Creative Innovativeness with Information Systems (IS) and its Role in Quality IS Usage

Research-in-Progress

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ABSTRACT

Utilizing information systems in more strategic and competitively advantageous ways is important in organizations. However, the capability to do so varies among users. This research proposes a model of creative innovativeness with information systems (CIIS) in the context of IS usage. CIIS refers to a user’s willingness and ability to explore information systems in a novel and cognizant manner. CIIS encapsulates personal innovativeness in the domain of information technology to acknowledge that willingness to explore is necessary, but novelty and creativity in exploring and utilizing IS are also needed to capitalize on the potential of IS. This paper makes an important contribution by identifying relevant traits that can be utilized in future research studies of IS users to achieve the maximum benefits of IS.

Keywords

Creative innovativeness with information systems, quality information systems usage, maximum benefits of information systems

INTRODUCTION

As the competitiveness within a global environment continues to grow stronger, organizations are looking to every aspect of their business to get ahead of their competition. One area that is scrutinized is information systems (IS) utilization to gain maximum benefits from IS. Organizations have embraced the importance of making their processes more efficient and more effective to place them at a strategic advantage. However, obtaining the maximum benefits from IS to assist in achieving strategic advantages has always been, and continues to be, a challenge.

As Wu (2005) noted, “The BI (business intelligence) solutions are considered successful because they are functioning as specified by the business community. Yet, the questions about truly realizing the benefits from their investment persist within their organizations.” (p. 10) For example, in research conducted in the UK financial sector regarding the utilization of a customer relationship management (CRM) technology, 96% of respondents felt strongly or moderately that CRM was a source for competitive advantage but the CRM did not deliver the expected benefits (Karakostas et al., 2005). Such scenarios are common in organizations involving various types of IS.

The investment that companies are making in business intelligence solutions may be functional from an operational perspective but the full benefits that the solution or system can provide may not be experienced (Wu, 2005). Not realizing the benefits of any information system can obviously put a strain on a company’s competitiveness, especially if the competition is able to get ahead in the area. Organizations are interested and want to have each of their users utilize their IS to not only continue carrying out their previous job functions in a more efficient and effective manner, but to also utilize the system in more strategic ways to enhance the organization’s competitive advantage.

In this research, we examine the literature on user characteristics that can contribute to quality IS usage through maximizing the benefits that can be offered by IS and then propose a concept, creative innovativeness with information systems (CIIS), that captures those key characteristics. CIIS is similar to personal innovativeness in the domain of information technology in the literature except that CIIS emphasizes the important role of creativity in achieving quality IS usage. Hence, CIIS can be defined as a user’s willingness and ability to explore any information system in a novel and cognizant manner. The construct’s determinants and consequences are proposed in this research and will be assessed in subsequent research to evaluate its impact.
BACKGROUND AND THEORETICAL INTEGRATION

Research studies introducing various models to explain intentions to use information technology and perceptions of behavior have had a significant presence in IS research (Ajzen & Fishbein, 1980; Ajzen 1985, 1991; Davis et al. 1989; Taylor & Todd, 1995), but these models do not examine IS usage from the perspective of achieving quality IS usage. The two user traits in the literature that are of relevance to this research are personal innovativeness in the domain of information technology defined as “the willingness of an individual to try out any new information technology” (Agarwal & Prasad, 1998, p. 206), and computer self-efficacy, defined as an individual’s judgment of their abilities to utilize technology in a competent manner (Compeau and Higgins, 1995). In our research, we propose combining personal innovativeness with creativity to address not only willingness to use IS but also the ability to use IS in a novel manner. More specifically, the research looks at the user’s personality and skill sets, versus one’s judgment of their skill sets as defined by computer self-efficacy. Although one may argue that a user’s view of their ability to utilize technology is an influencing factor on innovation, this research adopts the argument that it takes creativity to generate novel solutions and innovativeness to implement the solutions (Rank et al., 2004).

