Effective factors on virtual communication in projects

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Abstract

Virtual teams are currently an important part of organizations. Communication in virtual environment faces the biggest difference compared to co-located environment. On the basis of an online survey from individuals working on Engineering, Procurement & Construction (EPC) or construction projects, this study evaluates the positive and negative characteristics of virtual communication in projects, and compares them to the existing literature. According to the survey, the respondents believe that the most positive impact to the project communication, is having at least one face to face meeting even in case of virtual teams, while the biggest challenge comes from time difference. The other important factors are trust, existence of communication tools and technological issues. This study provides suggestions for organizations to improve communication and enhance its quality in virtual environments as an important factor for project success.

Keywords:

Virtual teams, Communication, Project management, Virtual Communication, Face to Face

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Introduction

Enormous changes during last decades have leaded organizations from industrial cultures to knowledge based cultures and have made different business environments as well as society characteristics (Ebrahim, Ahmed & Taha, 2009). In line with such changes, association of organizations and their human resources in certain geographical areas has decreased and a new type of organization collaboration has replaced traditional methods. Sporadic and virtual human resources as an example of such changes has been accepted within organizations and leaded to virtual project management (Brown & Eisenhardt, 1998). However many researchers believe that distributed work into different locations or times is not a recent year's phenomena and there are many examples of such collaborations in past years (King & Frost, 2002; O'leary et al., 2002). However, with salient technological improvements in recent years

especially in Information Technology (IT) facilities, working together from a dislocated team with time differences became easier, faster and more efficient (Hertel et al., 2005).

Moreover, nowadays organizations are facing essential and unprecedented challenges in a complicated and continuously dynamic environment (Rezgui, 2007). All different types of businesses are going through globalization (Acs & Preston, 1997). Organizations in order to decentralization and globalization of their processes and as a response to such dynamic environments tend to use virtual teams as a new sort of organizational structure (Ebrahim, Ahmed & Taha, 2009). Popularity of virtual teams and virtual work is increasing and growing while the developments in IT technologies such as internet has accelerated these trends so that most of large organizations has already used some sort of virtual work (Cascio, 2000; Hertel etal., 2005).

"Good communication is crucial to successful project management" (Michalski, 2000). The importance of communication has always been stated by academic literature as Henderson et al. (2008) are mentioning that its importance remains till end as a necessary and critical competency to manage projects. There could not be a separation between project's communication management and stakeholder management based on the PMBOK, which calls it a bridge between different stakeholders that connects diverse cultural and organizational backgrounds (PMBOK 2008). Also there is an endless link between communication and tools and techniques used to manage projects (Pritchard 2004). Especially in recent years that more attention has been in the communication tools to manage virtual teams and many efforts has been made to enhance and improve communication together with numerous researches about effects of cultural and organizational issues on communication (Rico et al, 2009, Reed and knight 2009); in addition the communication process is required and is the main factor for managing stakeholders expectations (PMBOK 2008).

Usage of virtual teams for projects that require interdisciplinary competencies or transboundary skills might be beneficial and the key for validation of such projects if organizations manage to define effective strategies pass through the challenges of these usages (Ebrahim, Ahmed & Taha, 2009). A virtual team in a project spends same life cycle stages in comparison with classical teams to achieve its objectives. However, management methodologies for these teams can be similar; in other words co-located or dislocated project teams do not change the foundations of project works necessarily, the goals regardless of the teams are similar and the methods to reach those goals does not need to be changed. The only difference is based on communication approaches of team members to each other (Trautsch, 2003). Virtual working in projects because of uniqueness and temporarily of their tasks and the need for collaboration and cooperation between different specializations, face more challenges in comparison with operational virtual teams (Turner, 2007)

