**FACTORS AFFECTING VIRTUAL TEAMS IN PAKISTAN CONSTRUCTION**

**INDUSTRY**

Khan Shahid Kamal Khan

Lecturer Abasyn University Islamabad Pakistan.

Department of Civil Engineering Abasyn University Islamabad.

Engrkhanshahid@gmail.com

**Abstract:**

**Increase of globalization and recent technology development has taken the business to a new orbit. Many of these changes have been driven by the dramatic continuing impact of the progress of information and communication technology (ICT). The concept of virtual teaming has been around for more than 20 years. However, it is the execution strategy of a larger scale multi- office engineering services began in construction industry is only from the past decade. This paper discusses the various impact factors affecting Virtual Teams in Pakistan Construction Industry.**

**Keywords: Virtual teams, globalization and information and communication technology.**

**Introduction:**

It is not only data processing and manufacturing industries that have moved to overseas. Increasing number of construction companies have to move the engineering design and development work to overseas countries. In today's global business environment, engineering cost is the most important interest for contractors and the owner. Most importantly, the owner wants a low-cost, and asks contractor for assuming more risk. Companies are beginning to consider different strategies in order to reduce the cost of capital projects. In addition, companies want that they should be able to release the final product early to market as much as possible. Therefore, benefits or revenue can be realized much earlier and thus, diverting more attention towards schedule driven projects. Around the clock work schedule for construction has been recognized as value-added to schedule projects that drive the global virtual engineering team (GVETs). Changes in technology, information systems, global economic conditions, social value, labor force statistics, the political environment, the production process have great influence on the products and services delivered by engineering team. Effects of these forces are severe, catastrophic, dynamic and unpredictable, on the organizations that are not read and cannot respond to it ([Anderson, McEwan, Bal, & Carletta, 2007](#_ENREF_1)) [1]. The organizations currently in ever dynamic and complex environment are faced with important and unparalleled challenges ([Cascio, 2000](#_ENREF_4)) [2]. All types of economic activities in globalization are moving in the direction to support the economy and the technological gap between developed countries and developing countries. It can be explained mainly by the difference of understanding between two sets of software technology and software environment among various countries ([Hertel, Geister, & Konradt, 2005](#_ENREF_11)) [3]. Consequently, this problem must be taken into account that the rapid development in the electronic information and communication medium in the past few decades resulted in distributing work faster, more easily and more efficiently ([Powell, Piccoli, & Ives, 2004](#_ENREF_19)) [4]. In response to globalization, increased de-centralization and business processes, numerous firms have a common goal that is to increase the organizational output on lowest cost. They have responded to the dynamic environment, geographical boundaries and cultural boundaries by introducing a virtual team work, joined by communication technology across organizational boundaries. Virtual teams are gaining popularity ([Bergiel, Bergiel, & Balsmeier, 2008](#_ENREF_3)) [5]. Due to vast improvement in information technology and ease of internet access, the communication around the world has been made possible and thus many companies are now showing great interest in virtual teams ( [Kankanhalli, Tan, & Wei, 2007](#_ENREF_12)) [6]. Information technology is providing the foundations for new reforms in organizations. Virtual teams, represents one such reform that has provided the construction companies with higher level of flexibility and responsiveness ([Fan, Suo, Feng, & Liu, 2011](#_ENREF_8)) [7]. Virtual teams are important mechanism for organizations that are trying to take advantage of the scarce resources across geographical boundaries ([Schiller, Mennecke, Nah, & Luse, 2014](#_ENREF_20)) [8]. But comparing in today's competitive global economy, organizations can create virtual teams of talented people that will enable them to respond quickly to changes in the business environment. This type of function in organizations will provide the advantage in this competitive environment ([Clear & MacDonell, 2011](#_ENREF_7)) [9].

**Methodology:**

Various techniques have been used in this study. These techniques include interviews, case study research method and analysis of the content.

**Data and Results:**

“Fig 1” shows the summary of the data collection for this research. 40 interviews were conducted for this research including the case study interviews. The result of these interviews showed that 20% of the interviews were from owners, 20% were from contractors, 32% were from consultants and 28% were from designers.

*Types of Participants*

“Fig 2” shows that the most of the interviewed participants (58%) had more than five year’s experience working with virtual teams. 35% of the participants had the experience of 1-5 years working with the virtual teams and only 8% of the participants had less than one year experience of working with these types of teams.

*Personal Experience with Virtual Teams*

87.5% of the respondents argued that the home country rules, regulations and policies do not limit the use of virtual teams. Only 12.5% of the participants said that use of virtual team gets limited by some countries policies and regulations

“Fig 3” shows that 37.5 % of the respondents indicated that the projects performed by virtual teams have the same productivity as when performed by conventional teams. 32.5% of the respondents observed that the productivity increases whereas 30% were of opinion that productivity decreases.