Combining Creativity and Innovativeness

This research combines creativity and innovativeness in the conceptualization of creative innovativeness with information systems (CIIS). As described in the research conducted by Rank et al. (2004), “creativity refers to idea generation, whereas innovation refers to idea implementation. Creativity and innovation differ in the required degree of idea novelty and social interaction. Creativity is truly novel, whereas innovation can be based on ideas that are adopted from previous experience or different organizations.” (p. 520) West and Farr (1990) suggest “creativity as the ideation component of innovation and innovation as encompassing both the proposal and applications of the new ideas” (p. 10). In discovering ways to determine optimal uses/benefits from IS usage, both concepts are needed to not only adopt what one has learned and one’s willingness to explore, but to also explore new ideas and ways of using the system that can bring benefits beyond what may have been planned or anticipated. Also, it is important to note that the concept of explore, as perceived of here, is referencing the process that the user undergoes while exploring new technology on an individual basis, versus in a group or collaborative context.

Rank et al. (2004) note in their research that a variety of variables may predict creativity and innovation in varying ways. For example, extraversion may be necessary for the implementation of new ideas in an organizational context, but introversion has been shown to predict creativity (Rank et al., 2004 citing Feist, 1999). Rank et al. (2004) stress that further identification of factors impacting creativity and innovation need to be explored, as well as their impacts. In this research, creativity and innovation are conceptualized as an integrated concept to study the usage and exploration of IS accomplished by an individual (versus a group) as one utilizes and explores IS.

During exploration of IS, the borders or distinctness between creating and innovating are blurred due to the quick reaction time with which the individual user is experimenting, and not the user’s interaction with the rest of the organization. For example, a user’s exploration of new software may involve developing new ideas for uses that the software may undertake and instantaneously attempting to try/test the idea. In this study, a model is developed to assess the impact of CIIS on quality IS usage.

Creative Innovativeness with Information Systems

As mentioned earlier, the construct of CIIS is defined as a user’s willingness and ability to explore information systems in a novel and cognizant manner. Cognizant, in this context, refers to being capable of exploring an IS in a purposeful and thoughtful manner, versus random, unproductive exploration. Therefore, the construct proposed here merges together the constructs of personal innovativeness in information technology (PIIT) and creativity. PIIT, considered a trait, was defined in Agarwal and Prasad’s (1998) research as “the willingness of an individual to try out any new information technology” (p. 206). Personal innovativeness has been applied in contexts of perceptions and acceptance of IT. Agarwal and Prasad’s (1998) research expanded on previous technology acceptance models to identify PIIT as an individual trait that could assist in explaining the development of perceptions and the influence they have on usage intentions. Innovativeness is one factor that contributes to novel uses of technology by incorporating the desire or willingness of the user to make such discoveries. Innovativeness, as it is defined here, is one of the components of CIIS.

Creativity has been conceptualized as generating novel ideas (Rank et al., 2004). The conceptual definition of creativity by Amabile (1983) is as follows: “A product or response will be judged as creative to the extent that (a) it is both a novel and appropriate, useful, correct or valuable response to the task at hand, and (b) the task is heuristic rather than algorithmic.” (p.
Applying these conceptualizations to the context of IS usage, an IS user will need to be creative to develop novel uses and applications of IS that are value-added or value-driven. Therefore, CIIS was developed to expand on a user’s willingness to discover IS in a way that invokes new approaches. This value-added discovery provides a higher level benefit than just adapting IS to accomplish similar tasks. The benefits realized capitalize on the potential value of a specific information system. It combines one’s willingness to try IS, as posed by PIIT, and incorporates doing so in a novel manner.

As noted in previous research, IS users that were able to find new uses or valuable insights into their work did so by their willingness to explore the new system as well as their novel approach to discovering different aspects of the system (Boudreau, 2003). In this research, we specifically examine CIIS and its influence on quality IS usage.

Quality IS Usage

As noted previously by Wu (2005), business intelligence solutions may be considered successful from a functional perspective, but maximizing the benefits remains debatable. Therefore, the concept of “using IT [or IS] successfully” may vary. The construct of IS use, as utilized in the definitions and degrees of IS success, varies (Boudreau, 2003). Boudreau developed a rich conceptualization of the construct “quality of use” in research conducted on a state government institution that declared a successful implementation of specific ERP modules although limited usage of the system was prevalent among some employees. The definition of quality of use in that research is “the ability one has to correctly exploit the appropriate capabilities of a software in the most relevant circumstances” (Boudreau, 2003, p. 236). Adapting this definition to this research context, quality IS usage is defined as the realization of the benefits and value of IS.

