

Essential Factors of Affecting Knowledge Sharing in Virtual Teams

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Abstract The research explores factors affecting knowledge sharing of virtual teams. Collectiveness and conscientiousness emerge as important socio-cultural enablers for avoidance of uncertainty and risk by team members, so technology assets, human networks, social capital, intellectual capital, and change management are identified as essential factors that have the potential to ensure effective knowledge sharing. More research is needed to validate the above results and deepen the understanding of the socio-organizational factors affecting value creation in industry in the future.

Key words Essential factors; Knowledge sharing; Virtual team; Human networks

1 Introduction

Organizations have become increasingly dependent on teams to carry out their virtue tasks. Effective teams rely on knowledge sharing and group cohesiveness to achieve better performance. In particular, the transitive memory system (TMS) and trust are two important factors that impact knowledge sharing in virtual teams. To date, there has been relatively little empirical investigation of the effects of knowledge sharing and group cohesiveness on team performance in technology virtual teams. This study proposes a research model based on knowledge sharing and group cohesiveness to examine team performance in technology virtual teams.

Most product and technology development is moving towards team-based structures, since teams are believed to increase individual commitment and performance (Ramesh and Tiwana,1999).Organizations rely on many kinds of collaborative groups to develop products, improve services, and manage operations(Cummings,2004),particularly relying on virtual teams to develop innovative technologies and products. Through interviewing the research materials in this field, we draw the main outline as following structure:

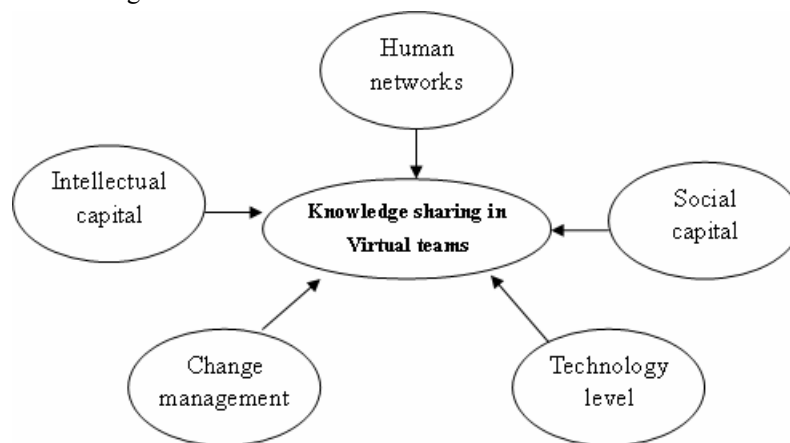


Figure 1 Factors Affect the Knowledge Sharing

2 Factors Research

2.1 Human networks

Team members have expressed concerns about the potential lack of face-to-face interactions during the virtual team lifecycle and in particular during the inception stage where the vision, mission, and goals can be communicated and shared. They have suggested the need to develop strong communication and collaboration protocols, including code of conduct, standards for availability and acknowledgement. Team collaboration through face-to-face communication creates stronger social relationships. These are difficult to establish in Virtual contexts due to the lack of emotional expressions. Therefore, team

members in a Virtual team are aware of the greater societal acceptance of face-to-face rather than Virtual interaction. Virtual communication such as email may form bridges between people (e.g. across different geographical locations) but it does not bond team members enough together. Construction relies heavily on ad-hoc relationships between individuals and companies. Therefore, the organization's knowledge values must be created through the network of relationships possessed by actors across projects. Strong social relationships, cohesiveness and collectiveness are perceived as critical factors necessary to create more opportunities for team members to participate in problem-solving and decision making.

2.2 Social capital

Issues related to trust, cohesion, motivation and satisfaction were raised in the team, and the sense of a political climate that engenders mistrust and competition emerged. Much of valuable knowledge is tacit and nurtured in small social networks. It was suggested that a “participatory” type culture, with affiant structure, open communication channels, and participation and involvement in decision making, enhances sharing of information and facilitates team cohesion, which in turn promotes respect and trust. This contributes to improving employees' overall satisfaction and job effectiveness. A culture that recognizes tacit knowledge and social networks results in the promotion of open dialogue between staff allowing them to develop social links and shared understandings, as outlined in Rezgui(2007)^[1]. The need to share tacit knowledge through face-to-face social communication has emerged from the research to foster social capital. This method is perceived to (a) break down barriers between employees and management, (b) establish stronger relationships among employees, (c) allow employees to reduce personal barriers and gain confidence, and (d) practice and improve their knowledge sharing skills. Support in converting explicit to tacit as well as tacit to explicit knowledge and moving knowledge from the individual level to the organizational and the inter organizational level (social networks) in construction sector helps promote knowledge value creation (C.Hopfe, N.Müller, C.Struck, J.Hensen,2006)^[2]. Social networks can be facilitated and nurtured by providing informal forums that can be assimilated into communities of practice. These are complemented with Virtual spaces to share knowledge (including sensitive information) protected by a role access control system. Employees need the creation of strong relationships and network ties across projects and organizations and avoid any conflicts so that to maintain a good level of relationship between team members. This emphasizes the role that social capital plays in creating organizational value underpinned by strong human networks.

