

CONTINUED USE OF IT: AN EMOTIONAL CHOICE

Completed Research Paper

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Abstract

Information technology (IT) is ubiquitous in modern workplaces. Achieving the business benefits of an IT system is intimately tied up with the continued incorporation of the system into the work practices it is intended to support. What makes people incorporate IT into their practices and how do they do it? While much is known about different use behaviors, the social, cognitive and technical factors that influence use, less is known about non-use behaviors as well as the role of emotional factors in users' choices on how to continue using a new technology post adoption. Through a longitudinal field study and a survey conducted in two universities, we examine how and why specific use patterns emerge and what the role of emotions is in this process. We find that based on emotional experiences around IT, people develop personal valuations towards an IT artifact, which are expressed in various (non-)use patterns.

Keywords: Emotions, continued use of IT, longitudinal field study

Introduction

Continued use of information systems (IS) is a topic of increasing interest in the Information Systems literature (Limayem, et al., 2007; Ortiz de Guinea and Markus, 2009; Premkumar and Bhattacharjee, 2008). Existing research typically conceptualizes post-adoption use as an individual's employment of various technology features to accomplish a task, including the various learning and exploration activities that may be necessary for successful task achievement (Barki, et al., 2007; Burton-Jones and Straub, 2006; Saeed and Abdinnour, 2011). Many models have been proposed that attempt to predict continued use (Bhattacharjee, 2001; Kim, 2009; Venkatesh, et al., 2008). Process-oriented frameworks (e.g., the practice and sociomaterial perspectives on technology use such as in Orlikowski, 2000; 2007) are also prevalent (e.g., Oborn, et al., 2011).

There is some agreement in this varied literature that the role of emotions has been understudied (Bagozzi, 2007; Beaudry and Pinsonneault, 2010; Ortiz de Guinea and Markus, 2009). In particular, there is a lack of theory that explicitly addresses the role of emotions in continued use (Bagozzi, 2007), especially theorizing that goes beyond mere extension of the technology acceptance model (Davis, 1989). This relative dearth of emotions research around continued use of IS is problematic for a number of reasons. First, beyond the anecdotal evidence of the importance of emotions in technology use, we know little about how emotions influence the emergence of use patterns. As a result, our theories around IT use, as well as our practical solutions geared towards encouraging certain use patterns, tend to emphasize either an overly technical orientation or the idea of purely rational, goal-oriented individuals (Bagozzi, 2007). This suggests that a more nuanced understanding of the phenomenon of IT use would be helpful, including the differentiation of various use patterns, such as: ignoring a technology as long as possible in the hope that it will go away, or putting minimal effort into the use of a technology. These post-adoption behaviors may be classified as user "resistance" (Lapointe and Rivard, 2005), but we argue that they represent complex patterns of behaviors, cognitions and emotions tied together with how individuals see themselves. Understanding these diverse patterns of use can help us build more complete theories and also potentially help organizations identify better ways of managing technology use.

Thus, this study focuses on two main research questions: 1) How do emotions arise during workplace IT use? 2) How do emotions around IT influence patterns of use? The research builds on studies that have addressed the role of emotions in the uptake of IT (Beaudry and Pinsonneault 2010); emotions research in organizations (Elfenbein, 2007; Scherer, 2005), and research on the continued use of IT (e.g., Leonardi, 2009a, 2009b). Through a multi-site, longitudinal field study, the paper investigates the use of a faculty productivity system in two North American universities. In both settings, the implementation projects are still on-going, which provides the researchers with the opportunity to observe the unfolding of IT implementation and use in context, as well as to examine the emerging outcomes in situ.

Our findings suggest that emotions arise during use-related activities through the confluence of a variety of situation-specific cues, such as the IT artifact instrumentally hindering or supporting a work activity; the IT artifact eliciting certain symbolic associations; various social actors interacting with each other in relation to the IT artifact, and the IT artifact eliciting identity-related self-reflection. We find that sensemaking (Weick, 1995) around these various experiences (involving both a cognitive and emotional aspect) can form into a personal valuation of the IT artifact and its use. This is expressed in various patterns of use and non-use, such as opting out; being a "good citizen", or trying to "game the system". Theoretically, the findings contribute to a better understanding of the role of emotions in users' decisions on whether and how to continue using an IT system post adoption and initial experimentation. Practically, understanding the various cues that lead to emotional experiences and personal valuation formation can help managers of IT systems nudge users' use choices and the emerging use patterns in desired directions, for example, through strategic communication, or planning for post-implementation changes (cf. Wagner, et al., 2010).

This paper is structured as follows: the next sections introduce the theoretical foundation for the study, followed by the outline of the methodology we adopted. We then present our findings and close the paper with a discussion of key insights from the study.

Continued Use of IT

Research has recently shown that successful initial adoption of technology does not necessarily lead to its successful continued use (Kim and Malhotra, 2005). Existing conceptualizations and measurements of IT use, which have tended to focus on “intentions to use”, are, therefore, not adequately capturing the phenomenon. In response, feature-centric definitions and models of IT use have been developed (e.g., Jasperson, et al., 2005) which denote a significant shift from the ‘black-box’ IT system view inherent in technology acceptance research (Davis, 1989). This line of reasoning has continued in IT use literature with Burton-Jones and Straub (2006: 6) defining individual-level IT use as “an individual user’s employment of one or more features of a system to perform a task”, and Barki and colleagues (2007: 173) suggesting expansion of the IT use concept to include use-related activities, such as users learning new features. While the feature-centric approach tends to overcome the limitations of a black-box approach to IT (Orlikowski and Iacono, 2001), it may suffer from the problem of “repeating decomposition” – if “there are features within features ... how far must the analysis go to bring consistent, meaningful results?” (DeSanctis and Poole, 1994: 124). To avoid this problem, in this paper, we focus on how features afford or constrain meaningful activities or elicit symbolic associations for different social actors, as suggested by Markus and Silver (2008).

As well as acknowledging how IT use is a product of evolving relationships between people, technology and practices, researchers have also demonstrated that IT use is related to individual goal achievement (Nardi and O’Day, 1999). In this paper, while recognizing the importance of goal-seeking behavior based on means/ends rationality, we take this further and see goal-seeking “as part of a larger social context in which interpersonal relationships are established and maintained” (Agerfalk and Eriksson, 2006: 2). In line with this more social conceptualization of use, we adopt the concept of “social actor” instead of “user” to capture the notion that IT users are first and foremost people going about their lives, which may include the utilization of various IT artifacts (Lamb and Kling, 2003). This draws attention to the fact that IT use is never just an individual interacting with IT, separate from the social context.

