Impact of Communication in Maintaining Quality and Timely Delivery of Projects

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Declaration

‘I, **Geetika Hemantkumar Khandekar** declare that this dissertation, that I have submitted to Dublin Business School for the award of MBA Project Management is the result of my own investigations, except where otherwise stated, where it is clearly acknowledged by references. Furthermore, this work has not been submitted for any other degree.’

Signed: Geetika Hemantkumar Khandekar

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Abstract

Purpose: This research is conducted with the purpose of analysing the impact posed by communication on the quality management and prompt delivery of Indian IT projects.

Methodology: The research data has been acquired through the survey process wherein 20 participants comprising project managers, project team members, were interrogated with the questionnaire.

Findings: The research-oriented findings uncovered that communication with the support of modern techniques like Skype, email, video conferencing and voice calls, has strong and positive impact on the assurance of IT projects' quality along with their delivery as per schedule.

Practical Implication: This research imposes implication on the practical usage of the communication strategies in the project. The research depicts that if the viewpoints of the team members are not recognised and interpreted in a correct manner, then it may generate communication problems which further degrades the flow of information.

Key Word: Communication, Project-Delay, Quality Management, Project Management

Chapter 1: Introduction

1.1 Introduction

Communication practices employed at the organisation/project manager are considered as critical for determining the success of the company/project specifically relating with maintaining high quality and timely delivery of the projects (Daim et al., 2012, pp.193). Communication is cyclical process that integrates two-way exchange of ideas, viewpoints, suggestions, opinions, and beliefs and not limited to merely listening and sharing knowledge or information. Effective communication involves detailed structured planning that is practical and supports the accomplishment of assigned tasks with great results (Daim et al., 2012, pp.193). Successful communication processes focus on the development of both verbal as well as non-verbal communication skills for transferring messages with high effectiveness (Bryde, Broquetas and Volm, 2013, pp.978). The absence of effective communication processes often results in lowering the confidence and motivation level of the employees causing a decline in individual and organisational performance (Bryde, Broquetas and Volm, 2013, pp.979).

Communication is considered as the base for the timely completion and overall success of the project as team members can stay connected and exchange important information concerned with the attainment of objectives of the project. The development and integration of effective communication practices have been identified as an essential tool to empower and develop strong relationships among the employees by enhancing their productivity (Gungor et al., 2011). Aligning with this aspect, the project managers invest resources and time for the developing communication practices that support in the delivery of clear messages, enhancing understanding and building trust among varied stakeholders of the organisations including employees, customers, shareholders, and the government (De Bakker, Boonstra and Wortmann, 2011). The presence of effective communication practices reduces risks and chances for the occurrence of errors helping in enhancing the quality of the project by multi-fold times (De Bakker, Boonstra and Wortmann, 2011).

Effective communication plans that involve all the stakeholders ensures that all important information can be assessed by team members and thereby enhances the chances for successful and timely completion of projects. Communication facilitates transmission and exchange of information and have been identified as an important process in this aspect for the formation of collaborated teams and developing mutual understanding among teams (Lee, Park and Lee, 2015, pp. 798). Team members can interact share emotions and thoughts concerning with the execution of activities linked to the project through the integration of effective communication channels. Communication difficulties among teams results in the creation of conflicts among members causing a sharp increase in unnecessary costs of projects, degrading the quality of work and delaying the completion of the projects (Lee, Park and Lee, 2015, pp.799). Aligning with this aspect, the key focus of the research study is on understanding the ways in which communication can impact the maintenance of quality and timely delivery of the project in the information technology industry.

1.2 Background

Communication is considered as an important aspect within teams for working with high efficiency, enhance performance and deliver quality work across all the industries irrespective of their size and nature of work. Project managers and team members often requires to access pertinent information concerning with risks, customer needs, objectives, plans, and time constraints associated with the project and the presence of well elaborated communication plans are considered as highly effective in resolving misunderstandings and occurrence of delay in projects (Kraut, Egido and Galegher, 2014). In this aspect, the advancement in communication technology and evolution of the internet as facilitated project managers in making significant improvements in the communication processes employed for exchanging pertinent information and knowledge with the team members supporting them to work with greater prevalence, awareness and integrity (Caniëls and Bakens, 2012).

