Virtual Team Management

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Introduction

With the development of globalization and the advancement of the Internet and information technology, more and more project teams have embarked on a path that is completely different from the traditional way – virtual team. Generally, the term "Virtual Team" refers to a group of people who do not work together face-to-face but collaborate through web-based communication tools in forms of audio, video and letter(e-mail). Miles & Snow (as cited in Warkentin & Beranek, 1999) defined the virtual team as "an evolutionary form of a network organization." (p. 271)

Thanks to the rapid development of information and communication technologies in recent years, the virtual team have become a popular choice from international groups to start-ups. Even traditional project teams will inevitably introduce elements of virtual teams. The key value of the virtual team is its ability to engage and connect geographically dispersed workers which can reduce the cost of global collaboration and increase its speed and adaptability. It can gather the talented people needed by the project without considering the geographic difficulty. The virtual team could be much more valuable in the context of IT project since most of the workload of IT project can be finished online and many software engineers, programmers and IT companies are willing to take outsourced and offshore work (El-Sofany, H. Alwadani & A. Alwadani, 2014).

However, there are still many factors that affect the efficiency and usability of the virtual team. For example, as the geographic range of the collaboration expanded, cultural diversity could become an essential factor that brings some unexpected "surprises" to the

team – both beneficial and harmful. According to Dávideková and Hvorecký (2017), the team integrated by people with multiple cultural backgrounds can have more creativity that leads to better alternatives. However, the barrier of language could cause misunderstanding. Members who do not speak the dominant language in the team may decrease their participation which is obviously a waste of efficiency and talents. Also, some unintentional offenses against religious and cultural taboos may provoke conflicts within the team which are harder to deal with since there is no face-to-face chance for managers and members to solve it (Dávideková & Hvorecký, 2017). Moreover, direct communication, creating team dynamics and trust and human resource management in the virtual environment could be the critical problems faced by the virtual team. Therefore, virtual teams have higher requirements for managerial leadership in the ever-changing environment (El-Sofany, H. Alwadani & A. Alwadani, 2014). Additionally, Martinic, Fertalj and Kalpic (2012) pointed out that changes and unplanned situation are more likely to happen in the virtual environment while traditional project management has limited capability to deal with this issue. They emphasize that there is no current project management methodology can fit the requirement of the virtual team, but they proposed a methodological framework to support virtual team management by "iterative approach, adequate planning, monitoring and control, supported with intensified utilization of software tools and information and communication technologies." (p. 702)

Methodology

In this paper, there are four reliable sources and two official websites used to find the technical tools for virtual team management in terms of communication, leadership, visualization of monitoring, and management methodology. Among them, the communication

tool is both tangible and intangible, while tangible through informatic communication technology and intangible through communication skills. Visualization of monitoring is tangible through software or website. Leadership and management methodology are intangible as a managerial tool. As for communication, Dávideková and Hvorecký (2007) evaluated the drawbacks of the styles of communication that are commonly seen in the virtual team, while Warkentin and Beranek (1999) stressed out the effect of virtual team communication training on group interactions and discussed the process and outcome of the communication training. As for leadership, El-Sofany, H. Alwadani & A. Alwadani (2014) conducted a survey to find out the most important skills for the manager of a virtual team. As for the visualization of monitoring, this paper focuses on two tools that can contribute to project management of virtual team – GitHub and Pivotal Tracker. As for management methodology, Martinic, Fertalj and Kalpic (2012) proposed a framework for virtual team management combining traditional and iterative approaches associated with intensive utilization of tools and technologies.

<div align="center">Discussion</div>

Communication

Since all the communication of virtual team is based on informatic communication technologies, the technology itself and factors connected to it can have a significant influence on the performance of virtual team (Dávideková & Hvorecký, 2017). For instance, the technological proficiency of team members, the incapability of tools or systems used by different team members, technology failure and electricity breakdown or outage. Dávideková and Hvorecký (2017) pointed out that incapability of tools or systems used by individual

team members can cause significant problem in task execution. They further discussed the inherent drawbacks of information transfer and distribution in virtual teams – delay and omission. Though the issue of slow speed of data transfer and insufficient broad bound can be eased by asynchronous communication, the delay of task completion is inevitable compared with synchronous communication. They also emphasized that the selectivity and omission of the distribution of information between members can lead to unnecessary misunderstandings, inconvenience in work communication, and conflicts within the team (Dávideková & Hvorecký, 2017).