Generally, research on continued use and non-use of IT has proceeded relatively separately, with the latter being much less frequently investigated (Selwyn, 2003). The closest to examining non-use has been the research on resistance (Bhattacharjee and Hikmet, 2007; Hirschheim and Newman, 1988; Kane and Labianca, 2011; Lapointe and Rivard, 2005; Markus, 1983; Martinko, et al., 1996; Selander and Henfridsson, 2011), which has often been studied as the ‘other side’ of acceptance (Rosen, 2005). Prior literature on resistance has found different categories of such behavior, including apathy as well as passive, active and aggressive resistance (Coetsee, 1999). Because the term resistance evokes a somewhat negative image, to be overcome in order to realize the full potential of IT (Hirschheim and Newman, 1988), we adopt a more neutral term – non-use – to indicate a broader set of interactions that people have with IT, as well as the possibility that not all forms of non-use are negative or the result of “individual deficits” (Selwyn, 2003). This approach recognizes that, similar to use, “people’s non-use of technologies is a complex, fluid and ambiguous issue guided by ‘goodness-of-fit’ with their lives” (Selwyn, 2003: 110). Different forms of non-use, such as avoidance (Kane and Labianca, 2011); cynicism (Selander and Henfridsson, 2011); lagging adoption; disenchantment; disinterest (Satchell and Dourish, 2009), and non-compliance (Sobreperez, 2008) have been identified. These categories describe various patterns of behavior, for example, cognitive distancing and initial enthusiastic use turning into non-use.

As suggested above, research on continued use of IT largely grew out of an effort to problematize the assumption that successful adoption will necessarily lead to successful continued use (Kim and Malhotra, 2005). While there are distinct differences in the implementation, adoption and use phases of IT projects (Markus and Tanis, 2000), it is also the case that many IT projects proceed in an iterative fashion with IT use often involving tinkering on the part of the social actors (Berente, et al., 2008; Wagner, et al., 2010). Therefore, in this paper we consider these configuration and implementation activities as part of our study of the continued use of IT.

Emotions in Organizations and Continued Use of IT

Studies examining the role of emotions in continued use of IT remain rare, despite the calls to pay more explicit attention to the topic (McGrath, 2006; Ortiz de Guinea and Markus, 2009) and a longtime

recognition that new technologies can trigger strong emotions because of the interruptions that they bring (Weick, 1990). Some efforts have been made in an attempt to incorporate emotions into existing models of technology acceptance and use (for a comprehensive review, see Beaudry and Pinsonneault, 2010). For example, Kim, et al. (2007) proposed a thinking-feelings model, where not only perceived usefulness, but also perceived pleasure and arousal, are examined for their effect on continuance intentions. Bhattacharjee (2001) found that users' satisfaction with initial IS use was positively related to their intention to continue using the system. Anxiety during initial use has been shown to be negatively related to perceptions of ease of use and, indirectly, to continuance intentions (Venkatesh, 2000). Cenfetelli (2004) found that positive (joy, contentment, etc.) and negative (anxiety, irritation, anger, worry, fear, etc.) emotions during *initial use* influenced usage intentions both directly and indirectly, through effects on perceptions of ease of use. He also demonstrated that negative emotions influenced beliefs and usage intentions more significantly than positive emotions. Beaudry and Pinsonneault (2010) showed that emotions are also indirectly associated with IT use through adaptation behaviors, such as users creating psychological distance from IT or users seeking social support. These adaptation behaviors offer a more nuanced explanation of the influence of different emotions on IT use. For example, they found that anxiety has a negative direct effect on IT use, a positive indirect effect on IT use through users seeking social support and a negative indirect effect on IT use through psychological distancing.

Most of these studies on emotions and IT use have focused on how emotions can explain (either directly or indirectly) IT use or usage intentions. As pointed out by Beaudry and Pinsonneault (*ibid.*), *how* technology triggers emotions needs further investigation. Our first research question aims to fill that gap. Our second research question extends the current research on the influence of emotions on IT use by conceptualizing IT use as a set of qualitatively distinct patterns, allowing us to examine how various emotions link to various patterns of use rather than just more or less use or stronger or weaker intentions to use.

In this paper, we adopt a component process definition of emotion as “an episode of interrelated, synchronized changes in the states of all or most of the five organismic subsystems *in response to the evaluation of an external or internal stimulus event* as relevant to major concerns of the organism” (Scherer, 2005: 697-698). The five emotional components, according to Scherer (*ibid.*) are: cognitive (appraisal), neurophysiological (bodily), motivational (action tendencies), motor expression (facial and vocal), and subjective feeling (emotional experience). Traditional “folk” understanding equates emotions only to the subjective feeling component¹. For the purposes of this paper, with its focus on the study of emotions in IT use, the neurophysiological and the motor expression components are not of primary interest. Rather, we adopt a more social approach (Fields, et al., 2007), in that we focus on individual and collective emotional responses (appraisals, action tendencies and subjective feelings) in particular settings (Gross, 2008). Approaching emotions from a social perspective draws attention to how individual and collective emotional responses can express value judgments and power, thereby producing an ‘emotion culture’ – a collective’s understanding of how certain emotions should be directed and expressed towards certain groups, such as asylum seekers, sexual minorities, etc. (Fineman, 2008). The component definition of emotions, with its inclusion of a cognitive appraisal component, aligns well with the idea that there is an intimate interplay of emotions and cognitions in most social situations. Emotional responses in social settings (such as the workplace) can, therefore, be conceptualized as cognitively “filtered”, or as Weick (1995: 45) puts it, “sensemaking is infused with feeling” and vice versa. The collective sensemaking of emotions attests also to the malleability of emotions, reflecting people’s capacity to work on their own and other’s emotions (Gross, 2008; Fields, et al., 2007). Indeed, cognitions and emotions are difficult to separate since it is the cognitive appraisal of the situation that leads to a particular cultural label (e.g., “satisfaction”, “joy”) being applied to the feelings that are experienced (Thoits, 1989).

While emotions are typically seen as being elicited by stimuli or triggers (Elfenbein, 2007; Scherer, 2005), there has been very little research on the specific triggers that elicit emotions during IT use. Beaudry and Pinsonneault (2010) argue that individuals evaluate or appraise an IT event (e.g., the implementation of

¹ Being anchored and elicited by specific events as well as their relatively short-term duration most clearly distinguish emotions from the related concepts of moods and attitudes. Moods are more diffuse, are characterized by a predominance of specific subjective feelings and need not necessarily be linked to specific stimuli. Attitudes are relatively enduring beliefs (with a cognitive, affective and behavioral component) that also need not be triggered by specific events, although may become more salient during such events (Scherer, 2005: 703-705).

new software) along two dimensions: first, to determine whether the IT constitutes a threat or an opportunity and, second, to assess how much control they have over the expected consequences. Depending on the evaluative assessment, four classes of emotions may be triggered: loss (anger, dissatisfaction, frustration); deterrence (anxiety, fear, worry); achievement (satisfaction, enjoyment, relief) and challenge (excitement, hope, playfulness). However, Beaudry and Pinsonneault (ibid.) do not explore specifically what it is in an IT event or IT artifact that is appraised and elicits these emotions. Prior research in other contexts suggests some plausible possibilities. For example, Weiss and Corpanzano's (1996) Affective Events Theory argues that workplace emotions are often triggered by interactions with co-workers, customers or supervisors. Such interactions are also part of IT implementation efforts. Rafaeli and Vilnai-Yavetz (2004) argue that physical artifacts elicit emotions in three ways: instrumentally (by supporting or hindering task achievement); symbolically (by association with ideas, etc.), and aesthetically. Emotions have also been found to be triggered by identity work (Boudens, 2005). For example, organizational change often elicits emotions because it affects identity-related issues, such as challenging or verifying people's identities (Kiefer and Müller; 2003), or leading to reflexive self-comparisons (Obodaru, 2012). Technological change may elicit emotions for similar reasons. In general, it has been argued that people have the strongest emotional responses to the most central concerns in their life (Elfenbein, 2007) and, in workplace contexts, more negative than positive emotions have been observed (Dasborough, 2006). It is not unreasonable to assume, then, that peoples' emotional responses to IT use will be stronger when negative and when technology use is of central concern to them.