Virtual teams present many advantages, they let organizations to hire the most competent personnel regardless of their locations or limitations, also they help organizations to act and react faster to global competitions and they bring more flexibility for organizations and their personnel (Hertel et al., 2003; Bell and Kozlowski, 2002). These teams have the possibility to change or increase their main members based on environmental needs and new members or teams could be added to the main team rapidly and easily (Jarvenpaa & Leidner, 1998). Hornet (2004) positions the process of information distribution in

virtual teams to be better than classic teams through availability and sharing of information. This access to information leads to more participation in decision making process and generally more dynamic interactions in organizations. But on the other hand, there are many challenges for such teams regarding information distribution and communication, according to Chinowsky and Rojas's findings (2003) we can divide these challenges into two groups generally: 1.Technical challenges and 2.Managerial and personal challenges. Hertel et al. (2005) discuss another method for categorization of such challenges, first individual challenges such as isolation, lack of interpersonal communication and increase of misunderstandings; second, organization challenges such as problems in controlling team members, extra costs for required technologies for the team and information security; and finally social challenges such as social isolation and reduction of social communication.

Generally, the major part of these challenges are directly or indirectly related to communication, such as culture differences, time differences, unseen and unknown competencies, higher potential for misunderstanding, lack of face to face meeting and more needed time for members to build interpersonal relationships. Many of these challenges are also related to technical factors such as possibility of software breakdowns or unfamiliarity to certain IT tools for some employees (Blackburn et al., 2004; Bell & Kozlowski, 2002; Trautsch, 2003; Dube & pare, 2004). In each and every communication there is a significant amount of noise that decreases the quality and certainty of it (Shannon and Weaver, 1949). Communication cycle in virtual environment is longer and more complex compared to co-located situation, there is human-system and then system-human communication instead of human-human communication (Reed, 2010; Kerber & Buono, 2004).

Face to face meeting is the main element in the process of building common understanding in teams, there is no possibility for this type of communication in virtual environment or it is limited to a few times; accordingly the key difference between virtual teams and co-located teams is considered as their type of communication (Roebuck et al., 2004). Individuals in face to face communications lean on different aspects of communication, many messages such as tone and volume of the voice, eyes' movements, facial expressions, hands movements and body language. These pulses could be used as a guide for controlling and managing the communication as well as being a tool for transferring information (Warkentin et al., 1997). When a person reads an email, only a small part of the message's information will be delivered. This fact increases the potential of misunderstanding or confusion. Although email is still the most popular IT tool in working environments and this is probably because of its advantages such as the time to think about the message (for both sender and receiver) or sending one message to several people instantly (Trautsch, 2003).

Methodology

The basic idea for the online survey was to compare and assess the ideas on specified factors affecting on virtual communication. These factors were picked from important issues related to the communication and virtual teams' success within projects. Finally based on existing literature and the results of qualitative interviews, below factors were managed to conclude to be questioned in the survey. These factors are mostly divided into personal factors and technical factors.

The factors are professional culture, national culture, time difference, team spirit, having at least one face to face meeting, personal relationships, trust and availability of tools of communication. Some of these issues are considered as challenges of virtual teams and some are effective aspects of communication in organizations. The online survey was held among approximately 300 employees working on EPC or construction projects in Finland and 40 acceptable replies was received. The data later was analyzed by inferential statistics to prevent errors caused by low response rate and limited responses. T student test has been used by SPSS software for this purpose.

Results

Participants have been asked to share their comments about factors affecting communication in virtual working. Figure 1 shows the average results. As it can be seen having at least one face to face meeting has gained the most positive feedbacks and time difference has been seen to have the most negative impact on virtual communication.