*Engineering Productivity Impact*

It was asked to virtual team members that do they find it difficult to fulfill the requirements of virtual team. 70% of the interviewees responded that they do not find any difficulty in fulfilling the requirements of the owners with the virtual teams whereas 30% of the respondents said that they have some difficulties in satisfying the owners completely in virtual environment

It was asked to the members of the virtual team that if they encounter language problems during communicating with foreign team members. 93% of the participants said that language is not a barrier as English is used as a common language to communicate between the members. 7% of the participants said that language does cause some problems but it is extremely rare.

There was a question asked to the participants that whether technology is creating any hurdles in the use of virtual teams. According to “Fig 4” most of the participants (82.5%) said that the communication and collaboration tools are getting better day by day and technology available for communicating, data transferring and information sharing is quite suitable whereas 12.5 % of the participants said that technology creates problems few times. Whereas only 5% of the participants argued that suitable technology is not available for the virtual teams.

*Technology as a major Concern for Virtual Team*

In today’s virtual environment the project manager or a leader does not only have to deal with the technical difficulties of a project, but it also requires managing the relationships between the team members coming from different cultures and nations. It was found that 75% of the respondent thinks that virtual teams do enhance the amount of time spent on any project by the project management team, whereas 25% of the participants think otherwise.

As members of virtual teams are not present at the same location thus managers have the difficulty in communicating with these team members. In communicating with the fellow team members in dispersed team, electronic collaboration and communication tools plays a pivotal role. So managers must have multiple options of communicating with his team members.

It was recognized from the literature review that trust is one of the very important factor for the successful implementation of the virtual team. “Fig 5” shows the result for the problem of trust in dispersed teams. 67.5% of the respondents said that there is less trust among the team members of the virtual teams. It was interesting that 30% of the respondent felt that it does not make any difference. Whereas only 2.5% of the participants said that there is increase of trust in virtual teams and its members.

*Impact of Virtual Teams on Team Trust*

There was a section in the interview question that focused on the tools used for virtual team implementation “Fig 6” shows that email is one of the most popular tool used by the members of the virtual team with 100% usage, whereas web conferencing, video conferencing, project specific websites, virtual private networking (VPN) and file transfer protocol (FTP) were accounted for 55%, 70%, 42.5%, 30%, and 42.5% by the respondents respectively.

*Tools used for Virtual Team*

**Conclusion** **and** **Recommendation:**

This research concludes that although development of trust among team members of a virtual team is difficult but still it counters this aspect by the increase in productivity, 24hours and 7 days time space and making best use of the skilled and experienced person in his field.

It is also revealed that although technology is available for developing centralized work space and communicating and collaborating with each other but it is not fully utilized and there is a need to teach the team about the tools available in the market to make best use of virtual teams.

On the basis of this study it is recommended that virtual teams are the requirement of today’s competitive construction market. So it should be made sure that full potential of experts should be utilized from all over the world by making significant improvements in use of information technology, developing trust and countering cultural disparities.

**Acknowledgement:**

The author would like to acknowledge the support of the Civil Engineering department at “Abasyn International University Islamabad Campus” in pursuit of this research work.

**References:**

[1] Anderson, A. H., McEwan, R., Bal, J., & Carletta, J. (2007). Virtual team meetings: An analysis of communication and context. Computers in Human Behavior, 23(5), 2558-2580.

[2] Cascio, W. F. (2000). Managing a virtual workplace. The Academy of Management Executive, 14(3), 81-90.

[3] Hertel, G., Geister, S., & Konradt, U. (2005). Managing virtual teams: A review of current empirical research. *Human Resource Management Review, 15*(1), 69-95.

 [4] Powell, A., Piccoli, G., & Ives, B. (2004). Virtual teams: a review of current literature and directions for future research. *ACM Sigmis Database, 35*(1), 6-36.

[5] Bergiel, B. J., Bergiel, E. B., & Balsmeier, P. W. (2008). Nature of virtual teams: a summary of their advantages and disadvantages. Management Research News, 31(2), 99-110.

[6] Kankanhalli, A., Tan, B. C., & Wei, K.-K. (2007). Conflict and performance in global virtual teams. *Journal of Management Information Systems, 23*(3), 237-274.

[7] Fan, Z.-P., Suo, W.-L., Feng, B., & Liu, Y. (2011). Trust estimation in a virtual team: A decision support method. Expert Systems with Applications, 38(8), 10240-10251.

[8] Schiller, S. Z., Mennecke, B. E., Nah, F. F.-H., & Luse, A. (2014). Institutional boundaries and trust of virtual teams in collaborative design: An experimental study in a virtual world environment. *Computers in Human Behavior, 35*, 565-577.

[9] Clear, T., & MacDonell, S. G. (2011). Understanding technology use in global virtual teams: Research methodologies and methods. *Information and Software Technology, 53*(9), 994-1011