Excluding the problems caused by technology, the lack of soft skills of team members will also have a serious impact on communication. According to El-Sofany, H. Alwadani & A. Alwadani (2014), soft skills can refer to the skills that relate to "leadership, motivation, group dynamics, interpersonal communication, culture, and ethics." (p. 30) One of the critical soft skills among them is the ability to deal with the cultural and religious diversity of the virtual team. Dávideková and Hvorecký (2017) concluded that cultural differences could result in problems of the formation of team cohesion, the conflict of teamwork, and the destruction of mutual trust among team members.

When it comes to dealing with the technical problem, especially the delays and omissions caused by asynchronous communication, it is hard to turn all communication of virtual team into synchronous communication since the cost of broad bound could be expensive for large project's data transfer. Also, for team members located in different time zones, the time difference will be a significant obstacle to synchronous communication. However, virtual teams can still combine both asynchronous communication and

synchronous communication to reduce the negative impact of the delay. Warkentin and Beranek (1999) believed that synchronous meeting can be spontaneous for ideas to be exchanged with little structure while asynchronous meetings are assigned and structured to rely more on documents and data exchange among team members. Considering the rapid growth of synchronous communication technology in recent years, the combination of both synchronous and asynchronous communication has become the critical and widely accepted tools.

For soft skills, Warkentin and Beranek (1999) emphasized the importance of the training of communication skills for virtual teams. There are three important parts for the training -- team cohesion creation, the back-up plan for drawbacks of electronic communication and network communication etiquette. Firstly, they believed that the team should set aside time for the team members to know more about each other in the first few synchronous meetings. Secondly, all team members should be aware of the potential problems of online communication and be familiar with the mechanisms for addressing these problems, for example, sending an email about meeting content to those who absent the meeting. Finally, members should be trained to know how to properly communicate online, be aware of the cultural and religious taboos, and respect the differences (Warkentin & Beranek, 1999).

Leadership

As mentioned in the communication section above, the virtual team is facing more challenges than traditional team include but not limited to communication obstacle of multicultural background team members, sense of isolation, team never meet face-to-face

along with the trust crisis. Ingason and Jónasson (as cited in El-Sofany, H. Alwadani & A. Alwadani, 2014) argued that the project manager for a virtual team should have both ability in hard(technical) skills and soft (as defined above in communication section) skills. They proved that although technical skills are important for managers, a strong focus should be given to leadership and strategy since IT development is very rapid and as a consequence, any prediction about It projects and technologies are very difficult. Technical skill along is no more sufficient enough for the success of any IT projects in the distributed and complex workplace. Therefore, the managers for the virtual team must acquire the soft skills and leadership ability to lead the team to achieve measurable organizational value.

To find out which kind of skills is the most critical one to the leadership of virtual team management, El-Sofany, H. Alwadani and A. Alwadani (2014) conducted a survey of 31 participants, 24 male and 7 female, with high educational level. Only 14 of them had cross-cultural training. The average of VT (virtual team) projects that the participants participated was 6-10. As a result of the survey, the three most frequently occurred problems are different public holidays, time difference and lack of trust; the three major challenges are language differences, difficulty seeing the whole picture, none or few synchronous face-to-face meetings; the three most important competence are leadership skill, self-control and conflict & crisis handling. Through the survey findings, El-Sofany, H. Alwadani and A. Alwadani (2014) stated that both soft and hard skills are necessary for IT project manager to lead a virtual team. They concluded that the most critical competence for the leadership of virtual team is the ability to set a clear objective, the leadership and project management skills of managers, communication, reliability and efficiency, teamwork and quality management.

