and a single method factor test. The test results indicate that common method bias is unlikely to exist (see Appendix C for details).

4.2. Hypothesis Testing

We tested the base model first. Figure 4 shows the base model testing results. Consistent with the extant IS acceptance literature, all of the relationships are found to be significant. Specifically, compliance intention is predicted by both satisfaction ($b = 0.22$, $p < 0.01$) and perceived usefulness ($b = 0.30$, $p < 0.01$); satisfaction is predicted by both perceived usefulness ($b = 0.50$, $p < 0.01$) and perceived ease of use ($b = 0.26$, $p < 0.01$); and perceived ease of use has a significant effect on perceived usefulness ($b = 0.30$, $p < 0.01$). Overall, the base model explains 22% of the variance in compliance intention.

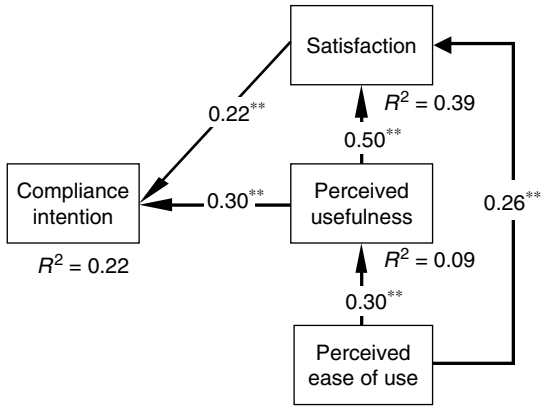
Figure 3 Weights of the First-Order Constructs for Perceived Justice of Punishment



**$p < 0.01$.

Figure 5 shows the evaluation results of the full research model. This model accounts for 36% of the variance in compliance intention, which is 14% more than that explained by the base model. Perceived justice of punishment is the strongest contributor, accounting for 23% of the variance in compliance intention. Punishment expectancy has an insignificant path to compliance intention ($b = 0.03$, $p > 0.05$), failing to support (H1). In contrast, the path from perceived justice of punishment to compliance intention is significant ($b = 0.42$, $p < 0.01$), which supports (H2). Perceived justice of punishment also has a significant relationship with punishment expectancy ($b = 0.50$, $p < 0.01$), which supports (H3). Hypotheses 4 and 5 are supported because the path from actual punishment to punishment expectancy has a significant positive coefficient ($b = 0.17$, $p < 0.05$) and the path from actual punishment to perceived justice of punishment has a

Figure 4 PLS Results of the Base Model Testing



$^{**}p < 0.01$.

significant negative coefficient ($b = -0.43$, $p < 0.01$). It should be noted that in the full model, perceived usefulness does not show a significant effect on compliance intention ($b = 0.11$, $p > 0.05$). Satisfaction's effect is still significant. Compared with the base model results, its magnitude decreases from 0.22 to 0.20 and its significance level lessens from 0.01 to 0.05.

In addition, we remove the base model constructs to test the effects of punishment expectancy and perceived justice of punishment on compliance intention. The results show that the effect of punishment expectancy remains insignificant ($b = 0.12$, $p > 0.05$), and that the effect of perceived justice of punishment increases from 0.42 to 0.49 ($p < 0.01$). Together the two constructs explain 31% of the variance in compliance motivation.