Summarizing this prior research, it seems that emotions can be elicited by various categories of triggers (elements of an IT event), such as instrumental constraints; human interactions; symbolism; self-reflections; change, and the like. However, the term trigger may imply a universal pattern, where A always triggers B. This is not consistent with our understanding that emotions are malleable and infused with sensemaking. Accordingly, we adopt the term cue, which we define as a specific aspect (social, personal, material) of a situation that elicits emotions. Because workplace technologies are part of organizational routines (Goh, et al., 2011), we argue that IT use is emotional not only through the IT artifact (the material aspect) itself, but also through all the associated social and personal cues present in a situation. Importantly in this perspective, we build on the general understanding that emotions and cognitions follow action (Weick, 1990; 1995), with actions providing the cues for sensemaking.

While situations are full of cues that social actors need to make sense of (involving both emotional and cognitive elements), it is also clear that past emotional experiences influence subsequent interactions with an IT artifact (e.g., choices on whether and how to continue using the IT and the formation of use patterns). Loewenstein and Lerner (2003: 626) have shown that decision-making is influenced by expected and immediate emotions. For example, people respond emotionally to relative changes in their situation, to comparisons of what happened against counterfactual scenarios and to what outcomes imply for their competence. These bear distinct resemblances to the cues, such as technological change and identity work, discussed above. The choices made and resulting use behaviors, in turn, can lead to another round of feeling-infused sensemaking. The role of cognitions in interaction with IT has received wide consideration – most of the popular models (e.g., TAM) consider the cognitive antecedents (e.g., perceptions of usefulness; intrinsic motivation or cognitive absorption) to use intentions (Agarwal and Karahanna, 2000; Venkatesh, 1999). The argument in this paper is that, as sensemaking is infused with feeling (Weick, 1995), continued use of IT is influenced not only by cognitions, but also by emotions. The use of IT, therefore, is influenced by, and in turn influences, cognitive *and* emotional experiences.

Methodology

A longitudinal multi-site field study was chosen to investigate the role of emotions in IT use. The chosen method allowed for an in-depth and temporal investigation of the relationship between IT, emotions and cognitions in a specific context. Data collection was undertaken in two North American universities – a large public state school and a small private business school – both of which have purchased and implemented the same software package (FP) in order to improve the efficiency of faculty productivity assessment, accreditation submissions, and other administrative functions. The two research settings presented some unique opportunities for examining interactions between emotions and IT use. While the use of FP is mandated in both cases, the university context, with its powerful user base (faculty), provides an opportunity to explore *how* users *choose* to comply with such requirements. Furthermore, as FP is tied

to performance evaluations (a relatively central concern for faculty), it is likely to elicit various emotional responses, allowing our exploratory study to go beyond examining just the instrumental concerns around new IT.

Over 40 semi-structured (mostly face-to-face) interviews have been conducted across the two research settings (see an overview of data collection methods in Table 1). Interviews were conducted with a wide range of stakeholders including university administrators, faculty members and staff responsible for implementing the software package. All of the interviews were tape recorded, transcribed and shared among the research team using Dropbox. Additional data in the form of meeting recordings; informal conversations with faculty; university-wide memos, and e-mails were collected and examined. Observational data have also been collected: a number of faculty members were videotaped while using the software to fill out annual activity reports, used for performance evaluation. All video observations were transcribed, to include both verbal and non-verbal (e.g., activities with the system) components.

A survey that probes the use and responses to the software has been carried out in both settings. The survey functions as another data collection instrument to allow for data triangulation (Denzin, 2009). The survey instrument was developed based on insights from the interviews, and was pilot tested on faculty members before wider dissemination – in October 2010 and April 2012 (at State) and February 2012 (at Private). In this paper we focus mainly on the qualitative data, simply using the quantitative data to provide an overall account of how the FP was viewed in the two sites.

Methods	State	Private
Field work	Interviews and observations over 18 months	Interviews and observations over 12 months
Timing	Implementation and post-implementation	Implementation and post-implementation
Narrative interviews	29 with 23 stakeholders.	18 with 30 stakeholders.
Observations	2 faculty advisory group sessions + limited observations of faculty use during interviews.	4 sessions with faculty filling out their annual reports (video recorded) + limited observations of faculty use during interviews
Survey	2011: 137 respondents 2012: 158 respondents	2012: 109 respondents
Follow-up contact	Yes	Yes

The data collected were analyzed with a view to describing and explaining the role of emotions in the early stages of post-adoption IT use at work, during which users make the important choices about *whether* and *how* to incorporate IT into their daily work. For the purposes of this paper, we chose critical realism as outlined by Mingers (2004; 2011) as our analytic perspective. While subscribing to the emergent perspective – viewing the uses and consequences of IT as emerging unpredictably from complex social, material and personal interactions (Markus and Robey, 1988), critical realism views the social-personal (e.g., emotions, cognitions) and the material (e.g., IT) as having causal agency (Mingers, 2004; Thompson, 2009). In short, we chose critical realism because it allows us to explicitly recognize and study IT artifacts both as real objects and as subject to human interpretation. Our focus, therefore, lies on the ‘realism’ aspect and less on the ‘critical’ aspect of critical realism (cf. Klein, 2004). This aligns well with the descriptive-explanatory goal of the study and the nature of the research questions. It allows for the identification of emerging use/non-use patterns as well as potential enabling conditions, in terms of the features of the technology, social interactions, and personal experiences, including emotions and cognitions (Gregor and Hovorka, 2011). In line with these goals, we analyzed the qualitative (interviews, observations, etc.) data using descriptive (open and theory-based) and interpretive coding (Myers, 2009) with an eye to surfacing the role of emotions, cognitions and the technology itself in the use/non-use patterns we observed. We used a web-based tool (Dedoose) for the purposes of coding.

When analyzing the data to identify emotional/cognitive experiences, we were looking for how the study participants described situations in emotional/cognitive terms (such as happy, frustrated, satisfied), but

also the way people “talked to” the system while using it (e.g., curse words) in the observational data. To identify the cues relevant for a particular emotional/cognitive response, we looked for reasons that people gave in their descriptions of experiences (or events that preceded an emotional reaction during observation). Because interview data are mostly retrospective, cues tend to feature in people’s descriptions of past experiences. Many examples in our findings represent such retrospective accounts of how cues work. Based on prior research (Boudens, 2005; Rafaeli and Vilnai-Yavetz, 2004; Weiss and Corpanzano, 1996), we found evidence of instrumental; symbolic; identity work-; interaction-, and change-related cues in the specific context of IT use. Some of these cues are material in nature (related to features of the technology), while others are social or personal in nature (see more below), suggesting that emotional responses to IT use are conditioned by objects in three different ontological realms – the objective, the normative and the subjective (Mingers, 2011, based on Habermas, 1984).