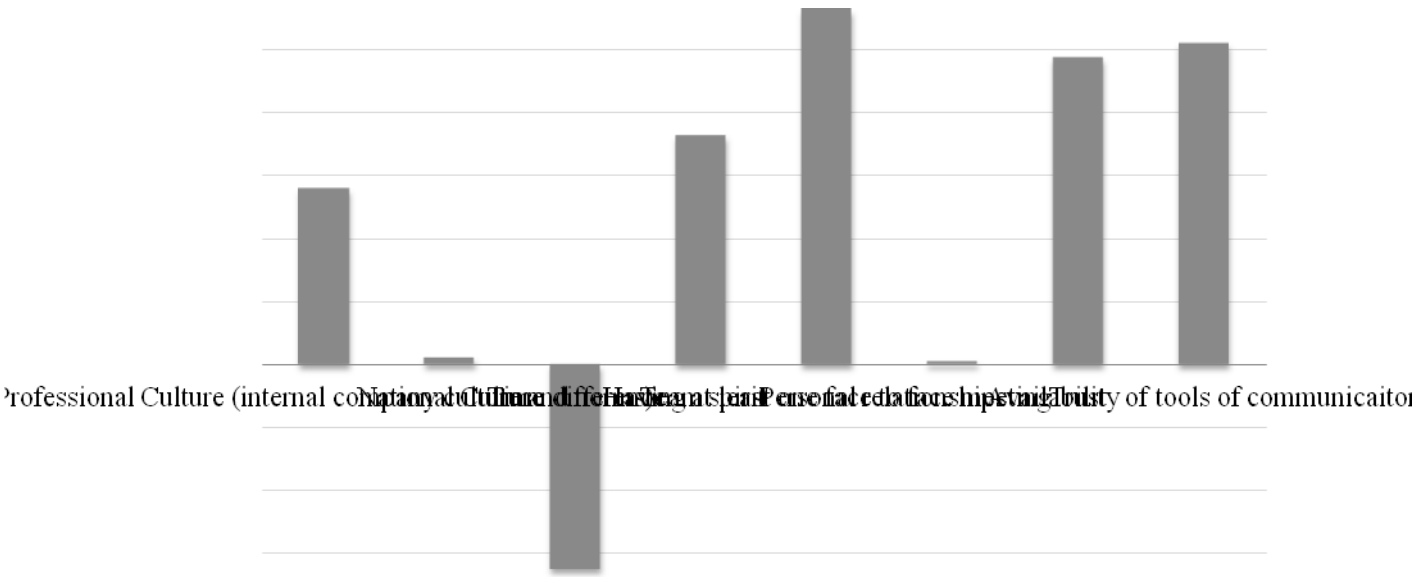

Figure 1: Attitudes towards impact of factors on virtual communication, Overview of answers

Face to face meeting as one of the most important tools to make interpersonal relationships and a media for informal communication is considered as the most positive factor to have better virtual

communication by participants, while availability of communication tools and trust are also considered as strong positive factors for having a good virtual communication, after these factors team spirit and professional culture also seem to have a positive impact on virtual communication. Although face to face meeting and team spirit as well as trust, gained positive attraction, but national Culture and personal relationships do not indicate any positive or negative impact on virtual communication. Time difference is the only strong negative factor for virtual communication in projects.

	Average	Standard Deviation	t Stat	t Critical	differentiation from mean
Professional Culture	1.39	2.30	3.68	2.02	Significant Difference
National Culture	0.05	1.96	0.16	2.02	No Significant Difference
Time difference	-1.62	2.11	4.61	2.02	Significant Difference
Team spirit	1.82	1.65	6.68	2.03	Significant Difference
Having at least one face to face meeting	2.82	1.74	9.81	2.02	Significant Difference
Personal relationships	0.03	2.59	0.06	2.03	No Significant Difference
Trust	2.43	2.55	5.72	2.03	Significant Difference
Availability of tools of communication	2.55	2.41	5.79	2.04	Significant Difference

Table 1: Significance test on general results

Using inferential statistical analysis to have more accurate results, we can see with 95% confidence, except national culture and personal relationships other factors affect virtual communication. These results do not seem to be different from Figure 1 where we could see the positive and negative effects. Time difference is the only factor with significant negative effect while professional culture, team spirit, having one face to face meeting, trust and availability of communication tools have positive effects. Table 1 shows the results of statistical t test to assure the reliability of the findings. It seems that there is a significant consensus over some of the factors related to communication between participants. Figure 2 indicates different attitudes towards communication between employees of different companies. Having one face to face meeting is the biggest concern for two companies while for the second company availability of communication tools seems to gain most attention. Individuals in company 3 seem to have positive expression on personal relationships and in the other companies they see it as a negative factor. These differences show the variety of expectations on the above factors to affect communication in virtual environment.