The increase in the use internet and online technologies has led to varied changes in the working practices and organisational structures specifically in the information technology industry. Further, an increase in the globalisation practices along with the increase in the use of internet has supported development of virtual teams across the world wherein individuals located at distant geographic location work together (Stapel and Schneider, 2014). The project managers of Indian IT companies share increased responsibility concerning with handling of multiple tasks, complex processes and ensuring that project undertaken is successfully completed. In this aspect, communication practices initiated by the project managers while working with both real teams and virtual teams plays a critical role in determining the flow and success of the project (Daim et al., 2012, pp.200). Facilities concerning with video conferencing and email have facilitated in initiating communication with high ease among virtual teams, however, the presence of cultural differences and working timings are considered as to create issues in effective and timely execution of work (Daim et al., 2012, pp.204).

The multinationals operating in the information technology industry are working on multiple projects with operations and project development teams spread across the world. Wherein it is evident that working on a variety of products and hundreds of projects every year with different teams spread across the globe presents critical challenges since the initial stage of the project till the final stage for information technology giants including Intel, Microsoft, Google and Oracle (Bloch, Blumberg and Laartz, 2012). While working on projects often team members belonging to different countries, religions, and cultural background are required to work together for discussing pertinent details concerning with the IT projects. Team members need to communicate with each other often during weekly meetings, brainstorming sessions, and team-building events. The presence of differences in languages and cultural practices of team members have been identified as a critical challenge for project managers in initiating and execution of effective communication process within multi-cultural and virtual teams (Gnanlet and Yayla-Kullu, 2014). The project managers of the IT companies are inclined towards the integration of new and innovative processes for strengthening the communication flow among team members. The employees forming the virtual teams are sent on business trips for gaining understanding about the working environment and cultural practices followed by their partners for initiating an error-free, translucent and effective communication so that they can deliver quality projects within stipulated time (Bloch, Blumberg and Laartz, 2012).

Intel a multinational IT company reflects that the IT projects undertaken by the company involves projects wherein activities concerning with the development of software are carried out in home country and designing software in other country and in this aspect, the presence of highly integrated and a well-structured communication system is considered as highly pertinent for attaining success (Daim et al., 2012, pp.197). mastered the art of managing global projects. The project managers at Intel ensures that team members belonging to different cultures and working together on a particular project often interact with each other face-to-face for developing better understanding on key aspects associated with the project. Frequent interaction of the team members is highly effective in developing trust within team members and a conducive working environment wherein each team member can perform their best (Daim et al., 2012, pp.205).

1.3 Research Aim and Research Objectives

1.3.1 Research Aim:

The research study aims at analysing the impact of communication practices integrated by the project professionals in ensuring that projects related to the information technology industry are delivered with high quality and completed within the specified time.

1.3.2 Research Objectives:

The objectives support help in attaining set aim and goals and are considered as a central point for setting up an inquire on the dissertation topic:

A. To recognize the hypothetical premise and common-sense usage of communication innovation as recognized in Media lavishness hypothesis and versatile structuration hypothesis and past thinks about the groups in IT industry.

B. To decide the benefits and issues due to communication advances and to recognize which communication innovation completely fulfil the key needs in group projects.

C. To compare distinction future communication advances and show communication innovations

1.3.3 Research Question

The primary research question is:

"What is the impact of communication on project quality and delivery?"

The secondary questions are:

A) How project professionals value project communication?

B) What causes communication barriers on project?

C) How IT project communication affect project delivery?

D) How communication impacts the quality of project?

The research question is in alignment with the aims and objectives of the research study as it encourages an inquire and identifies the significance of communication innovations and at the same time also focuses on identification of circumstances that can impact communication innovations to derive effective solutions concerning with the resolution of issues that exists within the IT industry.