During analysis, we noticed that an individual’s emotional/cognitive sensemaking around FP lead to a kind of evaluative judgment of FP (overall valuation). This evaluative judgment is similar to an attitude in that it is a relatively enduring predisposition towards FP that has a cognitive, affective and motivational component (Scherer, 2005). Distinct valuations were identified, associated with different emotional/cognitive experiences, and with different cues being more or less salient. It emerged from the data that this valuation is expressed in how individuals choose to use FP for specific activities. To identify these use/non-use patterns, we looked for descriptions of specific ways of using the FP system (or actual use behaviors) that were characteristic to an individual (or repeated across individuals).

Research Setting

As already noted, the Faculty Productivity (FP) packaged software implementation is examined in two US universities (‘State’ and ‘Private’). FP offers two main solutions – one for capturing and managing faculty activities, and the other for course evaluations and learning assessment. The FP vendor first offered the package in 1999. Currently there are about 3,000 organizational adopters across more than 25 countries. FP is not configurable by the user organization; rather, it comes as a standard package and the vendor organization undertakes all of the configuring requested by its clients.

Setting I: State

State is the largest and fastest growing of the seven state universities that reside within its borders. It comprises three colleges and four schools, employs approximately 1,500 faculty members (900 full-time), and enrolls about 40,000 students. With the approval of the Provost, State purchased the FP product, replacing a very simple homegrown web form used for gathering faculty activity information. The decision to purchase FP was mainly driven by the need for some kind of central faculty vitae database. State’s FP implementation project was assigned to a central administrative office (CA) consisting of two people – one staff member handling the configuration, communication with vendor and faculty requests, and a senior administrator/faculty member responsible for the initiative as a whole but not so involved in day-to-day matters. State had no prior experience with any formal faculty activity database prior to the implementation of FP.

At State, FP has been in use since 2009, when it was introduced to the faculty as a vitae database capable of supporting planning and budgeting activities and faculty were asked to enter their entire vita into the system. In hindsight, the Provost considered this had been a mistake, as there was so much negative feedback from faculty, who were overwhelmed with how much time and effort it took to manually re-enter all of their CV into FP. In 2011, faculty members were requested to enter only the most recent academic year’s activities into the system. Faculty reactions to FP generally veer on the negative side (from the 2010 survey, 58% thought FP was not useful for recording their work-related activities, while 76% thought the process of entering data into FP took too long). FP was considered unhelpful for generating a vita, resulting in many faculty simply not complying with requests to enter their data (only 27% of the survey respondents had generated a vita report from FP by early 2011).

Setting II: Private

Private is a small private university emphasizing business education, but also offering programs in the arts and sciences. It has approximately 5,500 students and 280 full-time members of faculty. At Private, the decision to purchase FP was made by a special committee, comprising administrators, faculty representatives and technology support personnel. FP replaced a homegrown database that had become increasingly difficult to maintain. The need for a new system was due mainly to the perceived need for more efficient accreditation reporting. The FP implementation at Private was managed from a central technology office (CT) that offers IT support for instructional and research purposes. The CT team handling the implementation consisted of four people in charge of different aspects. A small faculty advisory group was involved in the initial customization/configuration phase, and was periodically asked for feedback. The main customization that was made in Private was the creation of standardized web profiles for all faculty members by pulling data from the system.

FP has been used at Private since 2010 when it was rolled out as a pilot; its use was voluntary initially. A campus-wide e-mail from the Provost delineated the advantages of the new system, including the ability to maintain a more attractive public profile webpage, generate a standardized CV, and do annual activity reports more easily. Most of the data in the old system were migrated into FP automatically. In 2011, after improvements to the software, all faculty members were asked to prepare their annual reports in FP (in early 2012, 81% of the survey respondents perceived FP use to be mandatory). Reactions to the software differed across faculty: 42% of survey respondents thought it took more time to prepare for the annual review process using FP than using the previous process, with 51% not liking FP, because it was not user-friendly. Despite this, there was a high level of compliance with the request that annual reports be prepared in FP (90% of the survey respondents had generated an annual report in FP).

Findings

The following sections present the findings of this study, addressing the two research questions: 1) How do emotions arise during use of workplace IT? 2) How do social actor emotions around IT influence patterns of use? Despite the differences in the two research settings, the process through which emotions arose during IT use and the process through which emotions influenced users' choices around continued IT use were similar across settings. In the following sections, we, therefore, extrapolate from the setting-specific findings to these common processes.

How Do Emotions Arise During IT Use?

In general, we found that, during IT use, social actors respond cognitively and emotionally to a number of cues. Across the two research settings, we identified six types of cues that build on past research (as described in the methodology above) and that are broadly distinguishable as material (IT instrumentality and change from established practices); social (interactions with others and involvement in change), and personal (identity work and IT symbolism) cues. Our analysis revealed that each of the cues was associated with particular classes of cognitive/emotional responses (as discussed below). The cues were also found to be situation-specific in the sense that they were related to the activities in which the individual was engaged. However, it was not a simple case that a particular activity presented an actor with a particular cue, but rather, that particular cues were more or less salient in relation to the activity. Thus, while performing a particular activity, individuals respond to a **confluence** of cues (with different emotions). We also found that some cues tended to trigger more intense emotional responses. Thus, when personal cues were salient, cognitive/emotional responses tended to be more intense than when either material or social cues were more salient. Further, negative emotional experiences tended to be stronger than positive ones, confirming prior research findings (cf. Cenfetelli, 2004; Dasborough, 2006). Next, we describe these different cues and provide quotes from interviews and/or observational data to illustrate the associated cognitive/emotional responses.

Material Cues associated with using the technology to input data

In undertaking some activities, the materiality of the technology was the most salient; this was especially

the case when the social actor was engaged in an activity that actually involved inputting data into FP. Our analysis revealed two such material cues: IT instrumentality and change from established practice. First, the IT instrumentality cue was apparent when the social actor perceived FP as helping or hindering completion of an activity. For example, in describing entering data for the annual activity report, a faculty member at Private stated: “*Two **most annoying** things about FP: I can’t edit a publication entered by a co-author and I can’t see what I have entered (a report preview)*”, while a faculty member at State said: “*It seems **very generically written to try to appeal to everyone**, but it just **pi**es off most people***”.

Second, the change from established practice cue was apparent when the social actor was aware of differences between the current and previous systems that had been used to complete the same task. For example, a faculty member at State, reflecting on the FP package stated: “***What if we replace FP with another product?** That’s the **big uncertainty** for me with going with that ...*”, while a faculty member from Private stated: “*There was **some grumbling early on because so much data needed to be entered** - some of it got migrated but then a lot of new things had to go in.*” Our analysis of the responses to this type of cue suggests that, when material features of the technology were salient, it tended to elicit fairly high levels of cognitive reasoning (e.g., the weighing of advantages and disadvantages) and simultaneously relatively weaker emotional responses. However, the emotional responses were stronger when the material features of the technology were found to *constrain* goal attainment than when the material features were found to *support* goal attainment, or when the material features were considered to be inferior to a previously used technology, as shown by the quotes above. Using Beaudry and Pinsonneault’s (2010) classification, our data show that relatively weaker **loss** emotions (frustration and annoyance) are prevalent in response to these material cues. This suggests that specific features of the technology become emotionally salient when they pose a threat or a constraint and when users have little control over the consequences.

