

# EXPLORATORY USAGE OF ENTERPRISE SYSTEMS: THE JOINT EFFECTS OF INTRINSIC MOTIVATION AND PSYCHOLOGICAL EMPOWERMENT

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## Abstract

*Users' exploratory usage of enterprise systems plays a critical role in determining the extent to which an adopting organization can materialize the purported benefits of the system. As such, examining the antecedents of exploratory usage of ES is of great interest to researchers. In this study, we intend to explore how different components of intrinsic motivation (i.e., intrinsic hedonic and normative motivation) and what users experience in their system exploration process (i.e., psychological empowerment) jointly affect exploratory usage. Drawing upon motivation theories and the Regulatory Engagement Theory, we develop a research model that will be tested by survey data. Possible theoretical contributions and managerial implications are discussed.*

*Keywords: Enterprise system, exploratory usage, intrinsic motivation, psychological empowerment*

# 1 INTRODUCTION

Enterprise systems (ES) are large-scale integrated software packages designed to support business processes, information flows, reporting and business analytics (Seddon, Calvert and Yang 2012; Davenport 1998). It is well touted that ES solutions can significantly improve organizational operations and allow firms to derive competitive advantage, and therefore ES has become the largest IT investment for an organization (Shang and Seddon 2002; AMR Research 2007). However, significant challenges remain in harvesting returned value from ES investment, which is evidenced by the reality that about one-half of ES implementations have failed to meet the adopting organization's expectations (Morris and Venkatesh 2010). It becomes imperative to investigate how organizations can reap the purported benefits of ES.

In recent years, there are significant efforts dedicated to examining factors that would lead to the success of ES implementation (e.g., Jasperson et al. 2005; Seddon et al. 2010; Nambison et al. 1999; Nan 2011; Morris and Venkatesh 2010; Sykes and Venkatesh 2009). In particular, scholars have paid increasing attention to the role of organizational users (e.g., Nan 2011; Sykes and Venkatesh 2009; Jasperson et al. 2005; Robey et al. 2002; Burton-Jones and Straub 2006; Strong and Volkoff 2010). It is well established that the innovative use of technology is necessary for an organization to materialize the benefits of ES and such innovative ideas are generated by the users rather than the management or IT staff (DeSanctis and Poole 1994; Robey et al. 2002; Swanson 1994). With the complexity and configurability of ES, users' proactive exploration of system features, subsequent adaptation to the system by altering their work processes, and selective appropriation of features will determine the success of system adoption (Karahanna and Agarwal 2006; Devaraj and Kohli 2003; Jasperson et al. 2005; Kane and Alavi 2008; Seddon et al. 2010; Sykes et al. 2009). Thus, vital questions in ES research and practice concern how to motivate employee users to behave in line with organizational goals after the system's formal organizational adoption (Jasperson et al. 2005; Fichman and Kemerer 1999; Gottschalg and Zollo 2007).

A careful literature review suggests that prior studies have revealed the motivating factors for proactive system feature exploration (e.g., Ahuja and Thatcher 2005; Li and Hsieh 2007; Sun 2012; Jasperson et al. 2005; Hsieh and Wang 2007; Li et al. 2009). These factors cover a broad spectrum including job autonomy (Ahuja and Thatcher 2005), transformational leadership, perceived ease of use, perceived usefulness (Li and Hsieh 2007), personal innovativeness (Sun 2012), organizational reward system and enjoyment derived from the exploration (Li et al. 2009). In particular, intrinsic motivation is consistently found to be critical for users' exploratory usage of ES features (Li et al. 2009; Ke et al. 2013), which is in accord with what is suggested by the Creativity Theory, which posits that complex, innovative and extra-role tasks such as ES feature exploration requires the individual to be intrinsically motivated (Amabile et al. 1994; Deci and Ryan 2000). However, previous studies have focused on the effects of intrinsic motivation (i.e., the end-state of innovative system application) and ignored that of the exploration process. Yet, the Componential Theory of Creativity (Amabile 1983) suggests that motivation is necessary, but not sufficient, for creative outcomes. People's engagement in innovative process matters and their experience with the process will affect the outcomes of their goal pursuit (Higgins and Scholer 2009). In particular, psychological empowerment is identified as such an important factor that has the potential to affect individuals' involvement in creative work process. Therefore, it is imperative to investigate how intrinsic motivation and psychological empowerment jointly affect user exploratory use of the system as it considers the effects of both the *end-state* and *process-related* variables. The current research is an endeavor toward this direction.