1.4 Research Significance

The research study is concerned with analysing the impact of communication on the quality and timely completion of the information technology projects. The findings derived from this research study will contribute significantly to make improvements in the communication processes employed at the information technology companies for enhancing the efficiency of the teams, earn high customer satisfaction, and productivity of the organisation. Communication is a critical factor for ensuring the timely completion, delivering quality and overall success of the software projects in this aspect the research study will help the project managers in the identification of varied factors and issues that can act as a block in the development and implementation of effective communication flow within teams working in IT organisations. Research findings will help the project managers in identifying varied communication modes, practices and styles that can be helpful in creating links and trust among team members working at distant geographic locations. Project managers of IT companies based on the key findings derived from the research study integrate standard communication practices that support the execution of software project with increased efficiency and stipulated time frame.

1.5 Organisation of the Research Study

Chapter 1 Introduction:

Research study initiates with this chapter wherein a brief introduction and background in concern with the elementary information pertaining with the topic under study provides an overview of the topic. Further, research aim, objectives and research questions are designed for providing a definite direction to the research study. The chapter states the significance of the chosen research topic along with a briefing about the structure of the research study.

Chapter 2 Literature Review:

The second chapter of the research study presents detailed review of varied viewpoints, perceptions, and understandings of different research scholars in concern with understanding the impact of communication practices in ensuring the timely delivery of the project and maintaining its quality. Information and data integrated in the literature review are accessed by reviewing a wide range of academic sources in the form of articles, scholarly journals, books, and reports related to the topic.

Chapter 3 Research Methodology:

Research methodology chapter presents pertinent details concerning with the identification of varied research tools, methods and techniques that can be applied for executing the research work in the best possible manner. Aligning with this aspect, details concerning the research approach, research paradigm, research design, data collection and data analysis methods, and ethical considerations are integrated in this chapter.

Chapter 4 Data Findings and Discussions:

This chapter integrates the findings of the data collected for deriving authentic answers to the research questions and attain set aim and objectives. The results derived from the analysis are discussed further wherein findings are evaluated and justified using literature findings.

Chapter 5 Conclusion and Recommendations:

Last chapter of the research study concludes the results sand key findings of all the chapters of the research study to arrive at final conclusion. Furthermore, recommendations are stated concerning with overcoming issues/challenges in concern with overcoming communication issues for ensuring timely delivery of quality projects.

Chapter 2: Literature Review

2.1 Introduction

This part of the research is helpful in presenting the relevant studies about the impact of communication in maintaining the quality and delivering the project on time. In this segment, there is a review of well-defined literature sources that have been published by several authors at different times. Under this chapter, different academicians present their opinions, and views regarding the role of communication advances in order to deliver the quality of the project on time with the help of effective communication among all the stakeholders in an organisation (Makharinge, 2018). The literature study aims to analyse that with the help of communication advancement or innovation, project managers can share the latest updates and critical information related to project and documents with their project team members. It means that innovation in communication leads to improvement in the quality level of projects delivered and with respect to the advancement project can also be delivered on time.

The literature also focuses on analysing the issues and barriers of communication advantages that come at the time of delivery of the project in the IT industry. Moreover, it also results in identifying the impact of communication within the IT industry that affects the final delivery of the project. Additionally, in order to improve or enhance the quality of projects and deliver them on time in the IT sector, some of the effective strategies are also suggested by the current literature. Furthermore, it also furnishes the conceptual framework that can be helpful in analysing the impact of communication regarding the delivery of the project in the IT industry. In the concluding stage, this study summarises the critical research work that has been done and analysis made under the respective literature themes.