Visualization of monitoring

Another problem for the virtual team is for monitoring since all members are geographically distributed which provide space for "free riders". Therefore, visualization of monitoring is a crucial tool to help manager keep on track with every team member and find the potential problems within the team. In the paper, there are is a software and a website recommended as a powerful tool for distant monitoring – GitHub and Pivotal Tracker.

GitHub is a famous website well-known for its web-based code hosting service. As a productivity tool, it is popular among all programmers. GitHub has a special feature that let project managers and developers coordinate together to update their work which make projects stay transparent and on schedule (GitHub, 2019). It has a project board that can visualize all the work and check the planned and in-progress work easily. Through GitHub project management feature, every team members' code commitment can be visualized and monitored by the manager without face-to-face review.

Pivotal Tracker is a software developed for project management that contributed visualization of team process monitoring by sharing a view of team priorities and process that fosters collaboration and using dynamic tools to analyze progress. There are three main features of this software, its shared backlog makes priorities clear which help team visualize scope and focus on work; its guided iteration planning helps virtual team break down and prioritize projects into manageable parts; its shared and clear teamwork view can help every member know real-time status of the project and clarify the responsibility (Pivotal Tracker, 2019). The tool can bring visualized efficiency to the whole team.

With the help of these visualized monitoring tools, the efficiency and quality of

teamwork may increase since they know their work is "visible" to everyone. Additionally, the symmetry of information brought by visualization ensures that team members can get the latest progress of the project at the lowest cost and fastest speed to provide quick and accurate response.

Management Methodology for Virtual Team

Martinic, Fertalj and Kalpic (2012) stated that there is no existing management approach is entirely suitable for project management involving virtual team due to the uniqueness of the virtual team. Therefore, they proposed a methodological framework for virtual team project management that combines the most suitable elements of existing methodologies based on iterative approach.

According to their research, the project start-up and close-out of the new framework do not have a significant difference with the traditional methodology. The only thing that needs to focus on is that video meeting is strongly recommended to instead of face-to-face meeting. They stressed the process of development is consist of a sequence of iterative phases that each of them includes iterative planning, iterative execution, iterative review and customer review. During iterative planning, the current plan should be modified, confirmed by the team which requires a lot of communication. Therefore, an iterative plan can reduce the delay caused by asynchronous communication. After iteration planning is finished, the work on project deliverable production starts, processes should be standardized to reduce the need for frequent synchronous interactions. The mechanism must enable each team member to check the project environment and the latest upgrade of the project status on their own and upgrade their work to other team members when they finished. Through this way, the absence

of synchronous communication can be made up of asynchronous communication. As a result of their research, they conclude that "at the beginning of the project, when mutual trust and team cohesion is still being established, iterations should be shorter, and as the project progresses, duration of iterations can be prolonged." (p. 705) As for the iterative review, different from the traditional method, the review keeps happening throughout the process of the project. Work performed and deliverables produced are discussed among the entire project team in the date assigned synchronous meetings. As for customer review, it is the method that involves the customer in the routine synchronous meetings. However, for some reason, the customer may not be able to take part in the review frequently. Also, customer inspection may follow the result of the internal iterative review or may not follow. The customer's opinion should always be considered as the priority under any circumstances. There should be at least one customer review before the final deliverables come out.

Although this may not be the best way to manage the virtual team, however, they believed that "the proposed approach decreases the need for frequent synchronous interaction, while increasing of the project awareness consequently results in a more efficient project execution." (p. 706, Martinic, Fertalj & Kalpic, 2012)

Conclusion

Overall, the virtual team as an emerging project management approach is becoming a popular choice for more and more companies and projects, especially in the IT industry, by virtue of its ability to break down geographical limitations. However, it still has communication and monitoring issues. How to lead and manage virtual teams is also a new challenge and attempt for leaders. This paper brings a preliminary introduction to the

management of virtual teams, which could help companies find the technical and managerial

tools for them, by summarizing the results of some experts' researches.

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