In the remaining sections of this paper, we present the theoretical background and research hypotheses, and then describe how we would collect our data. We end this paper with possible theoretical contributions and managerial implications of this research.

## 2 THEORETICAL BACKGROUND

Previous IS research has endorsed the importance of motivation in IS implementation (e.g., Klein et al. 1997; Bock et al. 2005; Venkatesh and Davis 2000; Gallivan 2001). Motivation directs and energizes an individual's efforts in conducting relevant tasks and therefore could positively impact the behavioral outcomes (Kanfer 1990; Deci and Ryan 2000; Amabile et al. 1994). It is mainly manifested in two forms, namely intrinsic motivation and extrinsic motivation. Intrinsic motivation is defined as a psychological force arising from personal enjoyment or internalized value of work (Deci and Ryan 2000). In contrast, extrinsic motivation refers

to the impetus to act on acquiring externally administered rewards, including career advancement, prestige, and positive evaluations from others (Deci and Ryan 200). While extrinsic motivation is often short-lived and could cease once the mandates vanish, intrinsic motivation exists within an individual and is likely to be self-sustainable.

Prior studies have primarily focused on the role of motivation in user technology acceptance (Davis et al. 1992; Webster and Martocchio 1995; Venkatesh and Speier 1999; Venkatesh 2000; Gill 1996; Kankanhalli et al. 2005). For instance, Davis et al. (1992) relate extrinsic motivation toward technology use to efficiency of job-related activities (i.e., perceived usefulness). While these studies have been instrumental to our understanding of the effects of motivation on technology acceptance, these findings may fall short of the facility required for direct application to the context of ES feature exploration for three reasons. First, due to the complexity and malleability of ES, the system provides a wide spectrum of features or feature sets for users to appropriate, thus organizational users have to expend considerable cognitive effort when engaging in the exploratory activity (Sharma and Yetton 2003; Robey et al. 2002; Shang and Seddon 2002). It is well established that it is users' proactive learning of ES, rather than their passive acceptance of the system, that allows the organization to materialize the benefits of ES (Nambisan et al. 1999; Jasperson et al. 2005; Burton-Jones and Straub 2006). Thus, the focus should be switched to users' proactivity (Grant 2012). Second, ES exploration is an innovative, voluntary behavior that is not clearly specified in job descriptions and thus is predominantly volitional rather than mandatory (Karahanna et al. 2006; Venkatesh 2006; Boudreau 2003; Jasperson et al. 2005). The motivation for proactive learning ES features would differ from what is required for a decision to use ES, which is usually mandatory in the organization (Jasperson et al. 2005). Third, prior research on user motivation has been focused on what it is that users want or don't want in terms of the desirability or undesirability of the goal's end-states (i.e., goal outcomes). Yet, outcomes are only one aspect of what motivating individuals in pursuing a goal (Higgins and Scholer 2009). The process of goal pursuit also matters. In particular, what users experience with the process would affect the attractiveness of the goal outcomes and the strength of their engagement, thereby affecting the behavior outcomes (Higgins 2006; Higgins and Scholer 2009). As such, ignoring user experience with the process would impede our understanding of the potential factors that affects how motivation leads to the behavioral outcomes.

Recent years have seen studies investigating how motivations lead users to explore innovative application of ES. For example, Li et al. (2009) investigate the effects of intrinsic and extrinsic motivations on users' exploratory and routine usage of the system. Also, Li and Hsieh (2007) examine what affects user intention to explore a Customer Relationship Management system. A common theme of this stream of research is that it is the intrinsic motivation, rather than extrinsic motivation, that mobilizes users' exploratory usage of the system (Li et al. 2009; Ke et al. forthcoming). Also, the focus of these studies has primarily been the hedonic dimension of intrinsic motivation (e.g., Li et al. 2009; Ko et al. 2005; Venkatesh 2000; Li and Hsieh 2007), which is aroused by the satisfaction of basic psychological needs for competence and autonomy (Gegne and Deci 2005). However, according to the psychology literature, human beings possess a third need, i.e., the need for relatedness, which is defined as the need to be connected to others and to be effective in the social world (Deci and Ryan 2000). This need allows employees to internalize the organizational values and be motivated to behave in align with organizational norms and values (Allen and Myer 1990; Kreps 1997). As such, intrinsic motivation consists of two components: (1) an enjoyment-based hedonic component and (2) a values-based normative component (Linderberg 2001; Gottschalg and Zollo 2007). The normative component of intrinsic motivation is particularly important for the context of ES implementation since the adoption of the system is mandated by the organizational management, which may not necessarily arouse hedonic intrinsic motivation in users (Jasperson et al. 2005). In contrast, normative motivation would motivate users to align their individual interest with organizational goals of ES adoption and proactively explore ES features.