2.2 Examining the Role of Communication Advances in Delivering the Quality of Project on Time

Purohit (2012) has suggests that modern civilisation depends upon the advanced communication technologies and most of the recent advances of communication-related to the internet, which leads to spreading information and news all over the world or at the global level. It has been determined that there is advancement in the communication technology from the telephone to the internet and the worldwide population is more dependent upon the advanced communication technologies (Purohit, 2012). Wojcik (2013) further describes that information technology covers a form of technical aspects, which means that any technique, method, and equipment used in the organisation has linked it with the innovative and advanced level of technology. In this regard, advanced communication technology plays an important role in improving the delivery process of the project on time with the help of a wide range of communication methods, such as conversations, forms, emails, online meetings and project websites (Wojcik, 2013). According to the viewpoint of Onyegiri, Nwachukwu and Jamike (2011), advanced technology of information and communication has become crucially responsible for all the processes involved in the projects, starting from information being developed, explicated and transferred to building, maintaining and reusing the project. The information and communication technology have become relevant to the day-to-day life of people. It has a profound impact on modern society, and its increasing speed has empowered globalization. With the introduction of the internet, it has become easier to communicate with people as it is a global system of interconnected computer network that is utilized for effective communication between companies, institutions and individuals to exchange and share data and information. The evolution of internet has solved the problem of distance that was a major obstacle in sharing and exchanging information with one another (Onyegiri, Nwachukwu and Jamike, 2011).

In addition to the context, Perron et al. (2010) asserted that with the increased use of the internet, the development and use of information and communication technologies are also increasing. A vast range of information and communication technologies have greatly transformed education, communication and also the spread of information. Interacting with people using advanced information and communication technologies has also multiplied the probabilities of delivering products and services to anyone irrespective of location, and also developing new business and expanding an existing business in the world. Advanced technologies of communication and information provide effective and efficient ways to communicate with the clients, along with organizing the ideas and people, enhancing collaboration and efficiency of the work and also providing higher access to education and knowledge. Advanced technologies of communication and information help the organizations to connect with the clients regardless of the location and share and exchange information about the project and project delivery with the respective clients (Perron et al., 2010).

On the different hand, Dilworth (2013) determined that all the projects require an effective communication plan, but the planning may depend upon the type of projects as different methods of communication have been used for a variety of projects in an organisation. It is also necessary that the information needs of the stakeholders must be considered, which means that at the planning phase of the project management lifecycle, there is a need to increase the involvement of all the team members in the organisation. With respect to this, the stakeholders are able to identify the important aspects related to projects as they contribute their efforts, and the project work can be performed in an adequately effective manner (Dilworth, 2013).

On the basis of the aforementioned discussion, it has been analysed that communication advancement plays an important role in the timely delivery of the project. However, it is also important that all the stakeholders should be involved in the planning of communication through which they would be able to understand the essential characteristics of projects. As stated by Zulch (2014), communication plays a vital role for every member involved in the project and influences the project. It is essential for the project team members to share, collaborate, integrate and collate knowledge and information to realise the objective of the project. Advanced communication helps in communicating with each member of the project so that no misunderstanding develops in the project work, and the work gets completed effectively and efficiently. Electronic communication is the highest-ranked method of effective communication as it enables all to connect with anyone in less time and also does not affect the communication process because of distance. The successful completion of the project requires effective communication among each member involved in the project work, including the stakeholders. Advanced communication and information technologies help in knowing the requirements of the clients and also completing the project on time (Zulch, 2014).

As per the viewpoint of Ali, Abbas and Abdulameer (2019), it is essential for the project managers to communicate with the people performing different tasks in the project who have different perception levels and communication styles. This makes communication difficult for project managers. In this case, advanced communication technology plays a significant role. It has been observed that one common reason for the success of 80 per cent of the projects was effective communication. The projects that use systems of effective communication are likely to deliver the project efficiently and within the specified time duration of the project. It is found that communication is crucial for the on-time delivery of the project and within the budget of the project. It is essential for the project managers to develop an effective channel of communication to convey the message and share information regarding the project to the people involved in the project work and also other people who are influenced by the project work. Communication has a significant impact on the quality of the project and also the timely delivery of the project. Therefore, advanced communication technologies can be helpful for the organisation to manage the quality of the project, as well as the on-time delivery of the project (Ali, Abbas and Abdulameer, 2011).

