Assessing the Effectiveness of User Participation: Users' Knowledge Participation

Jun He
University of Pittsburgh

Follow this and additional works at: http://aisel.aisnet.org/amcis2004

Recommended Citation
http://aisel.aisnet.org/amcis2004/280
Assessing the Effectiveness of User Participation: Users’ Knowledge Participation

Jun He
University of Pittsburgh
junhe@katz.pitt.edu

ABSTRACT
Although user participation has been studied over four decades, the effectiveness users’ participative activities has not been well assessed. This research proposes knowledge participation as an assessment of the effectiveness of participative activities performed by users. By capturing the effectiveness of users’ participative activities, the construct of knowledge participation is argued to have more predicative power than the construct of user participation when predicting the outcomes of system development. In addition, knowledge process within an ISD project team is proposed as a mediating mechanism that converts users’ participative efforts into system development outcomes.

Keywords
User participation, knowledge participation, information systems development.

INTRODUCTION
The importance of user participation has long been recognized in IS literature. Considered as a critical ingredient in information systems development (ISD) (Barki and Hartwick, 1989, 1994), user participation is predicted to deliver a wide range of benefits to system quality and system acceptance (for review, see Ives and Olson, 1984; Damodaran, 1996), and ultimately “lead(s) to improved chances of successful system development” (Ives and Olson, 1984; p.587). However, empirical studies repeatedly report weak or contradictory results (Ives and Olson, 1984; Kirsch and Beath, 1996; Gallivan and Keil, 2003). Ives and Olson (1984) argued the “mixed” results (failing to demonstrate the relationship between user participation and system success as significantly positive) might be a result of poor instruments. They called for rigorous attention to measurement. The premise is that an accurate picture of user participation will help demonstrate the relationship as strong and positive.

Some researchers hold a different view. Hartwick and Barki (2001) argued that user participation per se might not be sufficient for such relationship. The observations that sometimes participation fails to deliver expected effects are not rare. For example, Gallivan and Keil (2003) reported a software project failure as a result of inaccurate and insufficient capture of user requirements, even users had communicated intensively with developers during its development process. Kirsch and Beath (1996) categorized the symbolic performance of participative activities as token participation, in which user participants appear to be active, but, in fact, do not contribute meaningfully to an ISD process. Therefore, Damodaran (1996) concluded that “it is not sufficient just to have participation, what is needed is effective participation” (p.365).

In this study, I propose users’ knowledge participation as a construct to assess the effectiveness of user participation. In addition, knowledge process is proposed as a mediating mechanism that translates users’ participative efforts into system development outcomes. The research model is summarized below.

Figure 1. Research Model

The remainder of the paper is organized as follows. I will first briefly discuss the measurement development of user participation; Then, I will propose knowledge participation as a valid assessment of the effectiveness of participation; Next, I will review the team process literature and propose knowledge interactions as crucial team processes for an ISD project team. Some implications of this study will also be discussed.
**USER PARTICIPATION**

In IS literature, user participation is typically defined as “the behaviors and activities that the target users or their representatives perform in the systems development process” (Barki and Hartwick, 1989; p.59). The behavioral conceptualization of user participation provides a solid foundation to guide measurement development, suggesting the construct be measured by “asking users to indicate the frequency, the extent or the degree to which they have performed specific ISD-related assignments, activities, and behaviors” (Hartwick and Barki, 2001; p.32). Basing on this conceptualization, Hartwick and Barki developed and validated an instrument with 4 dimensions: responsibility, user-IS relationship, hands-on activities (Barki and Hartwick, 1994), and communication (Hartwick and Barki, 2001).

The work of Hartwick and Barki and other researchers is a response to Ives and Olson’s (1984) call for rigorous attention to measurement. Given the dramatic improvement to the measurement quality, however, Hartwick and Barki do not expect a breakthrough for the weak to moderate relationships observed between user participation and system success variables. In addition to the measurement issue, they view the weak relationships lie also in the conceptualization of participation. As a behavioral construct, user participation delineates the common ISD-related activities among user participants. It does not reflect “the type, style, timing, or effectiveness of these activities” (p.32). While some activities could be symbolic or futile, it is the effectiveness of the activities that actually delivers the benefits to the ISD process.

To capture the effectiveness of participation, one needs to: 1) identify the activities; 2) assess the effectiveness of those activities using an approach that is consistent with evaluating the desired outcome. In fact, Hartwick and Barki (2001) view their research as identifying the key dimensions or categories of activities that need to be taken into account when assessing user participation. Given the good understanding of participative activities, it is appropriate for us to move to the next step toward understanding the effectiveness of participation. As suggested by Hartwick and Barki, “It is through such research that the true magnitude of participation’s impact on system success will begin to emerge” (Hartwick and Barki, 2001; p.33).

**USERS’ KNOWLEDGE PARTICIPATION**

This study proposes users’ knowledge participation as a subsequent step in assessing the effectiveness of participation, with team performance as the desired outcome. Knowledge Participation is conceptualized as the extent (both the amount and the quality) of knowledge that users contribute to an ISD process via participation. This concept has two elements: the “participation” element refers to users’ participative activities, main categories of which having been well studied and identified by Hartwick and Barki (1994, 2001) and other researchers; and the “knowledge” element refers to a cognitive approach to assess the knowledge contributions of these activities as their effectiveness.

Cognitive approach has been largely suggested when studying quality-related ISD outcomes. Olson and Ives (1984) proposed cognitive factors (improved understanding of the system, improved assessment of system needs, and improved evaluation of system features) as main “intervening mechanisms” that mediate the relationship between user participation and system quality. Kirsch and Beath (1996) focused on exchanged knowledge between users and system developers when analyzing the mechanisms of achieving task-system fit. Because ISD is knowledge intensive work (Faraj and Sproull 2000), and most design and development activities between user participants and system designers focus on users’ application domain knowledge (Walz et al., 1993), it is appropriate to assess the effectiveness of participation by evaluating knowledge contributions embedded in the participative activities performed by users.