In addition, according to the Componential Theory of Creativity (Amabile 1983), intrinsic motivation is just a necessary, but not sufficient, condition for an individual to achieve favorable creative outcomes. Engagement in the innovative process has an equal, if not more important, influence on individual creative behaviors (Zhang et al. 2009). As such, recent studies have emphasized the value of understanding the creative process (Shalley et

al. 2004). In particular, the Regulatory Engagement Theory suggests that what an individual experiences in the goal pursuit process would affect the strength of process engagement and thus influence the effects of motivation on the behavior outcomes (Higgins 2006; Higgins and Scholer 2009). Process includes factors that affect an individual's experiences in conducting activities to pursue a specific goal (Higgins 2006). Specifically, psychological empowerment is regarded as a critical factor that would help to keep employees engaged in the creative work process and strengthen the effects of motivation (Spreitzer 1996; Zhang and Bartol 2010). It is defined as a set of cognitions or states that are influenced by the work environment, and helps employees create an active-orientation toward job tasks (Thomas and Velthouse (1990). Psychological empowerment is conceptualized as a construct of four dimensions, i.e., meaning, competence, self-determination and impact. Meaning refers to a fit between the needs of an individual's work role and his or her values and behaviors; competence is defined as belief in an individual's capability to perform work activities with skill; self-determination refers to a sense of choice in regulating what and how work tasks are conducted, such as work methods and pace; and impact is the extent to which an employee can influence his or her work outcomes (Spreitzer 1995). Psychological empowerment allows employees to make sense of the work situation and accordingly decide on the course of action (Spreitzer 1995), thereby releasing the potential within employees to come up with innovative changes in their work roles or organization (Seibert, Wang and Courtrighy 2011). In particular, Zhang and Bartol (2010) found that psychological empowerment plays an important role in enhancing employees' willingness to be engaged in a creative process.

### 3 RESEARCH MODEL

We extend the existing ES research with the research model (Figure 1) by examining the effects of both hedonic and normative intrinsic motivation, how psychological empowerment experienced by users in the exploration process affects users' creative exploration outcomes and the effects of intrinsic motivations on exploratory usage.

According to the general motivation theory, the hedonic and normative experience associated with the value of the end-state of an activity is a major contributor to an individual's effort direction and intensity (Higgins 2006). Thus, intrinsic motivation enhances an individual's psychological well-being and mobilizes the individual's initiative and effort to work on complex, innovative and extra-role tasks (Li et al. 2009; Amabile et al. 2005; Deci and Ryan 2000). Specifically, with an intrinsic hedonic motivation, users' curiosity and interest in learning ES features and functionalities would enhance their openness to the complexity and willingness to take risks (Deci and Ryan 2000; Gagne and Deci 2005). Accordingly, users are able to expand their access to ideas and try out innovative ways of applying ES, and in due process, achieve greater extent and scope in exploratory usage of the system. In contrast, users with an intrinsic normative motivation are likely to expand their scope of attention to innovative ES applications that would benefit the organization (Gottschalg and Zollo 2007; Lindenberg and Foss 2011). Given the complex and highly interdependent nature of ES, an innovative feature application may affect the business processes conducted by multiple users (Seddon et al. 2010). An innovative normative motivation leads the user to think systematically to consolidate and align different perspectives. It follows then that the user would explore a wide range of ES features aimed at evaluating how different features benefit users, groups and the organization. Previous IS studies have consistently found the positive effects of intrinsic motivation on employee users' innovative application of system features (e.g., Li et al. 2009; Ke et al. 2013, Li and Hsieh 2007). Thus, we hypothesize the following:

*H1: A user's intrinsic motivation is positively related to his/her exploratory usage. Specifically,*

- a) Intrinsic hedonic motivation is positively related to exploratory usage of the system's features.*
- b) Intrinsic normative motivation is positively related to exploratory usage of the system's features.*

Psychological empowerment reflects an employee's sense of control in relation to his or her work and an active orientation toward his or her work role (Spreitzer 1995). Prior research suggests that psychological empowerment has significant influences on an employee's willingness to engage in a creative process such as ES feature exploration (Seibert et al. 2011; Zhang and Bartole 2010). In particular, psychological empowerment enables employees' proactive behaviors that can enhance their work effectiveness. For example, Spreitzer and