Social Cues associated with relations with the implementation project team

During some activities, the social aspects of the situation were particularly salient; this was the case when undertaking an activity that prompted consciousness about the implementation of the FP and the project team’s involvement in this. Our analysis suggested that these social cues also seem to elicit relatively weaker, more cognitively “filtered” emotional responses. We coded two types of cues here: interactions with others about IT, and involvement in change cues. First, our data revealed how various forms of communication create the background of second-hand experiences with IT so that the social actor responded to using the system based on what they had heard others say about the technology, in particular the administrative sponsors and the IT project team (interactions with others about IT cue). For example, a faculty member at State described: “*They’re **not doing a good job of communicating** the value of that. You don’t get punished, you don’t get rewarded. It’s like, why should we do this?*”, while a former department chair at Private said: “*There was a **consistent message of ‘here is your chance to do something’**. So it was sold as our next system ...I think they did a good job of saying that this is a next integration of something we need*”. According to Beaudry and Pinsonneault’s (2010) classification, our data show that weaker **loss** and **achievement** emotions (either satisfaction or dissatisfaction) are prevalent in response to this cue. This suggests that interactions with others about IT become emotionally salient when these interactions either suggest the new IT is a threat or an opportunity over which users have little control.

Second, our data revealed that some social actors responded to using the system based on their personal experiences of being involved in the IT project itself (involvement in change cue). For example, a department chair at State reflected on how feedback to the project team about problems with the FP had been used: “***I think they passed up some feedback, but nothing [happened]...And nobody is acknowledging or talking about departmental differences and what the categories in FP should be, which is why there are some concerns** as to where FP will lead*”. On the other hand, a faculty member at Private, who had been involved in the implementation project, stated: “***I’m very gratified with the results; I was glad I was part of it.** The (implementation) staff was super responsive about everything we brought to their attention. My impression now as a user is very positive.*” Our data demonstrate that weaker **deterrence** and **achievement / challenge** emotions (cf. Beaudry and Pinsonneault, *ibid.*) are prevalent in response to this cue. It suggests that involvement in the implementation of new IT becomes emotionally salient when this involvement either suggest the new IT is a threat over which users *could* have control (but are not being allowed to exercise this control) or the new IT is an opportunity. It is interesting to note that it is difficult to discern whether the positive emotions are in the achievement or challenge class in this case. This would suggest that the perceived level of control, if present, becomes less important for the emotional outcome.

Personal Cues associated with the use of the data for personal evaluations

Finally, in undertaking some activities, the personal aspects of the situation were most salient. More specifically, the personal aspects of situated IT use elicit emotions/cognitions through the cues of IT symbolism and identity work. These personal cues appeared to be related to associations and reflections around how the data were actually being used by administrators and others. First, IT symbolism refers to the various ideas and messages that using the IT artifact for a particular purpose brings up. At both State and Private, there were various symbolic associations elicited by FP, including associations of: **Bureaucracy** (“*This is **one more meaningless thing** we have to do. But if we don’t do it, **we’re going to lose ... none of us likes to feel like a cog in a machine**, but this (FP) encourages that”); **Surveillance**: (“*It’s another step in a **culture of monitoring** us. And if it’s not FP, it’s some other thing that’s gonna **make us all angry**. What we object to is the culture at this point...the software just makes it visible*”), and **Standardization** (“***Everyone’s frustration** is - those **numbers are meaningless**, so, are no numbers better than really bad numbers?” “Now FP forces the standardization, rather than the Provost being the ‘bad guy’*”). Clearly, relatively stronger **loss** emotions (cf. Beaudry and Pinsonneault, *ibid.*) are prevalent in response to this cue. This suggests that the symbolism of the new technology becomes emotionally salient when it poses a threat or a constraint and when there is little users can do to influence the consequences. It is also interesting to note that faculty clearly recognize that the symbolism, while associated with the specific technology of FP, also has a social element to it – FP is a product of a certain culture, managerial decision-making, etc.*

Second, the identity work cue refers to the self-reflections that arise in relation to the IT artifact’s use in a particular context. More specifically, the identity work cue refers to the ways in which the social actor using the IT associated it with particular aspects of their own status, power and performance: “*And it does **feel sort of yucky** when you have a lot of **blank categories**, because you **feel like you have failed to achieve**... FP feels connected to all of these issues, the **library isn’t very valued**, our budget is cut; **we’re losing tenure lines. Please do this form, so we can take away more money from you**. No wonder people are **suspicious** of it. And maybe we don’t publish as much, but we do lots of other things. We tend to do more service stuff and that’s not necessarily what the productivity report showed”. “*Being a faculty member - you’re an artisan. You develop your own unique ways of making yourself look good. And this [FP] is trying to frame it all into an assembly line. So I think that’s some of the **distrust**...*” (Interviews, State). In response to this cue, relatively stronger **deterrence** emotions (cf. Beaudry and Pinsonneault, *ibid.*) are prevalent. This suggests that the self-reflections arising around new technology become emotionally salient when they pose a threat and when users do have some control over the consequences. This confirms prior research, which suggests that identity work is especially emotional when there is a perceived challenge to one’s identity (Kiefer and Müller; 2003). Furthermore, while people have little control over FP being used as a surveillance tool (see above), they do have some degree of control over their own status and performance.*

Turning specifically to our first research question – How do emotions arise during IT use? – our findings reveal that the cognitive/emotional experiences of social actors are related to the particular confluence of cues that are salient at a particular point in time when undertaking a particular activity. Let us consider the situation of a faculty member inputting his/her annual report in FP. The most salient cues in this situation are typically IT instrumentality and IT symbolism: the salience of instrumentality lies, for example, in FP not allowing the person to edit a publication already entered by a co-author, while the salience of symbolism lies, for example, in them seeing FP as another mandatory bureaucratic requirement that has little personal value. Weaker and stronger **loss** emotions (e.g., frustration, annoyance, anger) are prevalent in response to both cues. These emotions are further reinforced by interactions that a faculty member has had with university administrators – for example, if there is a lack of communication about what happens to the data entered into FP. Once a faculty member has finished inputting data and has submitted his/her annual report, the emotional/cognitive experience changes into discomfort and anxiety (**deterrence** emotions), with the most salient cue being identity work. In this situation, if the faculty member believes that FP does not represent their unique “craft” in the best possible manner, they feel uncomfortable and worried about using the system for the purpose of being evaluated.

