

Virtual Teams and their impact on Project Quality Management

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Abstract

How does the advent of Virtual Teams impact the project's Quality Management? In this digital age, technology has increased our ability to interconnect across the country and the world with the use of Virtual Teams. These teams allow folks to be constantly connected to facilitate collaboration and leveraging expertise. Project quality is a constant balancing act between the quality of the product or service and budget, scope, and time. With the importance of quality being in such a trade-off balance, how do the pros and cons of virtual teams add to success or increase the struggle of a project throughout its life cycle?

Introduction

This paper highlights the significance of maintaining a balance between the quality of the project and the role of the quality of the project and how the information age of virtual teams makes a contribution in this regard. Quality has a solid definition. We'll analyze the importance of virtual teams, the new challenges they face, and how the two of them combine.

What are Project Quality Practices?

PMBOK says- [Project Quality Management](#) is the procedure and activities that are carried out by an organization that applies principles, objectives, duties, ultimate goal in order for the project to meet the requirement for which it was taken up. The quality of the project continually maintains balancing acts among the quality of the product or service, scope, budget, resources, risks, and schedule. Of "the processes and activities of the performing organization that determines quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken" (Riley, M, 2008). The standard of the project is a constant balancing act between the quality of the product or service, budget, scope, schedule, resources, and risks (Gilson, Lucy L., et al., 2015). The chart below shows that each section has a particular role in assisting in our overall completion of the project.

What is a Virtual Team

A virtual team implies a certain category of workers working in connection with their presence at different distant locations; they are dispersed and work by using communication and information technology. In order to accomplish any particular project, the trend of the virtual team is prevailing. In this regard, the advancement of technology in terms of Wi-Fi, smartphones, and gadgets has further strengthened its role. Flexibility is a clear advantage in the working of virtual teams, but communication cost is an important element as communication takes place through the modes of conference calls and video conferencing. The virtual teams work to achieve the same objective. Advancements in technology have given virtual teams global access, and they also have bigger challenges (Danton, 2006). The teams can work across the boundaries. This has further signified the importance of virtual teams in an organization.

Virtual Impacts to Quality

The increasing demand for communication between virtual team members and the stakeholders can impact the quality of the product that is being produced. Mutual understanding is also of utmost importance regarding team management and quality practices that lead toward the final completion of the project according to the standards of quality mentioned in the statement of work (Khalsa, 2011).

The structure of a virtual team was laid in the Australian area of New South Wales for the Police force to initiate a project named “Country Capital Works Program” (CCWP). The project tenure was three years, with a cost of more than \$20.5 Australian dollars. It aimed to develop the existing support for the radio systems of the police force. The primary objective of forming a virtual team structure was the implementation of the project as rural New South Wales had long distances, which created hindrances for a collocated team from the headquarters of the Police based in Sydney to maintain proper liaison by keeping the engagement of other members of project based in the distant area. The virtual team organization elaborates on the concept of virtual teams in the project. Virtual teams work in a team more effectively and with close collaboration despite challenges faced by them, provided a skilled manager takes up the project to find the solution to the problems linked with direct person-to-person contact and its managerial aspect. Problems can come if it is imperative for any established organization to develop a virtual team out of the personnel already existing in the organization who are under the obligation of daily routine duties inside the organization.

Scope Management and Project Integration

The CCWP carried on its operations as an established business case that defined the set of sub-projects for every part. The allocation for each subproject was one year. In this regard, different subprojects ran simultaneously. Generally, subprojects were implemented independently in different

RNS areas, but some specific subprojects were pooled at RNS units for efficient completion and adding value for money (Johnson, Heimann, et al., 2001).

For a comprehensive understanding of the project, a workshop was organized for center-based managers and also made them aware of the managers of collective and individual assignments. With the start of every year of CCWP, distant area teams led by the center managers were given the authority to enhance subproject items by consulting users with whom the center manager was in close contact as compared to central management. The focus was laid on the allocation of budget and time limitations before the steering committee formally accepted subprojects. In the formal acceptance of sub-projects by the steering committee, each of them was assessed in terms of corporate requirements in collaboration with country teams. The assignments of distant teams include the development of a work breakdown structure. A thorough analysis of the WBS enabled team members to define a number of tasks for subprojects. All of them were provided with the proper templates, and the necessary guidelines were also given in this regard. Further, the whole project was presented, which consisted of work related to project integration, improvement of subprojects and pooling appropriate subprojects, describing milestones, and prediction about cash flows. The cash flows and milestones determined the grounds for project-related decisions and the basis of the cost (budget) to evaluate the overall performance of the project. This overall progress of the project was constantly evaluated for the targets by using periodical reports, discussions with team members, and emails.