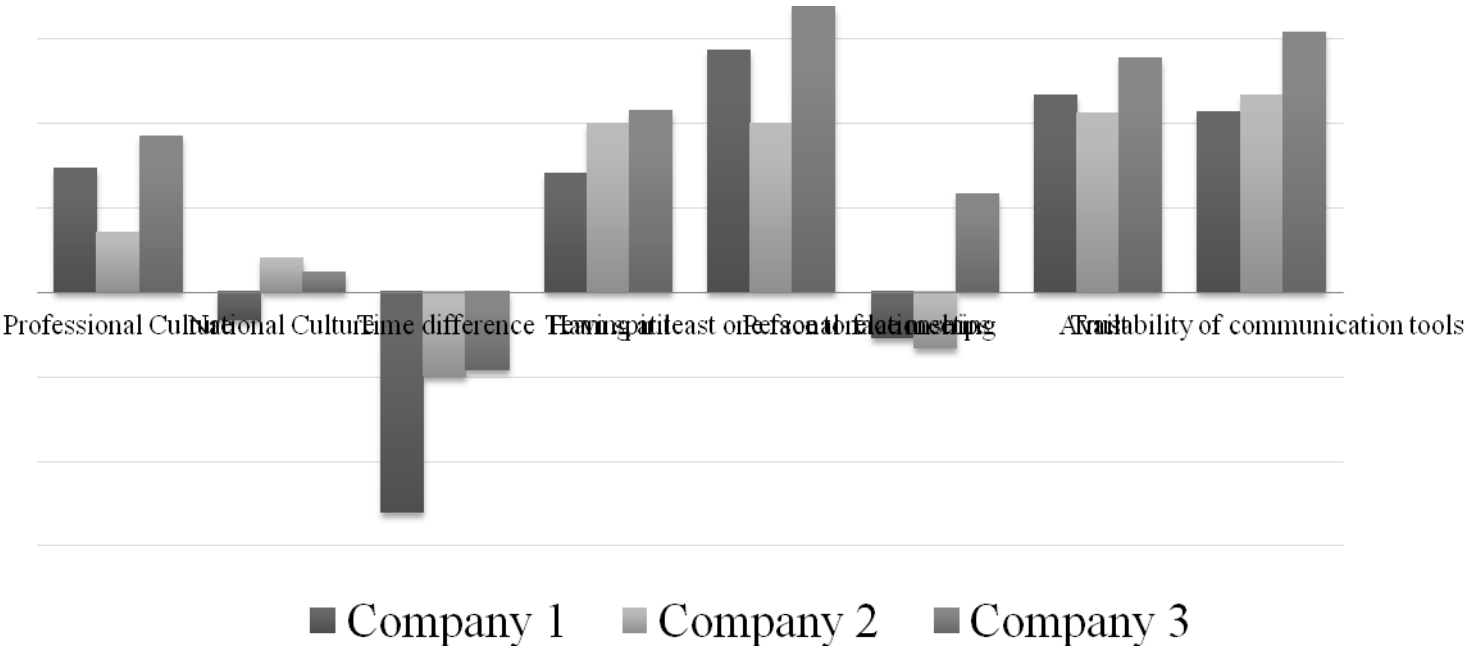

Figure 2: Attitudes towards impact of factors on virtual communication, viewpoints regarding company