Our analysis also demonstrated that the strength of the cognitive/emotional response is related to whether the cue is a central concern for that individual, confirming prior research findings (Elfenbein, 2007). As shown above, we found that the emotional responses to the material cues were weaker than responses to the personal cues. This suggests that in IT use there is a certain separation of the task at hand (e.g., inputting data into FP) and “what it means” (e.g., how the data reflect the faculty member’s

identity or whether the data are used for a larger surveillance objective), with emotions generally running higher around the “what it means” aspect of IT use. However, the centrality of concerns is also specific to particular social actors. For example, we found that performance evaluations (and the related identity work cue) were of more central concern for tenure-track and of less concern for tenured faculty (***“I’m tenure-track, so I’m following the rules ... I’m not sure my colleagues are as concerned about this, but for me, it’s definitely about the ramifications of the little boxes you choose to fill in.”*** (Faculty member, State)

We now turn to our second research question: How do social actor emotions/cognitions around IT influence patterns of use?

Emerging Patterns of IT Use

Our analysis of how emotions arise suggests that an individual actor typically has a set of weaker and stronger emotional-cognitive experiences associated with FP use. During IT use, social actors may have strong emotional/cognitive responses (to particular cues) that dominate other, less prominent responses (elicited by other cues). Over time, based on these cognitive/emotional experiences, social actors come to create an overall personal valuation of the IT artifact. This personal valuation is then expressed in subsequent use behavior – *whether* and *how* the social actor chooses to engage with IT. Analysis of our data suggested five distinct patterns of use that were associated with particular prior cognitive/emotional responses, or acts of sensemaking (see summaries in Table 2).

Table 2. Emerging IT use patterns and their link to emotions/cognitions and personal valuations	
Dominant response to cue(s); personal valuation	Resulting Use Patterns
Strongest response: Discomfort, anxiety (deterrence); tied mainly to faculty member’s identity work (+ weaker response to instrumentality); FP is reasoned to be good at giving the “facts”, not the story Personal valuation: faculty should be able to personalize their reports.	Personalization: facts vs. personal story (use FP for facts, personalization elsewhere)
Strongest response: Discomfort, anxiety, concern (deterrence); tied to faculty member’s identity work and a lack of faculty involvement; FP is reasoned to be a “necessary evil”. Personal valuation: there is no choice but to use FP, but nobody cares about your actual work, just that you look impressive in FP.	Game the system (minimal effort & look good): only fill out the categories that matter (half-hearted use of FP; minimal, but strategic data entry)
Strongest response: Satisfaction (achievement); tied to the interaction cues (+ weaker response to instrumentality); if FP is important to others, it’s worth trying to overcome the instrumental constraints. Personal valuation: faculty should do their best to put all their activities into FP.	Being a good citizen: reconciliation of accounts (use of FP as intended by administration / implementers)
Strongest response: Lacking; tied mostly to the instrumental cues, which are typically not strongly emotional Personal valuation: make the best out of the tool (FP) available.	Personalization: exercise discretion (use FP as intended, but tweak it to fit your profile)
Strongest response: Anger, resentment (loss); tied mostly to negative symbolic associations and faculty-admin interactions; there is no reason to use a system that nobody uses or cares about. Personal valuation: FP is unfit for its advertised purpose	Opt out (do not use FP at all)

For example, we found that the pattern of personalization (facts vs. personal story) emerged mainly as a result of identity work and instrumentality cues interacting. Stronger emotional/cognitive experiences of discomfort, distrust and anxiety (deterrence emotions) related to FP being unable to represent each faculty member’s uniqueness interacted with the relatively unemotional instrumental affordance of being able to generate an annual report from FP that is editable with MS Word. This interaction of cues resulted in a personal valuation (and use pattern) that FP is good at giving the “facts”, while these facts need to be composed into a personal story in Word. A department chair at Private states: ***“I had all my data in FP, but when I generated a report I had to edit it. Faculty want to be able to edit it, because when you have the final report, you want to get it to look nice, but the basic information – the articles, etc. – is coming from the system.”*** Editing their report in MS Word allows social actors to exercise control over the threatening consequences that FP has on their ability to favorably present themselves for evaluation. Notably, when such an instrumental affordance is not present (as was the case at State), some social actors may alter their pattern into opting out after initial trial and error: ***“I opted out after I realized that it’s not going to***

work for me. I can't use it as my CV, because it doesn't reflect my story" (Faculty member, State).

The pattern of gaming the system, on the other hand, emerged as a result of the interplays between identity work and interaction cues. In this case, stronger emotional/cognitive experiences of discomfort, distrust and anxiety related to FP not supporting faculty expressions of uniqueness interacted with the less intense concern (stronger and weaker deterrence emotions) around the lack of faculty involvement in FP design. This resulted in a personal valuation that FP provides little personal benefit, but must be used to impress the higher administration and was expressed in a use pattern of minimal, but strategic effort when inputting data into FP: **"At the beginning, there was talk about it** [engaging the faculty in FP configuration], **but I haven't heard anything. So there was a report that showed what admin was going to be looking at and even though they had all these other fields for, like, community service that you usually have in a CV, I said well, if they're only looking at seven fields, then all I'm going to do is put in seven fields. And I'm going to try to figure out minimally which buttons I'm going to have to choose, but I'm not going to spend a lot of time trying to massage it into being in any way meaningful.**" (Faculty member, State).

The pattern of being a good citizen also mainly emerged as a result of the interactions with others cue. In this case, more positive and satisfying experiences (achievement emotions) related to communication between project sponsors (higher administration) and the faculty interacted with the relatively unemotional responses to various instrumental constraints. This interaction between cues resulted in a personal valuation that faculty should do their best to use FP as intended as it is an important *opportunity* for the institution as a whole. This was then expressed in a use pattern, where faculty members put considerable effort into entering their activities into FP, including overcoming or working around instrumental constraints. A former department chair at Private describes his use of FP: **"In my e-mail I got the instructions that got sent to us for doing the faculty activity reports. So I'm gonna go back and read those instructions before I do it. I know that as long as I've updated my FP, my papers are in there, so they'll come up. In general, it's a tremendous time saving when you do annual reports for the chair because the stuff comes out in the right form. So that is sort of my bigger picture."**

The pattern of exercising discretion emerged mainly as a result of the instrumental cue being salient and, therefore, is not based on any particularly strong emotional/cognitive experiences. We found that this pattern emerged when no other cues besides instrumentality were salient at a particular point in time and both constraints and affordances were present (negative and positive cue content). Furthermore, the cost of overcoming constraints needed to be acceptable for the social actor (cf. Griffith and Northcraft, 1996). In response to acceptable instrumental constraints and affordances, faculty members developed a personal valuation of FP as a useful tool, especially when some discretion in its use was exercised. For example, a faculty member at Private states: **"I am very pleased with how it worked out. I can still see there's an excess of data fields, but if you're selective about the ones you use, then you don't have to invest a lot of time in it, so I think FP works to the benefit of individual faculty and the university as a whole. I don't fill out the abstracts... Date accepted, date published, date submitted - I usually end up filling out only one of those."** However, when the constraints were overly costly, the inclination to opt out was much bigger: **"I personally find it very difficult to use... And the only way that I can change these things is to learn an enormous amount and I frankly don't care to learn a whole lot about how FP operates"** (Department chair, Private).