There were several areas in which changes took place during the CCWP, including technology-based policy requirements and the government's radio strategy. These changes made a few important rectifications in the capacity of the overall project. However, in a lot of cases, virtual team members couldn't comply with the agreed principles to take up changes in the opportunity of the subprojects allocated to them. An official part of the project was BMP (Benefits management system). It provided a comprehensive process, whereas the project team could show the business advantages. A number of workshops were conducted, and business steps were mentioned. The BMP was initiated in country centers, where the advantages of the current project were assessed, verified, and recorded. Before the commencement of BMP measurement, skills were needed for the team members to gather data or obtain relevant data from the current information, update data, and document data as a standard practice. They were required to communicate with their local business managers with all the stakeholders to ascertain the advantages (Astashkina). In this regard, local staff turned out to be useful. This certainly was an advantage for virtual team members.

Time Management

Every single aspect of the CCWP was thoroughly analyzed and assessed closely while planning the schedules and milestones of the project. These schedules were specially made to help multiple simultaneous projects and authorize country teams. In PEP, the project management scheme was introduced. However, in a virtual team environment, both setting milestones and scheduling projects

proved to be difficult. This really was a complicated thing in a large number of subprojects (above 230) with some engineering limitations and the requirement of completion in the critical time period. Although the overall time period of the CCWP project was three years, some sub-projects were required to be completed during each year, and this really was a challenging task. During the early months of every single year in the project, project milestones were used to evaluate the beginning of critical activities of the project, and by the end of every milestone, they were used to check the accomplishment of work. The progress of some activities was evaluated through an intermediate monitoring point. Further, all the subprojects that had some problems were under constant monitoring in order to find and resolve issues instantly.

The project milestones and schedules were introduced at the project stage. They guided the RNS units in the scheduling of subproject work. It also adjusted project work on RNS units. Whereas country teams owned the work, they handled the project with minimal control through effective planning and implementation. This engagement and enthusiasm of country teams expedited the process required in planning approvals for some work based on site development due to country team members' good relationship with the agencies of local government in the area.

Cost Management

As per previous discussion the subprojects were implemented on their own in different RNS units in order to get time value of money and to accomplish some projects effectively. Further, budget allocation was taken into account before they got approved by steering committee. Cash and milestones determine the grounds of project decisions and the baseline of cost to measure project performance (Hamilton, G, 2018). The CCWP budget was centrally controlled, and this turned out to be an efficient and very useful control system. Through the use of Excel worksheets and graphs with cumulative values, the budget was monitored, as all the team members were already aware of the data being provided in that particular form.

Quality Management

This practice for the CCWP was part of PEP because it recognized quality standards and ways of satisfying them. It was unanimously decided that for quality review purposes, centralized resources wouldn't be used, and this is also applicable in the case of inspection at the subproject stages, as it was hard for quality checkers to visit complex places in the rural part of NSW.

Following are quality assurance practices that were considered useful

- The requirement of relevant skills to country teams with the help of a proper training program.
- Specification review, request for tender and quotations and evaluation methods that were designed.
- Including product quality with national and international standards and approved safety

practices as a reference in PEP.

- High priorities for suppliers with quality management experience while choosing contractors.

Since it was not easy for quality reviewers to go in person to visit extensive areas in a rural part of NSW, the distant team members were given confidence for the delivery of quality products without checking the basic and final products by an assigned central team, however, quality control and quality assurance at the product level were found to be more difficult in the virtual project team.

Human resource management

As an established organization the NSWP has a strong system of managing human resource, pattern, and guidelines, this includes all the policies, procedures and practices that were used within the structure of the project especially for the project communication, it was the part of communication management section. All the team members were managed by the center managers as the line managers.