2.3 Technology level

The technology level is an important factor in promoting a culture of knowledge sharing facilitated. The research results show the concerns about lack of social-oriented communication due to the tendency to completely rely on computer technology, which results in people feeling that they are usually “stuck” in front of their computers. This perception leads to KM fallacies or traps that directly influence the perceived functionality of technological applications for the support of KM initiatives (M.Huysman, D.de Wit, 2002)^[3]. As also reported in (Huysman and Wulf 2006), these fallacies relate to the tendency of organizations to concentrate too much on the IT role supporting KM practices, especially knowledge sharing, resulting in the “IT trap”. It is important to recognize that IT is not independent from the social environment, as it is not the technology itself, but the way people use it that determines the role of IT in supporting knowledge management practices^[4]. Therefore, the organization's success with the use of IT will not depend on IT skills, but the appropriate social context that can benefit from electronic communication technology (M.H.Zack, J.L.McKenny, 2009)^[5].

2.4 Intellectual capital

Issues pertinent to organizational learning, innovation, skills, and best practices were raised. These also include improved management competence and sustained motivation through adapted training and incentive/reward systems. While the organization has an overall good awareness of KM practices, there are some limitations that may have caused only a gradual improvement in KM over several years. These limitations revealed the following issues: Employees have expressed strong concerns about sharing their knowledge, arguing about confidentiality implications and Intellectual Property Rights (IPR) issues as they fear that their knowledge will be stolen or given away to others. Dominant bureaucratic (hierarchical) organizational structure in place is perceived to inhibit the development of skills and best practices amongst employees and managers who are of higher social rank, also leading to personal barriers. The support of communities of practice where members continuously increase their understandings of their collective tasks is essential. The results show that the organizations have provided spaces to support communities of practice such as formal training, resulting in efficiency in (a) connecting employees in general and (b) obtaining both tacit/explicit knowledge (best practices and innovation) and developing learning skills. An introduction of knowledge repositories within several

participating organizations (including project databases) has been welcomed, as these systems promote documenting and archiving of best practices across the organization. In fact, the coding and sharing of best practice is one of the common initiatives employed to initiate organizational KM, and knowledge sharing can take place only once a corporate knowledge repository is made widely accessible to staff. These have helped improve knowledge connectivity, access, and transfer across construction sites. An appropriate representation of the history of knowledge sharing activities may be useful since it allows human actors to better understand and refer to past interactions (Huysman and Wulf2006)^[4]. The respondents promoted their current practice involving recording useful research experiences and making these available through the company Intranet.

2.5 Change management

Change management may include technical and human issues. In terms of technical sides, interviewees expressed concerns about the invasive nature and the need to adapt to continuous technology introduction across projects in which they are involved, suggesting that research team members are affected more by the newness of the technology being used than of the team structure itself (which changes from one project to another). They pointed out that these problems of technology adoption could have a negative effect on individual satisfaction with the team experience and performance. Conversely, when team members are able to deal with technology related challenges, a culture of knowledge sharing is promoted. While the potential gains have been well articulated, concerns have been raised in that the necessary changes might be resisted. Therefore, to be effective, any KM program should be incorporated within a change management program that promotes a “participatory” type of culture while taking into account the team based structure and discipline-oriented nature of the construction industry.

The concerns about the necessary changes in the organization should be raised explicitly. For example, the organization can force most employees to follow the organizational obligation and norms as they may wish to avoid unexpected problems. One of the KM norms (knowledge owned and managed by individuals) is perceived to result in data redundancy and inhibit the efficiency of knowledge sharing across the organization. It is possible that they sometimes reflect skepticism about a low level of willingness to voluntarily follow this norm, though employees do not voice their concerns or express any resistance. This relies on the belief that they seem to value assigned responsibilities and follow mandatory policies or norms even if they are unwilling to do so. Conscientious people are likely to be responsible and reserved enough to express their request for changes. This may lead to gradual organizational development.

3 Conclusions

It has been argued earlier that technology assets, human networks, social capital, intellectual capital, and change management are important factors that underpin value creation activities. It is important that the construction sector migrates to a knowledge value creation culture where technology assets, human networks, social capital, intellectual capital, and change management must be blended successfully to ensure effective knowledge value creation. Understanding the social and cultural features, which influence knowledge value creation in the fragmented socio-cultural environment of the construction industry, is needed. As far as the research question is concerned, crucial cultural features emerging from the results include collectiveness and conscientiousness. Collectiveness represents collectivist culture and social relationship and conscientiousness represents avoidance of uncertainty and risk. Therefore, the organization's knowledge values must be created through the network of relationships possessed by people across teams and projects. A participatory culture helps develop trust, respect, and understanding for others at different levels in the construction sector. To sum up, the research has explored and identified distinctive socio-cultural features influencing knowledge value creation of Virtual teams in the construction industry. More research is needed to validate the above results and deepen the understanding of the socio-organizational factors affecting value creation in industry.

Acknowledgments

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