The pattern of opting out emerged mainly as a result of an interplay between the symbolic and interaction cues (combination of weaker and stronger loss emotions). Stronger emotional/cognitive experiences of anger and resentment related to negative symbolic associations (e.g., unequal allocation of support staff) interacted with less intense dissatisfaction with a lack of communication between project sponsors and faculty (e.g., about the importance of FP). This resulted in a personal valuation that FP was unfit for use and was then expressed in an actual pattern of non-use. For example, a faculty member at State puts it this way: **"I'm tenured. Last year, I just didn't do it because the basic tenor was: it doesn't really matter, half the school's not doing it anyway. And then we started feeling really resentful because we didn't have the minions that other departments have, we didn't have graduate assistants [to help enter the data]."** As shown above, in some cases, costly instrumental constraints or negative self-reflections without the balancing positive instrumental affordances can also lead to the 'opting out' pattern.

As suggested above, these patterns of use are not static, because personal valuations may change over time. For example, the IT instrumentality cue may become more salient than on a previous occasion of use because a social actor has experimented with new features, which have elicited a cognitive/emotional response that will in turn modify the personal valuation and subsequent use patterns – as a faculty

member at Private comments: “One of the reasons I didn’t use it last year was because you cannot send your chair a list of seven papers when it doesn’t show what’s going on... so this year they show the status [of the papers] on the report. **Once you get used to the system, it’s much easier for people. Plus they have some nice features – like this – ‘to present’.** A lot of the service stuff continues year after year, so you don’t have to retype it, but just put ‘to present’ [as the end date] and it’s done.” This suggests that opting out, if due to unfamiliarity or instrumental constraints, can potentially shift to other patterns, such as discretionary or “good citizen” use. Also, as the centrality of concerns and salience of cues depends heavily on the particular social actor, the resulting use patterns are also influenced by individual differences in status (e.g., tenured vs. tenure-track faculty), IT skills (e.g., cost of instrumental constraints), and the like.

The patterns of use that we identify can also be overlapping. Thus, some actors acted according to elements from multiple patterns, while other actors followed a single pattern. Prior research (e.g., Fong, 2006; Huy, 1999) has shown that emotions in work organizations are often mixed, because of complex stimuli, such as organizational change. It seems that when people have varied emotional/cognitive experiences, all of similar strength, social actors create and express an overall personal valuation that is ambivalent as well. For example, our interview data suggest that “gaming the system” and “exercising discretion” are two distinct patterns (Table 2). Our observation revealed, however, that in some cases, social actors’ use behavior is characterized by a mixture of the two patterns (Figure 1).

Timeline of use: emerging patterns of “gaming the system” and “exercising discretion” - minimal effort interspersed with diligent, but picky use

Faculty member: John (Arts & Sciences field)

Activity: filling out annual activity report (January 2012)

Review (skip) academic/prof. positions	Review (skip) professional memberships	Review consulting/non-credit instruction	Review/add journal articles, conference presentations	Finish activity report	
“If I go to add - positions - there’s nothing there ... is it asking only for the external appointments? What does this mean? So I’m just gonna say: ‘screw that’ and not update that at all.”	“Part of my thinking here is, like professional memberships - does your administration care? Probably not. So that in my mind prioritizes some of these categories. So I’m not just filling it out for me...”	“And what I’ll do - there is one thing I want to highlight. Is this engagement that I’ve been doing at the school X. So I want a record of it, you know. Cause I’m gonna also talk about it in my report.”	“Okay, so now we’re getting to the nuts and bolts - it’s the journal articles, etc. - I mean this is the meat of what I think they give a crap about.”	“It’s kind of like your parents making you eat your vegetables. It forces you to sit there and do this stuff. But then again, who the hell cares... I mean who does this? What other profession does this? ... it’s absolutely mind-numbing.”	“Keep in mind, shall we, that this is an activity report that will be used to determine the distribution of raises somewhere in the area of 2%. And that sense is not lost on people, like who cares, what’s this for.”

Figure 1. Example of a mixed pattern: “gaming the system” & “exercising discretion”

Figure 1 shows the unfolding of a faculty member’s (from Private) experience (during the activity of filling out the annual report) that was dominated by elements of both patterns. John’s use behavior is at the same time characterized by a cynical outlook (cf. Selander and Henfridsson, 2011) or recognizing FP for what it “really” is – a tool for quantifying everyone’s productivity based on the same criteria and with no effect on actual raises, minimal effort in some sections (e.g., memberships) and a more diligent effort in other sections (e.g., journal articles). This could be explained, for example, by the possibility that some of FP use is done purely for the administration – if FP’s value and purpose have not been communicated well (emotions/cognitions of dissatisfaction) and it does not necessarily present the faculty member in a manner in which they want to be presented, then FP is used with minimal effort. As this faculty member says: “There’s nothing that assures the material in FP was put in by the faculty member it’s meant to represent. Also, **there’s been no indication that the sole criteria (sic.) upon which faculty evaluation will be based is in FP.**” Other sections of FP (e.g., publications) may be of more central concern for the faculty member (related to status). In this case, instead of just ignoring particular fields, the fields are filled out more diligently, with the goal of making FP work for oneself (e.g., as a repository of one’s activities),

which may include overcoming some instrumental constraints. For example, John describes the need to work around constraints when entering publications: “*People organize their vitas by chronological order, right? Here (FP) there is some of that, but it’s not cleanly delineated. So it says March 2011, November 2011, but to me it should be ‘header 2011’; ‘header 2010’, etc. So I don’t have to dig as much.*”

The next section discusses the theoretical and practical implications of our findings.

Discussion: Emotions Perspective on Managing IT Use

So how have our findings contributed to existing research on continued use of IT? First, the process through which we show use patterns to emerge is in line with and extends prior theory (e.g., Beaudry and Pinsonneault, 2010; Weick, 1990) and is, therefore, theoretically generalizable to other contexts. Our findings lend further support to the notion that IT use is not only goal-oriented, but socially (and personally) conditioned, where interpersonal relations and power matter significantly (Agerfalk and Eriksson, 2006; Lamb and Kling, 2003). This is evident from the fact that many of the cues are about general associations, self-reflections and interactions between people that are part of IT use, rather than about the material aspects of IT use. Emotional responses also tend to be stronger to these cues, because they are related to central concerns in people’s lives (Elfenbein, 2007).

Second, our findings confirm the usefulness of conceptualizing IT use as a set of qualitatively distinct patterns. This effectively captures the notion that IT use or non-use is about the technology’s “goodness of fit” with social actors’ work activities, interpersonal relations, etc. (Selwyn, 2003). An emotion-oriented perspective on use brings out the situations where there is a lack of fit especially clearly – we find that IT use or non-use is an expression of an emotionally- and cognitively-based personal valuation of IT.

Third, our study suggests that in order to understand the emergence of continued IT use patterns, it is important to understand implementation efforts that set up the cues that social actors respond to. For example, the negative response from the faculty at State is the result of FP being presented as a good CV management tool and it failing to deliver on that promise. In other words, during implementation, the technological frame – assumptions, expectations and knowledge about IT (Orlikowski and Gash, 1994) – that was established did not match the actual capabilities of the system. If FP had been implemented as an annual reporting tool (e.g., as at Private), the CV management constraints would have still annoyed people, but most likely not elicited such outrage (provided, that is, that FP did work as a reporting tool).