In this context, Naqvi, Aziz and Rehman (2011) also asserted that the lack of satisfaction in the customers arises due to inappropriate communication of the organisation with the stakeholders. Appropriate communication with the stakeholders significantly affects the outcome of the project. It has been stated that project management is effective only when there is appropriate communication between the organisation and the stakeholders and also among the people involved in the project. Effective flow of timely and correct information among the project team and the stakeholders enhances the efficiency of the team, and resultantly, processes are completed in the assigned time and overall positively affect the outcome of the project (Naqvi, Aziz and Rehman, 2011). This becomes easier when the project manager or the organisation adopt advanced communication technologies. Advanced technologies enable teamwide communication and also simplify the complex processes of the projects.

In the views of Black (2013), for completing the complex project successfully, there is a requirement of good communication among all the team members because many of the projects are performed by the group of people who mainly interact through the electronic communication and therefore, they are a part of the virtual team. In relation to this, it is necessary that all the team members should avoid miscommunication that can be harmful to all the organisational members, as well as for the project (Black, 2013). In response to this problem, Kannan (2014) suggested that there is a need to increase the advancement in the present communication technologies; such as video-conferencing and WebEx that have been found as positive advanced technical resources leading to the accomplishment of success and development of virtual project team members (Kannan, 2014).

As per this context, McEvoy (2015) further defined that videoconferencing is the advance technology of communication that actually encompasses the wide range of technologies and helps to collaborate the working condition through the shared applications. Video conferencing may be many-to-many, one-to-one meetings or one-to-many meetings that provide audio and video sharing between more than two sites. Therefore, these kinds of practices lead to increase in the appropriateness and adequacy of the projects as team members are able to understand the core process of project delivery concerning the schedules and timelines (McEvoy, 2015). In alignment with this information, the Technology Acceptance Model (TAM) was defined by Nedostup (2015), which deals more specifically with the prediction of the acceptability of an information system. In case of advancement in communication for timely delivery of projects, perceived ease of use leads to improving the performance of the employees. This happens because once the employees accept the technology, then they will have to deploy less effort with a tool, which is easy to use and hence, team members are able to complete the project task on time (Nedostup, 2015).

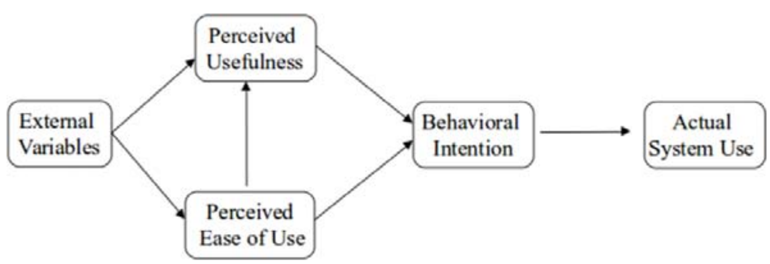


Figure 1: Technology Acceptance Model (TAM)

Based on the above-mentioned studies, it has been argued that for improving the quality of the project, there is a need to increase the advancement in the technology and it has also been illustrated that video conferencing is an adequate source of advance communication, which offers a better delivery of the project on time.

2.3 Critically Analysing the Issues and Barriers of Communication Advances That Come While Delivering the Project in the IT Industry.

Olufunmilola (2009) has suggests that communication failure occurs when the information is misunderstood, shared late or lost. Most of the people are using e-mails for collaboration and communication with each other in an organisation. However, keeping track or record of all the essential data, which has been shared through e-mails might become a difficulty for the team members, especially when they are working on a large project. According to the study, 57 % of projects are failing due to a breakdown in the communication network, and virtual team members also fail to identify long e-mail threads during communication. In this regard, the failure of communication increases the chances of delay in project delivery (Olufunmilola, 2009; Wilson, 2018). It has been argued by Yeager (2009) that many of the IT industries have turned towards using video conferencing communication technology in order to improve the level of quality of the projects and for completing them on time. However, it has also been analysed that there are few drawbacks of video conferencing, which include lack of personal interaction, technical issues related to network, hardware, and software and also the high cost of video conferencing set-up. In this regard, these kinds of problems adversely affect the quality of the project, and it takes more time, which means that when there are network issues, then the communication gap will happen that would break the link of discussions regarding the project. Moreover, for increasing the effectiveness of large projects, there is a requirement of advanced features, which come along with the high cost of technology advancement and are expensive in nature (Yeager, 2009).