One of the predominant factors that impacted quality of use was the extent that users learned the system and, therefore, comprehended the system. Learning was determined to come from formal and informal training. The informal training was evident in comments that were generated during interviews such as:

“I can’t tell you how many things that we learned, not because of training, not because the trainers knew it, but because somebody figured it out, and it became kind of folk knowledge.” (Boudreau, 2003, p. 240)

These users utilized the system beyond the rudimentary ways to develop processes that better suited their needs. To further understand how knowledge and greater abilities to utilize the system were developed by these types of users in their own capacity is the focal point of this research. This research proposes that a combination of creativity and innovativeness in the domain of information systems can contribute to quality IS usage.

MODEL DEVELOPMENT

Components of Creative Innovativeness with Information Systems

To assess the creativity component of CIIS, Amabile’s Components of Creative Performance will be adopted (Amabile, 1983, 1986; Amabile et al., 1996). These components include domain-relevant skills, creativity-relevant skills, and task motivation. Domain-relevant skills represent the cognitive resources an individual utilizes during the process of solving problems or task completion (Amabile, 1996). Creativity-relevant skills consist of cognitive techniques, creative heuristics, as well as work strategies and disposition. Task motivation is an individual’s initial task-oriented attitude and the individual’s perception of their engagement in the task at a given point in time.

Innovativeness has been defined as “the degree to which an individual is relatively earlier in adopting new ideas than other members of his social system” (Rogers and Shoemaker, 1971, p. 175). Hurt, Joseph, and Cook (1977) developed a scale to measure innovativeness based on their view of innovativeness as a personality construct and as a characteristic of human capital versus the innovation artifact. Key characteristics include the following: rational, open-minded, comfort with ambiguity, risk-taking, motivated, socially adept, opinion leader, externally resourceful, and change agent (Hurt et al., 1977; Rogers, 1983; Rogers and Shoemaker, 1971).

Outcomes of Creative Innovativeness with Information Systems

When utilizing IS, IS users can employ various strategies, which results in a range of positive and negative outcomes. For those individuals who perceive the consequence of an IT event as an opportunity and have a sense of control in managing any disruptive event (i.e., adapt a problem-focused approach), a Benefit Maximizing strategy can be realized (Beaudry and Pinsonneault, 2005). Maximum benefits can be realized if users adapt the operational procedures of the system or adapt to positive factors that affect their self-adaptation (e.g., reward systems, additional training). In applying the definition of CIIS, one can assess that IS users applying a Benefit Maximizing strategy would be more capable of achieving more effective,
strategic, and productive benefits. CIIS is conceptualized as an essential aspect in predicting whether or not the maximum benefits of a system will surface. As Bandura (1986) noted in reviewing adoption determinants, “the acquisition of knowledge and skills regarding innovations is necessary but not sufficient for their adoption in practice” (p. 148). Therefore, CIIS is proposed to be an important determinant in achieving quality IS usage through Benefit Maximization strategy.

Based on the above discussions and synthesis of the literature, a research model will be developed and tested in future research. A summarized version of the model is shown in Figure 1.

CONCLUSIONS AND FUTURE RESEARCH

This paper proposes a model to explain user factors that facilitate quality IS usage which will be further developed and tested in future research. Quality IS usage is still an under-studied topic in the IS literature. Because of the important role played by IS in today’s organizations, research to understand how users can achieve quality IS usage is warranted. A plethora of research opportunities exist from the conceptualization of CIIS and the development of this model. For example, our next planned step for this research is to further develop and test this model, including the determinants and consequences of CIIS. This model will be evaluated within the context of system usage in which IS users have discretions over the usage and application of IS. Also, future research can expand the model by identifying other relevant external factors, such as management factors.

In addition, future research can evaluate the impact of CIIS in various stages of an IS implementation. Saga and Zmud (1994) highlight factors, such as innovation, that impact the various stages of IT implementation. In the Infusion stage, in which the system becomes absorbed by the organization, they identify various degrees of assessing infusion. These include extended use in which technology is utilized to accomplish a complex task, integrative use in which technology is used to bridge differing tasks, and emergent use in which technology is applied through innovation to develop new processes. Factors that influence an individual to initiate and apply their CIIS in these various stages or degrees can be assessed.

Lastly, we will investigate in future research if CIIS can be utilized to predict and explain quality IS usage, and if potential moderators such as perceived innovation attributes play a role in determining quality IS usage. We believe the concept of CIIS can help us to better understand how novel uses of IS can be achieved and how maximum benefits from IS can be obtained by users.

Figure 1: Model of Creative Innovativeness with Information Systems (Summarization)

REFERENCES