Fourth, we have demonstrated that continued use of IT is indeed an emotional phenomenon. Even if not always very intense (e.g., in response to many instrumental cues), emotions seem omnipresent around IT use. Confirming Weick’s (1995) arguments, emotions in IT use tend to be infused with sensemaking. Social actors decide how and when to use IT based on their emotional/cognitive experiences arising from a variety of cues. Such cues include not only the IT system itself, but also who is implementing the system, what associations the system brings up, and so on. Separating the study of IT use from this socio-emotional context would leave us with very impoverished accounts of human-technology interactions.

Our findings complement and extend existing research on emotions and IT use. For example, Beaudry and Pinsonneault (2010) focused on discrete emotions, such as anger, anxiety and excitement, and their effect on IT use (directly and through mediating activities, such as venting, distancing or task adaptation). In contrast, our research, first, demonstrates how discrete emotions around IT use arise (a topic that is recognized as an avenue for future research by Beaudry and Pinsonneault). Second, it theorizes the effect of emotional/cognitive experiences on IT use, not just in terms of more or less use, but in terms of qualitatively distinct use/non-use patterns that are expressions of emotionally- and cognitively-based personal valuations. As such, our study answers the calls from Bagozzi (2007) and Ortiz de Guinea and Markus (2009) for more theorizing on how emotions enter decision-making in IT use, beyond mere extension of TAM. Our findings suggest that emotions enter the process of initial use decision, pattern formation and modification through various cues that elicit emotional and cognitive responses. Based on these, a personal valuation is formulated, which is then (often strategically) expressed through specific use or non-use behaviors. For example, people may avoid use based on their interactions with others. In one of our research settings, “horror stories” elicited negative emotions and cognitive reasoning that the system must be ‘bad’, leading many faculty members to a valuation to opt out as long as possible. This was then expressed in actual non-use behavior and the continued propagation of the “horror stories”, creating an emotion culture that started to prescribe how to feel about FP.

How can insights that IT use is socio-emotional; cognitive; framed by implementation activities, and best described as qualitatively distinct patterns (rather than through measures such as intensity, breadth and frequency) be useful from a managerial perspective? First, it is clear that focusing purely on the technical design of the software is not enough. As pointed out in prior research, good design (software) will not necessarily produce good performances by the people using the software (Pentland and Feldman, 2008). Bad design, on the other hand, will quite certainly produce bad performances and frustration. Therefore, system improvement based on user feedback is essential in combination with other strategies. One of these strategies is ensuring that the communication of the system's functionality and purpose matches what the system is actually capable of doing from the users' perspective. However, our findings also confirm insights from prior research that some post-implementation changes (and negotiations around which changes to accommodate) are unavoidable (Wagner, et al., 2010). At Private, many improvements were planned and made to FP post-pilot-roll-out, resulting in an acceptable fit between required work practices and the software's capabilities. At State, the negotiations were fraught with difficulties and resulted in more modifications to the required work practice (how much data had to be entered), because of a lack of fit between the practice of CV management and FP capabilities. Our findings show that such negotiations are a combination of alterations to the technology and addressing the social and personal needs of users. These aspects are difficult to separate and should be considered together by managers. To illustrate, alterations to the technology based on user feedback establish an emotional connection with the users (users may be more or less gratified with the results, but at least satisfied to be involved), while not involving users leads to deterrence emotions (e.g., concern or worry). Lack of faculty involvement, in combination with other cues, can then lead to minimal effort use behaviors, such as "gaming the system" pattern. Second, technology alterations can break cycles of non-use based on other cues and prior emotional/cognitive experiences. As shown above, simple design changes (e.g., showing the status of publications on the annual report) can provide instrumental affordances that change a use pattern from "opting out" to discretionary or "good citizen" use. However, decisions about how to implement IT and how to address the social and personal needs of users also color the technology in ways that can be difficult to change with design modifications. This is most clearly demonstrated by the IT symbolism cue. Our findings show that the new technology becomes a lightning rod or a scapegoat for many negative associations brought forth by the project and the decision-making around it. At State, FP, rather than the Provost, who was behind the decision to standardize CVs, is blamed for trying to make "one size fit all". FP is also blamed for increased surveillance, while it is recognized that such "surveillance" is an artifact of changing culture in higher education. One way to counteract this coloring is to purposefully facilitate distinctions between technology use for a particular task and "what it means". As shown above, emotional responses to material cues are much less intense and, without the presence of other cues, lead to organizationally desirable use behaviors, such as "discretionary" use where people make the best out of the new tool. While symbolic associations tend to muddy this distinction, leading to intense emotional responses, getting users to focus on the instrumental aspects can neutralize at least the task at hand (i.e., putting data into a system). At State, this was accomplished, for example, by hiring a graduate student as the faculty liaison who helped to train staff. Not being part of the faculty or the administration (the decision-making around FP), this person could remain neutral and technology-oriented and help faculty fill out their data without getting into heated discussions about the "hidden agenda".

Furthermore, our findings suggest that IT use cannot be nudged into some desired direction by attending to problem situations and cues in isolation. As our evidence shows, cues work together and attending to just one or two can lead to unintended consequences. For example, in our study, State administration responded to faculty complaints about the unreasonable amount of effort and time required to input their entire CV into FP by providing assistance. This intervention was geared towards helping people overcome the instrumental constraints of FP, and through that, make them more likely to use FP. However, providing help may appease the users who opted out (or gave up), but it also unjustly "punishes" the individuals who put in the effort in the first place. Furthermore, it can create an expectation that help will always be provided in the future and it is no longer the faculty member's responsibility to update FP. Accordingly, before deciding on a plan of action (How to provide support? How to change the design? Who to involve in feedback sessions?), the decision-makers can benefit from considering all the cues involved and the possible content of cues in their specific setting.

Conclusion

In sum, we found that social actors respond emotionally to (and make sense of) a confluence of cues that are more or less salient in a specific activity. The strength of the emotional experiences depends on whether the salient cues are related to a central concern in the social actor's life and the content of the cues (negative or positive). Second, we found that as people use IT, through a dominant emotional experience (or lack thereof) and its cognitive filtering, people form a personal valuation towards IT use as part of their work. These valuations are expressed in specific use or non-use patterns.

Our study also points to numerous further research avenues that can address the limitations of this study. First, longitudinal examination of IT implementation and use in other (non-academic) contexts may suggest other types of cues and differential importance of the cues. For example, in an environment with a powerful user base (such as faculty) and an IT artifact intimately tied up with performance evaluations (such as FP), the cue of identity work came forth very clearly and in relation to the most intense emotional/cognitive experiences. In other environments this may not be the case. Second, individual differences in users' emotional and cognitive responses to IT use need further investigation. For example, the role of skills, personality, gender, etc. in the differential influence of cues on emotional responses is one interesting avenue of future research. Third, more detailed examinations of the managerial interventions (over time) that accompany IT implementation projects are needed to better understand the influence of such interventions on the presence and salience of cues as well as the resulting experiences, sensemaking and possible changes in use patterns.

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