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Attention-based View of Knowledge Integration in Virtual Teams

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ABSTRACT

Knowledge creation and creativity are essential for organizations' success. *Ideation* is the first step towards organizational creativity and many of the best ideas are created when individuals work together or ideate on a topic (Santanen *et al.* 2004). With individuals being repositories of often heterogeneous and asymmetric information, knowledge integration becomes a critical process for creating innovative ideas. This research maintains an attention-based view of knowledge integration (Ocasio 1997; Simon 1947). For ideas to be integrated, they have to be exposed to brainstormers' attention and this paper investigates the extent to which channeling and directing individuals' attention through manipulation of visibility of the ideas and prioritization influence knowledge integration behavior of the individuals.

Keywords

Knowledge integration, attention, visibility, prioritization

INTRODUCTION

Ideation requires the creative efforts of the individuals (Santanen *et al.* 2004) and we consider integration of the ideas a critical convergent process during which individuals create ideas that are more integratively complex and adopt perspectives from ideas proposed by others (Baker-Brown *et al.* 1992). The reason why integration is desirable is based on the premise that no one individual has the knowledge to generate the best idea (Robert *et al*. 2008), and that integration of the ideas is necessary at the collective level (Okhuysen & Eisenhardt 2002) to enhance the quality of the group outcome (Santanen *et al.* 2004). Knowledge integration in this study is defined based on the well-studied concept of *integrative complexity* in social psychology. Integrative complexity is defined as a measure of the individual tendency to consider decision-relevant information from more than one perspective and to create conceptual connections among them; integrative complexity therefore consists of two phases of differentiation and integration (Baker-Brown *et al.* 1992).

ATTENTION-BASED VIEW AND KNOWLEDGE INTEGRATION

As discussed earlier, idea integration requires recognition of different perspectives and making conceptual connections among them (Baker-Brown *et al.* 1992). Assuming that individuals are motivated to do so, discovering different perspectives requires attending to ideas proposed by others. Thus for ideas to be integrated, they have to be exposed to brainstormers' attention. As attention is a scarce resource (Simon 1967) and the abundance of information disperses individual's attention, information technology interface can be used to channel and direct individuals' attention to a limited set of ideas.

Similar to the interventions used in prior studies to direct and switch individuals' attention (Okhuysen & Eisenhardt 2002; Santanen *et al.* 2004), this study uses *visibility of the ideas* and *idea prioritization* as two methods for channeling brainstormers' attentions via user interface to a selected set of ideas. As individuals can focus on a limited number of ideas at any given time, in an ideation setting, ideas compete with each other to get attention of the brainstormers (Hansen & Haas 2001) and visibility based on chronological order or the collective prioritization of the ideas are two methods used in this study for distributing attention among the ideas.

RESEARCH MODEL AND METHODOLOGY

As discussed before, for idea integration, individuals have to perceive different perspectives on the issue and they have to recognize the connection among them. To create the conceptual connection among the differentiated perspectives, individuals have to search memory for the relevant concepts. Focusing attention helps individual get cues and probe memory with those cues. When individuals search memory with the cues from ideas, related concepts will be activated and through spreading activation finding the connection among concepts becomes possible (Santanen *et al.* 2004).

Visibility of the ideas channels individuals' attention and facilitates members' exposure to different dimensions of the ideas. Since each idea that individual attends to provide a potential set of cues that can be used for probing individuals' memory (Potther & Bolthazard 2004), the number of potential cues increases as the number of visible ideas increases. Presenting too many ideas, however, will cause cognitive overload that disperses individuals' attention (Santanen *et al.* 2004). Cognitive load therefore is moderating the relationship among idea visibility and exposure to new dimensions. The construct of *idea visibility* is studied in the context of user interface design but can be independent of particular technology. Visibility is defined by the portion of the idea pool that is visible without extra effort (clicking or scrolling) and it is assumed that visibility plunges as the effort for viewing the ideas increases. As the ideas that are attended to become more diverse, the potential for integration increases because information diversity will by itself stimulate information integration (Homan *et al.* 2007). Diversity of the ideas also leads to increased diversity of cues which in turn facilitates retrieval of more information from memory and therefore, increases the possibility of the members realizing connection among different ideas' dimensions.