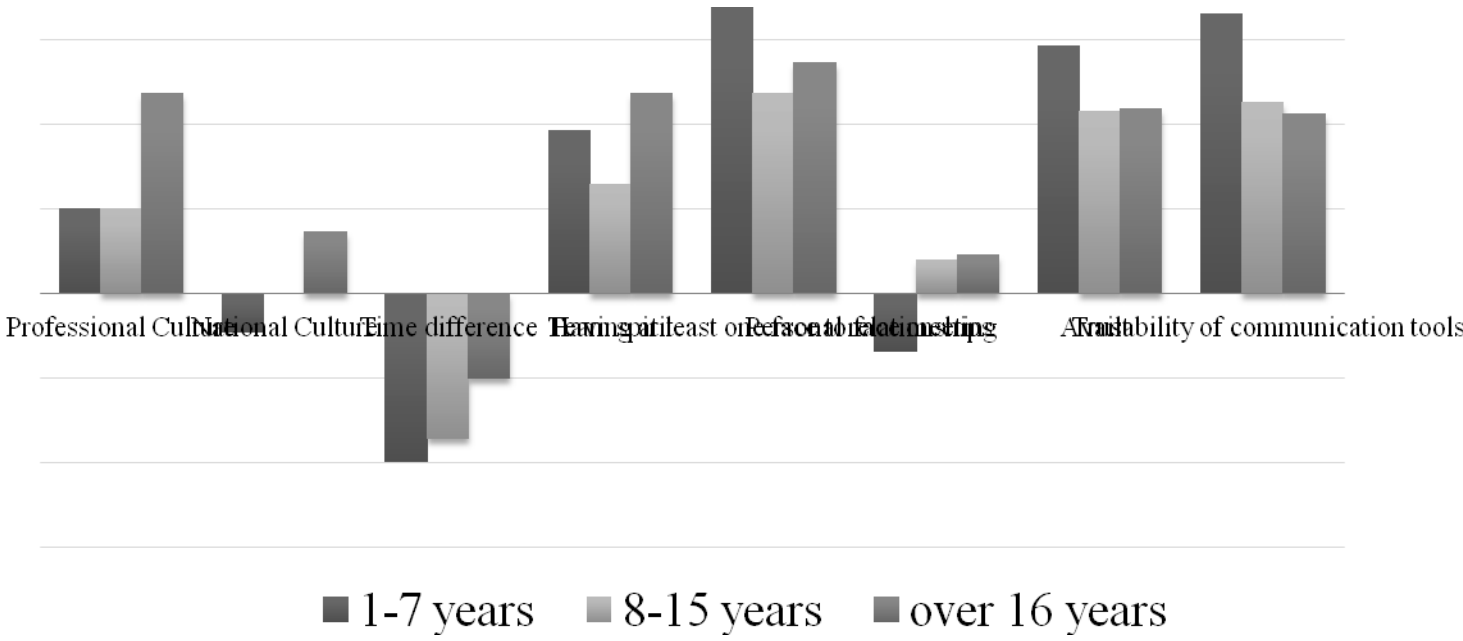

Figure 3: Attitudes towards impact of factors on virtual communication, viewpoints regarding work experience

According to experience, some of the perceptions may differ. The expectations on negative effect of time difference seem to be reduced with more job experience and the same trend applies on national culture. Nonetheless for individuals with more experience, professional culture gains higher score comparing to other groups and for employees with less experience, trust and availability of communication tools gain more attention than other groups. Figure 3 states the varieties between viewpoints of individuals with different experiences on the factors affecting communication in virtual environment.