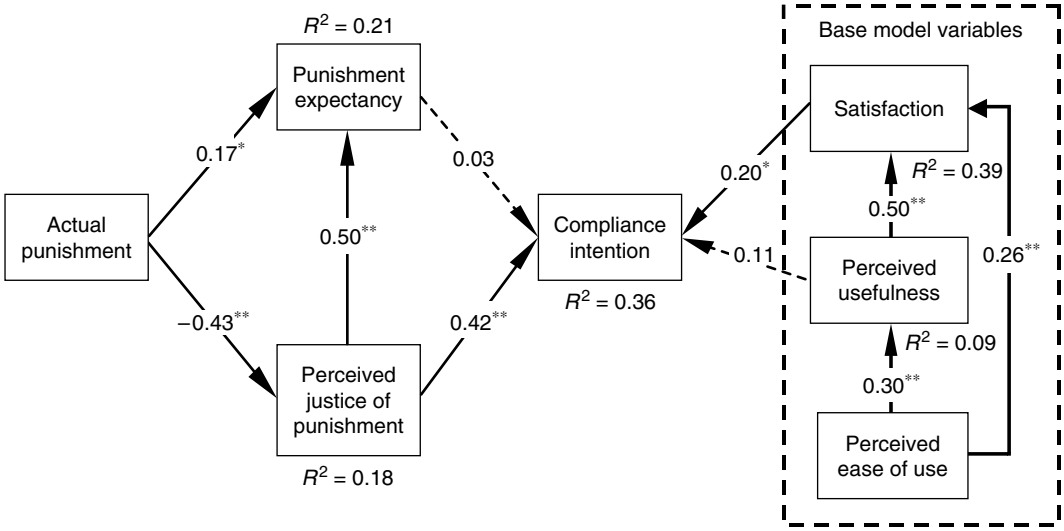
5. Discussion

This study finds that perceived justice of punishment is a strong determinant of IT compliance intention in mandatory settings. The findings suggest that punishment is a pronouncedly important phenomenon that has long been overlooked by IS researchers. The consideration of punishment, especially justice of punishment, offers a new perspective in the well-researched IT acceptance area and provides an enhanced understanding of mandatory IT usage.

The model testing shows that punishment expectancy does not influence compliance intention. Its effect is overshadowed by perceived justice of punishment. This finding suggests that employees decide to comply with mandatory IT usage mainly because they perceive the organizational IT policies to be fair, and that punishment expectancy is a lesser concern. Given that justice perceptions help to shape the social identity of employees within their organization (Tyler et al. 1996), it seems that a value-based approach could be more effective than a fear-based one to enforcing IT compliance. As mentioned earlier, punishment expectancy is similar to punishment certainty. In security research, the findings about punishment certainty are inconsistent. Whereas Straub (1990) shows that punishment certainty has a significant effect on computer misuse, D'Arcy et al. (2009) find that its effect on computer misuse is insignificant only when users have low moral commitment. Thus, it is not surprising that punishment expectancy is not found to be significant in the current study, especially when the effect of perceived justice of punishment is controlled.

The finding of the salience of perceived justice is consistent with the finding of management research

Figure 5 PLS Results of Full Model Testing



$^{*}p < 0.05$, $^{**}p < 0.01$.

that justice perceptions strongly influence employee behavioral outcomes (Ball et al. 1994, Podsakoff et al. 2006). Furthermore, we find that actual punishment reduces justice perceptions, which leads to some interesting speculations. If employees think that being punished themselves is unfair, it is reasonable to expect that their positive justice perceptions are primarily based on observations of other employees being punished. Thus, employees seem to have a contradictory view regarding the organization's punishment practice: whereas they may see the punishment of others as fair, they may see their own punishment as unfair. This paradox confirms that punishment is a highly charged act, and that the strong emotional responses it evokes make it difficult for the individual affected to evaluate punishment in a detached manner (Barsky and Kaplan 2007).

Our findings suggest that researchers should be cautious when applying classical theories to study new IT phenomena. First, the punishment model explains more of the variance in compliance intention than the base model (36% vs. 22%). Second, perceived justice of punishment has the strongest impact on IT compliance intention, satisfaction has a much weaker effect, and perceived usefulness has no significant effect in the full model. As perceived usefulness and satisfaction are two dominant predictors of IT usage intention (e.g., Bhattacherjee 2001, Venkatesh et al. 2003), our findings are somewhat surprising. However, it should be noted that there is no conflict between our findings and those of the extant literature. In this study, the dependent variable is IT compliance intention, which concerns complying with rules and policies. The classical predictors of IT acceptance, intended to explain IT usage, are not expected to fully explain compliance behavior. Therefore, we ought to carefully consider the context and dependent variable of interest when applying traditional IT acceptance models. It is also important to consider additional variables to truly understand the relevance of perceived usefulness in predicting behavior. In mandatory settings in which severe punishments are administered, a user's goal in using the target IT might differ from his or her goal in voluntary settings. Whereas the goal in voluntary settings is based on the benefits derived from the usefulness of the IT (approach-focused goal), the goal in mandatory settings might become avoiding being punished for IT nonuse or misuse (avoidance-focused goal). This approach-avoidance distinction (Liang and Xue 2009) helps to explain why individuals have different concerns in different environments. As our findings demonstrate, in a mandatory context, the effect of perceived usefulness is insignificant and the effect of satisfaction is about half that of perceived justice of punishment, which corroborates the importance of considering additional relevant variables when applying traditional theories.