Communication Management

The NSWP had all the systems, guidelines, and practices in place to manage the process of daily routine information and communication requirements of the CCWP, and all the members had the ability to access email, shared information, and telephones. All the team members interacted via electronic mode, though they had some interactions in person during their presence in training programs and in meetings.

In the start, information was required from the country teams, which is why formal procedures were put in place to obtain relevant information. This was organized on the basis of needs with the objective of making the required information available for control and monitoring purposes as well as for all the stakeholders involved in the project. The formal procedures were amended a number of times with the progress of the project. The progress of the project was reported on a monthly basis. However, it was mandatory to gather data quickly to ensure the availability of a snapshot of the project. There were two ways in which official reporting of the project was done: (1) Reporting specific to the project for sharing information and to help in the project completion stage. (2) Reporting with regard to the status of the project for specific information to different stakeholders. The current structure and systems of the NSWP were used to give project managers formal reports. The team was encouraged to interact informally for the sake of better understanding. Also, cooperation and better teamwork were required to complete the project on time.

Steering committee gave formal reviews at the start, middle and towards the close of every year of the project. These reviews were given in face-to-face meetings with the country members. However, country teams also visited Sydney in some cases. In other cases, personnel from Sydney had to visit country centers. Further, video conferencing was also used as per the requirement. For example, to

resolve issues and/or formalize procedures. The following are included in the system:

- At the start of the project, project work, major milestones, and related information were assessed and agreed upon.
- Systems, patterns and the speed of the reporting to monitor the budgets and timeline were agreed.
- Members of the team were taken on board as per the requirement for progress reviews. Also, the members were given feedback during the summary report presentation to stakeholders. However, three main common problems were faced in this regard
- At the start of the project, a reasonable effort was needed to engage team members in accepting the structure of managing the project and its evaluation and controlling systems.
- To take up proper corrective measures. For this purpose, an effective project monitoring system was needed to recognize the issues and problems along with the risk and scope, and so on and so forth.
- A little more focus was required to maintain complete documentation of the project as team members may not appreciate the significance of documentation.

Further, a few other problems were also encountered that might add to the constraints of the virtual team, skill issues, and the culture of the particular organization's involvement.

- For the implementation of certain procedures and to resolve problems, the project manager required support from the sponsor.
- Few team members lacked the required expertise in managing project
- Resource constraints were also faced in important times were also faced as team members were also supposed to carry out further tasks
- At the distant centers, decisions were not centrally taken and documented in some situations
- The documented path was not adopted to resolve some problems from the project manager to the committee and then to the project sponsor.

Risk Management

At the subproject defining stage, guidance was given to country team members for their training with regards to identifying risk, risk quantum, and development of response for each subproject (Malone, 2011). Further, a thorough plan for managing risk was devised for the project. Advance planning and managing risk responses did work efficiently in the project; for example, the planning of the project took place as a number of managed subprojects at the local level with the presence of some weak links among most of the subprojects; this led to the termination of unsatisfactory subprojects separately when necessary (Mitchell, A, 2011). Some of the activities, such as site development, erecting buildings, and constructing huts, were not part of this. It reduced the formation of links among subprojects, gaining some value for money was possible though. Likewise, at the product level, the proper response to changes in risk during the project process and enhancing risk

management plans proved to be difficult. During the event and the notice of the project manager, there was a time gap. Also, there was a risk attached to this. It happened because either distant team members couldn't spot risky events immediately or they didn't realize that they had to report to the project manager.

Procurement Management

The main objective of CCWP's procurement management planning was to meet two requirements: 1. Achieving value for money and 2. Complying with the NSW government procurement policies and guideline principles.

Procurement guideline principles were part of the PEP to guide country teams in terms of all procurement requirements, i.e., from decisions about procurement to the satisfactory completion of the contracts. Further, the project manager has always been available to advise team members whenever they require him to do so. A thorough examination in terms of activity-based patterns at the subproject stage helped team members to define a cluster of activities for each subproject, which followed the project delivery methodology to document every purchase need like acquiring shelf-equipment, leasing arrangements with service providers, using contractors and use of in house facilities. This work was part of defining the early scope of the subproject. The proposal of the purchasing pattern of each subproject provided by country teams was analyzed in the central office. It was then followed by the preparation of a coordinated procurement scheme to cater to procurement work across RNS units, including progress milestone monitoring. Some purchasing work was pooled to attain value for money, while others were not as part of the reducing risk plan of links among subprojects. Moreover, country teams were permitted to take up purchase requisitions, and these requisitions were assessed at the central office as part of the approval process part.