Prioritization works as a selection mechanism for choosing a few ideas for display among competing ideas. Prioritization is therefore less salient when the pool of ideas is small and is more salient when the pool of ideas is large. Prioritization also increases perceived integration efficacy because when ideas chosen based on the collective evaluation, individuals will value them higher. Since the actions individuals take is based upon their belief of the consequences of those actions (Simon 1947), this study proposes that individuals are more likely to integrate ideas when the perceived integration efficacy is high.

As group size (Gallupe *et al.* 1992) and information diversity (Santanen *et al.* 2004) have been proven critical factors in ideation research the experiment is run in groups with different sizes. Diversity of the ideas is also accounted for by using Latent Semantic Analysis (LSA) method (Landauer et al. 1998) to measure similarity of the ideas proposed during the ideation process.

For measurement of the dependent variable, the number of times a unique piece of information is referred to by a participant other than the individual who proposed it is counted (Robert *et al.* 2007). And the quality of the idea integration is measured at each occurrence (Okhuysent and Eisenhardt 2002) by using a modified 5-point scale version of the widely established 7-point scale of integrative complexity (Baker-Brown *et al.* 1992).

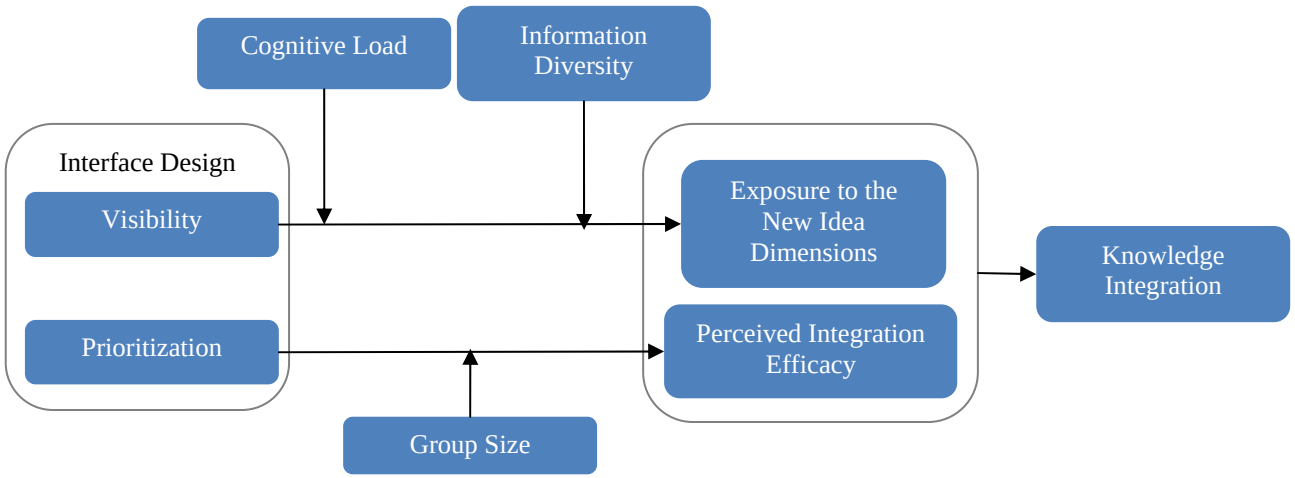

Figure 1: Research Model

CONCLUDING REMARKS

This study proposes that idea integration is curvilinearly associated with idea visibility; that is idea integration will happen more at moderate levels of visibility and happen less at both low and high levels of visibility. It is also proposed that visibility based on collective evaluation will lead to formation of higher perceived integration efficacy compared to visibility based on the chronological order; and formation of higher perceived integration efficacy leads to more idea integration. Based on the

prior research group size is expected to moderate the relationship between prioritization of the ideas and perceived integration efficacy such that prioritization will have more of an effect on perceived integration efficacy in larger groups than in smaller groups. A series of experiments will be conducted to test these hypotheses in laboratory. The experiment will employ 3*2 factorial designs (visibility: low, med, high; prioritization: yes, no). The findings of this study will contribute to the design of information technology to support knowledge integration in virtual teams.

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