Quinn (1996) found that middle level managers would be more engaged in transformational change initiatives when they were empowered. Also, Spreitzer (1995) found that empowerment enables employees to be more innovative at work and more willing to conduct organizational citizenship behaviors (Wat and Shaffer 2004). Applying this notion to the ES implementation context, we expect that psychological empowerment experienced by a user in the ES feature exploration process would positively affect his or her exploratory usage of the system's features. Specifically, when an employee perceives proactive learning of ES as personally important and meaningful, he or she will expend more effort on investigating the implications of different ES features from multiple perspectives. In particular, the employee will try to acquire information from multiple sources, synthesize a variety of information and knowledge, and generate a number of possible ways of applying ES features (Gilson and Shalley 2004). Also, when an employee user perceives that he or she is capable of exploring ES features, has the opportunity to decide how and what to explore, and has a say on how job tasks should be conducted, the user will focus on an innovative idea of ES feature application for a long time and be willing to persist in the face of difficulties (Deci and Ryan 1991; Spreitzer 1995). Such a user is also more likely to explore new cognitive pathways, take risks, and be playful with ideas about innovative ES feature applications (Amabile et al. 1996; Angst and Agarwal 2009), which can lead to more exploratory usage of the system. Thus, we hypothesize the following:

*H2: Psychological empowerment is positively related to exploratory usage.*

The Regulatory Engagement Theory suggests that sources for engagement in the creative process would contribute experiential qualities to the goal pursuit activities and thus magnify the value of the object pursued (Higgins and Scholer 2009; Higgins 2006). Extending this logic to the current research context, we conjecture that psychological empowerment would affect the effects of intrinsic motivation on exploratory usage. Specifically, psychological empowerment derived from the system feature exploration process would arouse positive affects about the creative activities, thereby enabling the user to be cognitively absorbed (Agarwal and Karahanna 2000; Burton-Jones and Straub 2006). Such engagement provides energy for sustaining effort, which would allow the user to experience more intense force of their intrinsic motivation to explore ES features (Higgins 2006). In other words, psychological empowerment would make the user experience the positive target object even more positively (i.e., enjoyment for hedonic intrinsic motivation and personal value for normative intrinsic motivation) and thus amplify the effects of intrinsic motivation. Thus, we hypothesize the following:

*H3: A user's psychological empowerment strengthens the effects of intrinsic motivation. Specifically,*

- a) Psychological empowerment strengthens the relationship between intrinsic hedonic motivation and exploratory usage of the system's features.*
- b) Psychological empowerment strengthens the relationship between intrinsic normative motivation and exploratory usage of the system's features.*

## **4 RESEARCH METHODOLOGY**

To test our research model, we will develop a questionnaire and employ a survey to collect data from employees working with companies that have adopting ES for at least 1.5 years. When developing the questionnaire, we will try to adapt the established scales that measure the constructs in our model. For example, intrinsic motivation and exploratory usage of systems can be adapted from Ke et al. (2013). We intend to analyse our data in three steps. We first examine the psychometric properties of the measurement using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Then we will use the partial least square (PLS) to test the hypotheses.

## **5 CONCLUSION AND EXPECTED CONTRIBUTIONS**

In this research, we intend to understanding how *end-state* and *process-related* variables jointly affect users' exploration usage of ES. Drawing upon the literature on motivation and regulation engagement, we propose a research model. Specifically, we posit that intrinsic motivation (i.e., hedonic and normative motivations) and psychological empowerment would have positive effects on users' exploration usage of the system. Further, we argue that psychological empowerment would magnify the value of the object pursued, and thus strength the

effects of intrinsic motivation on exploratory usage.

The results obtained will have significant theoretical and practical implications. It will contribute to the ES literature by examining the direct and interaction effects of motivation for system exploration and users' experience with the exploration process on employees' innovative application of ES features. Specifically, considering both intrinsic hedonic and normative motivation allows us to have a more nuanced understanding of how different types of intrinsic motivation would affect exploratory usage of ES. Also, examining the effects of psychological empowerment will shed new light on our understanding of the critical factors leading to innovation application of ES, given the importance of process-related factors in an individual's innovative pursuit. Furthermore, this study may be among the first to investigate how users' psychological empowerment interacts with intrinsic motivation for system feature exploration, thus adding to much needed research on understanding mechanisms that facilitate employees to explore ES. This study will also contribute to the practice by offering guidelines on how to facilitate employees' system exploration and how to reinforce the effects of employees' intrinsic motivation and positive experiences.

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