Also, supplier agreements assisted in purchasing equipment as required for subprojects with no compromise on quantity discounts. This helped to deliver the equipment in many consignments, which also provided assistance in meeting subproject purchasing needs.

Review of Project Closure

A structured study was carried out after the conclusion of the second year of the project to determine and develop the project closing report. This study was based on the review assessment of the views of the participants in the project, RNS staff members, steering committee, and supporting staff, all of whom were the participants in the development of the project closure report. The focus was to suggest improvement plans for project management practices employed in the project. To provide the required data, participants were supposed to analyze the learning needs as to what the right things were done, what went wrong, and the reasons behind this. What could be done for rectification, and what improvement plans could be introduced in the next project? In this regard, the table was

given, and participants were asked to fill it in by providing information for nine major areas of project management with four learning requirements. Also, the Internal Audit group of the NSWP carried out a review of the audit in the second year of the project. The audit report came up with some specific findings with regard to the aspects of planning, implementing, completing, and finance.

Lessons

Important elements in reducing the performance level of the virtual team project teams were reviewed by compiling information from three sources. The Project closure report, the project manager's experience, and the NSWP audit report. These elements were published in the paper (Kuruppuarachchi, 2006). The factors can be classified into three major areas:

- Development of supporting system for virtual teams;
- Effective controlling and monitoring

The supportive systems, specifically for virtual teams, can be provided by taking a stand to make daily activities better for the organization. The following are the proposed initiatives:

- Compliance with proven management practices
- Improving skills needed for managing project of staff members without limiting their abilities for daily operational duties
- Engaging engineering teams to develop standards for technical products for upcoming projects without waiting for project initiatives.
- Storing current information on the basis of user needs and available technologies constantly.
- Maintaining good relations with members of the organization and with other relevant external agencies (government, power utilities, and carriers)
- Minimizing the delays that occurred in certain project tasks, for example, utilizing memoranda of understanding
- Developing knowledge-based management systems, especially with regard to general information and valuable documentary information from experienced people
- Development of managing groups to plan for an upcoming project
- Identification of resource requirements for effective management of the project, which includes detailed planning, procurement handling, documentation, and budget control.
- Establishing methods and mechanisms for better control, quality control, and risk management.
- Mutual agreement on working responsibilities
- Conduct workshops to establish trust and achieve a common understanding of work duties at the start of the project.
- Identifying official and informal communication needs and agreement on formal communication systems for status reporting, controlling, and monitoring
- Establishing the procedures to undertake the project activities, such as understanding user requirements, undertaking procurement, and so on.

- Using appropriate use of electronic communication modes such as telephone, email, video conferencing and so on.
- Following the code of conduct, especially regarding information access
- Identifying the dispute in teams
- Conducting meetings on regular basis at two stages 1. At the project level 2. At the subproject level
- Maintaining an atmosphere of trust and good relationships.

Conclusion

Virtual teams provide organizations with cost savings, flexibility, and other advantages, but they give some challenges related to communication and leadership (Walker, Anthony, 2015). Deficiencies in project visibility, not addressing the emotional aspects of members, problems in contacts, and technology barriers, which include poor data coverage in some of the distant areas. As a result, miscommunication takes place which affects the performance of the team. However, these communication-related issues can be resolved by deploying effective and modern equipment of communication. Advanced technologies in this regard can come into play to achieve better results. Also, the virtual team needs the required skills to undertake tasks comprehensively by following the requirements of clients. As team members are distant from each other, therefore, an overall environment of trust and should be developed among the team members and it serves the platform for virtual collaboration (Peters & Manz, 2007, p. 124).

The development of an efficient virtual team can be achieved if employees are well-disciplined and have a thorough know-how of managing project concepts from their other daily work experiences (Iorio et al., 2015). They should also be well-versed in quality assessment and other related tasks. The most important thing is teamwork.

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