ISD project teams’ performance is the dependent variable in this model. Because the construct of knowledge participation is argued to capture the effectiveness of user participation, it is hypothesized to contribute to the performance of ISD project team.

_Hypothesis 1: Users’ Knowledge Participation has a strong and positive effect on ISD project team performance._

**THE MEDIATING ROLE OF KNOWLEDGE PROCESS**

Because the mere presence of knowledge does not ensure a high quality of ISD outcomes (Faraj and Sproull, 2000), and “teamwork is essential to all successful information systems development efforts” (Dean et al., 1997; p.187), I propose knowledge process, or the knowledge-related interactive activities between users and system developers, as a mediating mechanism that translate the effects of user participation into ISD outcomes. Literature on teamwork suggests that team process plays a pivotal role for a team to produce meaningful work. Performance is a result of the interactions and dynamics among team members (McGrath, 1991; Hackman, 1987; Gladstein, 1984). Most researchers generally have adopted an Input-Process-Output (I-P-O) framework, viewing team processes as mediating mechanisms linking team characteristics and team performance (Marks et al., 2001). The strength of team process’ mediating effect is particularly strong for conceptual teams (teams working on primarily non-routine tasks) (Stewart and Barrick, 2000).
Most ISD project teams are conceptual task teams, as ISD projects are relatively complex, dynamic, unstructured, and require intensive teamwork with joint responsibility for the end product (Levesque et al., 2001). Team process as the interactive activities between users and system developers will mediate strongly, if not completely, the relationship between user participation and team performance. This argument is also consistent with repeated observations in ISD literature that the lack of interactions or ineffective communications between users and developers often lead to incomplete or inaccurate capture of users’ information requirements (Abdul-Gader and Kozar, 1990; Gallivan and Keil, 2003), which are claimed to be a major contributor to many IS failures (Curtis et al., 1988; Dean et al., 1997).

Holding a knowledge perspective for this study, I propose knowledge process, or the knowledge-related interactive activities between users and system developers, as a main mediating mechanism that converts users’ knowledge into successful system design and development.

Hypothesis 2: Knowledge process mediates the relationship between users’ knowledge participation and ISD project team performance.

In addition, I identify two types of knowledge interactive activities between users and system developers as particularly important to an ISD process: knowledge acquisition and knowledge exploitation. Knowledge acquisition is viewed as a process that system developers extract application domain knowledge or information requirements from users (Byrd et al. 1992). Knowledge acquisition refers to the activities by which a team accesses and applies its members’ individual (either user participants or developers) knowledge for a team task.

Knowledge acquisition is important simply because getting the user requirements right might be the single most important and difficult part of an ISD process (Guinan and Bostrom, 1986). And a high quality knowledge acquisition process is possible only when users supply their knowledge and expertise via knowledge participation.

Hypothesis 2-a: The level of user participation is positively related to the intensity of knowledge acquisition activities in an ISD project team.

ISD is a collective process that inevitably requires team members work together to “agree to a common definition of what they are building, share information, and mesh their activities” (Kraut and Streeter, 1995; p. 69). Knowledge exploitation is a crucial process that integrates both users and system developers’ knowledge and expertise to achieve a better understanding of the project context and make a better decision for certain problem. In fact, the enthusiasm for using teams instead of individuals comes from the expectation that a team has a larger knowledge pool than any subunit and an effective utilization of such collective knowledge will produce a better performance than any subunits working alone.

Hypothesis 2-b: The level of user participation is positively related to the intensity of knowledge exploitation activities in an ISD project team.

TEAM PERFORMANCE

Here I adopt Faraj and Sproull’s (2000) suggestion of two dimensions of performance that appear essential for ISD project teams: effectiveness and efficiency. Effectiveness refers to how well a team met the project goals (Guinan et al., 1998; Faraj and Sproull, 2000), based on subjective comparison of team performance with other software teams on dimensions such as work quality, team operations, ability to meet project goals, extent of meeting design objectives and reputation of work excellence. Subjective assessment is used instead of objective measures in that the latter is problematic in the IS field (Henderson and Lee, 1992). Efficiency is usually measured by project cost and time-to-completion (Jones and Harrison, 1996).

In addition, I propose that team efficiency benefits more from knowledge acquisition, and team effectiveness benefits more from knowledge exploitation. This argument is consistent with teamwork and modern organizational management studies, as a better knowledge acquisition process will promote role differentiation among team members (Stasser et al., 2000) and thus improve the efficiency of the teamwork; while collaborative knowledge exploitation processes focus primarily on joint problem solving activities, in which the quality of decision-making is often the major concern (Stevens and Campion, 1994; Smith-Jentsch et al., 2001).

Hypothesis 3-a: Knowledge acquisition is strongly associated with team efficiency.

Hypothesis 3-b: Knowledge exploitation is strongly associated with team effectiveness.
SUMMARIES
In this study, I propose users’ knowledge participation as a construct to assess users’ knowledge contributions via participation. It is through supplying knowledge that users effectively contribute to an ISD development process. In addition, I identify two types of knowledge interactions between user participants and system developers, knowledge acquisition and knowledge exploitation, as main team processes that mediate the relationship between users’ knowledge participation and the ISD project team performance. Major implications of this study are that user participation may not be effective if participants cannot contribute knowledge to the ISD process, or their knowledge cannot be successfully acquired and utilized by the ISD project team.

REFERENCES