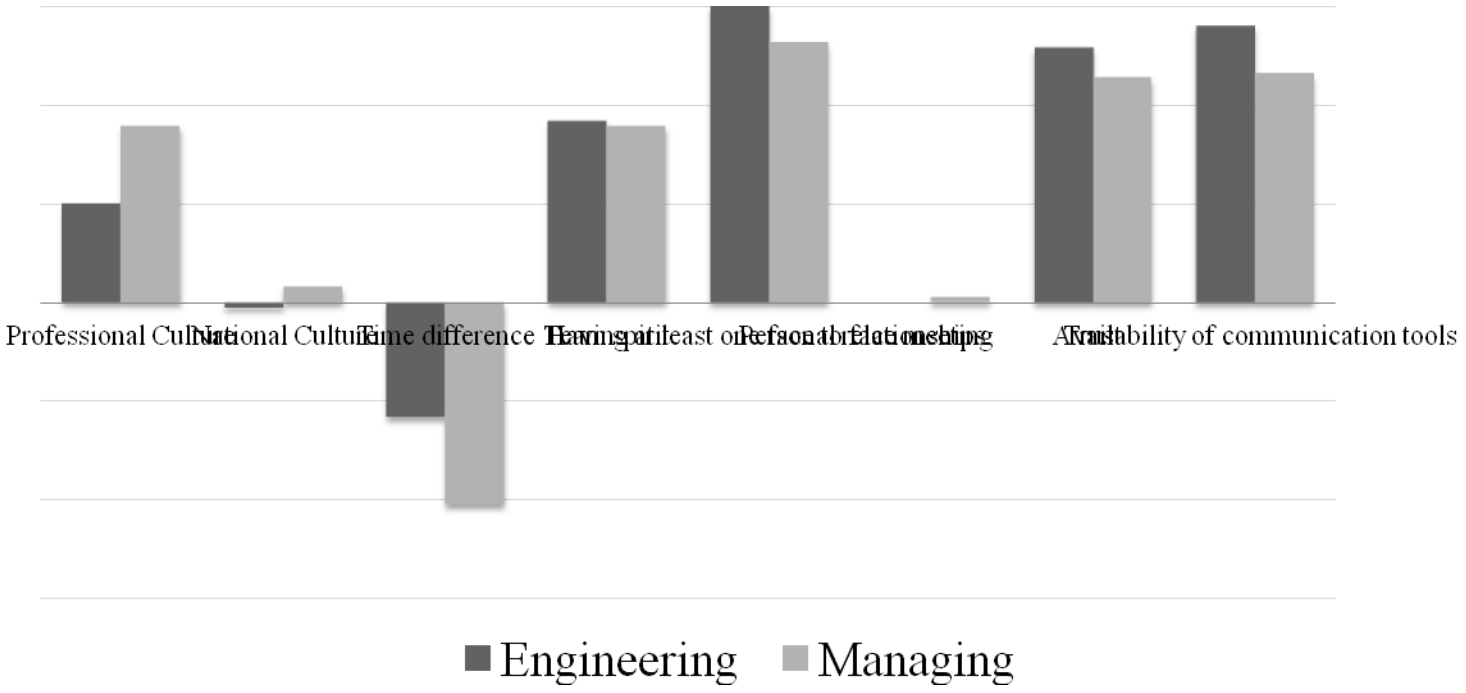

Figure 4: Attitudes towards impact of factors on virtual communication, viewpoints regarding job type

Finally Figure 4 shows the difference of attitudes between engineers and managers. As it could be seen, the prospects are mostly similar except time difference and professional culture where there is a significant difference among these two groups. In line with Figure 2 and Figure 3, we can see again that

although for each group of individuals, there are unique expectations on the defined factors to affect communication; the main overview is nearly similar for every group.

Conclusion

Virtual teams and working in virtual environment appears to use different process of communication and there are many factors that could possibly affect this type of communication. Whereas some factors may have same effect on co-located communication, there are some other factors that do not act similarly in virtual communication.

Face to face communication as a channel that is the major difference between virtual and co-located environments, gains a lot of consideration by participants. Difficulties to arrange face to face meetings in distributed working environment creates challenges but if at least one meeting is arranged it has very positive impact to the project. On the other hand trust and availability of communication tools as well as team spirit and professional culture seem to be important. Except communication tools, the other factors are related to human and personal matters as it shows the importance of personal factors in virtual environment, but personal relationships itself did not get a lot of attention. This might be because of pointing to a broader subject than the other factors or lower importance of this factors based on participants viewpoints. The above ideas may differ in co-located environment, as many of the mentioned factors typically would happen to receive more attention in virtual environment.

Comparing the viewpoints of participants based on their company, job type and working experience shows the similarities and differences of these attitudes. Mostly having one face to face communication seem to gain highest attention and time difference seems to be negative factor for every prospect. But on the other hand, there are some disagreements about some factors. These expectations and viewpoints may differ from exact impact of the factors since there is a possibility of mismatching human behavior and its attitude and perspective. But this differentiation helps us to understand better the different aspects of virtual communication in projects.

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