In addition, we explicate punishment expectancy results from two mechanisms—dyadic punishment and social learning. We examine the effect of dyadic punishment by measuring actual punishment received by employees. The social learning effect is captured by perceived justice of punishment. The respondents who were not punished could develop justice perceptions only by observing the punishment events that occurred around them. Perceived justice powerfully reflects the knowledge that employees gain from learning how others are punished, which provides a deeper understanding of social learning than simply measuring the awareness of others being punished.

5.1. Implications for Research

Our findings have important implications for IS research. First, we used three constructs (punishment expectancy, actual punishment, and perceived justice of punishment) to describe punishment in the mandatory IT context. Punishment expectancy is based on cognitive evaluations of personal punishment experiences and social learning of punishment events that have occurred to other employees. Actual punishment captures the negative emotional consequences of punishment imposed on employees. Perceived justice of punishment depicts the manner through which punishment is administered by measuring distributive, procedural, and informational justice. These constructs describe different aspects of punishment, and together offer a reasonably holistic view of punishment.

Our findings suggest that in the context of mandatory IT usage, classical IT acceptance theories should be applied with caution, especially when harsh punishment is practiced. For example, we find that perceived usefulness does not significantly affect IT compliance intention when perceived justice of punishment is considered. This finding indicates that under pressure of punishment, employee compliance is motivated less by performance gains from using the system than by perceived justice. Because prior research primarily investigates IT usage intention (rather than compliance intention) as the dependent variable, this study complements the well-established IT acceptance literature by proposing and validating predictors of IT compliance intention that have not previously been investigated. However, it should be noted that although we did not find that perceived usefulness has a significant relationship with compliance intention, this does not necessarily mean that it has no impact in mandatory settings. Our finding could be due to the unique research context, in which strict punishment policies are implemented

and employee attention is highly focused on punishment. In other organizations whose punishment policies are not so strict, perceived usefulness might still be a significant factor. Future research should examine these constructs in organizations with policies of varying degrees of strictness to understand the boundary conditions of the proposed model.

Our findings also have implications for punishment research. We find that actual punishment tends to reduce perceived justice of punishment, suggesting that the justice perceptions of employees are paradoxical. Employees seem to be able to rationally assess the justice of the punishment administered to others, but when it comes to being punished themselves, they are inclined to consider the punishment as unfair regardless of whether the punishment is administered fairly. This interesting finding is consistent with recent research on the relationship between moods and justice (Barsky and Kaplan 2007), and suggests that reactions to punishment are complicated and justice evaluation is not completely rational. Emotions and affects appear to influence justice perceptions. More research is needed to shed light on the intricate relationship between actual punishment and justice perceptions.

5.2. Implications for Practice

This study makes a significant contribution to IS practice. It illustrates that in mandatory settings, neither actual punishment nor the expectation of punishment for noncompliant IT behavior is a major issue among users. Rather, perceived justice of punishment proves to be the strongest determinant of compliance intention. From a control perspective, these findings suggest that organizations that decide to make the IT usage mandatory should not ignore the importance of designing appropriate punishment policies. Most organizations stress the importance of developing user commitment to IT usage and are reluctant to employ punishment. As this study shows, punishment policies can be effective if they are implemented correctly.

If an organization wants to make punishment policies effective, it should ensure that the policies symbolize distributive, procedural, and informational justice. Justice is especially important when the mandatory IT is a large-scale enterprise system that requires users to make tremendous adaptive efforts. Sometimes the noncompliant IT usage of individuals is simply unintentional or based on good will. If these individuals are punished as though they had intentionally violated the IT standard, they are likely to perceive such punishment as unjust. Therefore, organizations should clearly explain to employees during a punishment event the reason that they are being punished and provide recommendations to avoid future punishment. In addition, employees being punished should be given the opportunity to defend themselves, and punishment should be applied appropriately. These measures will nurture employees' overall perception of justice of punishment.

The study findings indicate that actual punishment reduces the perception of justice of punishment. They suggest that punishment is tricky in practice because it can lead to a vicious cycle. If employees are punished, their perception of justice will likely decrease, which will lead to reduced compliance intention. As employees become less compliant, they will likely receive more punishment, giving rise to a vicious cycle in which employees are excessively punished, but their justice perception and compliance keep deteriorating. Therefore, organizations should be careful in administering punishment. Because IT compliance intention is influenced by perceived justice of punishment, organizations could aim to achieve employee compliance with mandatory IT use without actually punishing staff. First, companies need to make sure that the punishment policy is fair and well communicated to employees so that employees can develop justice perceptions. Second, if punishment has to be administered, a desirable strategy is "to beat the dog before the lion." The number of people who actually receive punishment should be kept low, and when a person is disciplined, the disciplinary process and outcome should be as fair as possible. The punishment event should be utilized as a signal to other employees to corroborate their perceived justice of punishment. Through social learning, those employees are likely to develop justice perceptions of punishment and comply with the organization's mandatory IT usage.

5.3. Limitations and Future Research

This study has several limitations. First, the special research context could limit the generalizability of our findings. The data were collected from a Chinese company that has implemented strict punishment policies to mandate the usage of its ERP system. Although many companies utilize punishment to ensure compliance with IT usage, it is uncommon for a company to fine employees for noncompliance. In addition, since the cultural characteristics of China differ from those of other countries, caution should be taken when generalizing our findings to other cultural contexts. For example, if this study is done in North America, then we speculate that the relationship between perceived justice and compliance intention will become stronger as a result of the influence of uncertainty avoidance. According to classic work of the Hofestede (2001) on national culture, China's level

of uncertainty avoidance is lower than in the United States. This means that Americans tolerate fewer risks in a punitive environment than Chinese and demand a higher level of justice to be motivated. To gain more insights, future research needs to measure relevant culture dimensions such as uncertainty avoidance, individualism, and power distance and examine their moderating role. Second, our respondents were accounting professionals. Characteristics unique to the profession might have influenced their reaction to punishment and evaluation of justice. This could also limit the generalizability of our findings. Third, the cross-sectional survey data used in this study do not allow us to draw conclusions about the causal relationships among the constructs. Ideally, longitudinal data should be collected so that the effects of punishment-related variables on IT compliance intention can be examined over time. Siponen (2000) suggests that punishment's effect is short lived. It would be interesting to determine whether and how the effect of punishment diminishes over time. Finally, we did not measure interpersonal justice, one of the four dimensions of justice perception proposed by Colquitt (2001). Although our decision to omit it is based on previous research which shows that interpersonal justice has no significant relationship with rule compliance, we cannot provide empirical evidence to confirm this prior finding. Future research should extend this study and examine whether the addition of interpersonal justice can generate new insights.

6. Conclusion

The objective of this study is to understand the impact of punishment on employee compliance with mandatory IT policies. Drawing on punishment research and justice theory, we develop a research model by extending the TAM, and test the proposed model by analyzing the data collected from 118 ERP users. The results indicate that IT compliance intention is strongly influenced by perceived justice of punishment, which is, in turn, negatively affected by actual punishment. This study draws attention to the important role of punishment in mandatory IT settings, showing that perceived justice of punishment has a stronger influence on user intention to comply with mandatory IT usage than either perceived usefulness or satisfaction. It contributes to the IS literature by providing a new perspective that complements the extant IT adoption research.

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