According to Vasista and Abone (2018), advanced information and communication technologies require high investment cost, which turns out to be a barrier for the small and medium IT firms. Another barrier is that to operate the advanced communication technologies, the firms need professionals who can effectively operate the technologies and gain its advantages. Therefore, the organisations have to conduct training sessions for the employees to work on the technologies, which require a certain amount of money as the organisation need to appoint professionals who can train the employees. If the organisation thinks of hiring a professional who can better handle the technologies, it has to pay more to the hired professionals, which also adds a new expenditure to the organisation's pocket. However, it is beneficial if the organisation hires professionals for handling the advanced technologies because if there is a lack in the training of the employees, then it may severely affect the project work and may cause certain damage. This would also result in the delay of the project work and also delayed delivery of the project. Poor strategies of information and communication technologies also hamper the project work and the delivery time of the project (Vasista and Abone, 2018).

On the other side, Tulenheimo (2015) highlighted that as the implementation of advanced communication technology in large firms has been increasing with time, small firms are facing the problem and downfall has been observed in the performance of the small firms as compared to bigger firms. It becomes difficult for small firms to adopt advanced technologies for effective communication due to its high cost of investment. It also requires extra expenditure on training the employees for the operation of the advanced technologies. It is also difficult for small firms to hire professionals as it would need to offer high wages to them in order to hire them in the organisation. Due to all the aforementioned barriers, small firms fail to adopt the advanced technologies, and therefore, their performances are perceived to be lower as compared to the larger firms. It also affects the projects' delivery time of the small firms as the management of the projects is not adequate due to the complexities in some processes, which could be made simpler by the utilisation of advanced information and communication technology. Inadequate communication also leads to misunderstanding among the members involved in the project work, which adversely affects the projects' outcome and the project duration (Tulenheimo, 2015).

On the other side, Udrea (2013) argued that the project team is a diverse workgroup that has come together to deliver a unique and quality benefit to the organisation in the form of completing the project on time. However, it has been found that the diverse workforce comes from different backgrounds, geographies, countries, age groups, gender, and educational backgrounds and hence, to put them together is the biggest challenge for the project manager. Moreover, there are some of the project team members who refuse to accept changes, which means that if it is related to the technological advancement in communication, most of the people are not accepting the communication and this can also be an issue coming across while performing the task or project (Udrea, 2013). In support of this context, Singh (2010) describes Social Cognitive Theory, which seeks to explain the diversity that can result in adverse outcomes in an organisation. The theory assumes that when the changes occur in the organisation, the person's personality also changes automatically, but it is not true because many of the culturally diverse people refuse to accept changes because neither they have any knowledge about that particular task nor they want to learn about that task (Singh, 2010).

As stated by Delaney and D'Agostino (2015), gaining staff's acceptance can also be an issue as getting accepted by the employees who would be involved in the operation of the advanced technologies would be difficult to be managed by the managers of the organisation. The adoption of new and advanced communication technologies would create disruption in the behaviour and patterns within the organisation that may result in the loss of continuity and delay in the project completion. Adoption of new technologies may lead to the change in the job responsibilities of the employees and also may increase the workload, which may be unacceptable for the employees of the organisation and affect employee retention rate. Employees are one of the main resources of the organisation, and if the employees are not satisfied with their work and the organisation, it may cause a negative impact on the project and cause a delay in the project work. Hence, it will automatically result in a delay in project delivery and customers' dissatisfaction (Delaney and D'Agostino, 2015).

On the other hand, Ejiaku (2014) stated that governments provide a framework of strategic policy for the purchase and use of advanced information and communication technologies for economic and social growth. The weak and ineffective policies of information technology also create a problem in the application and growth of information and communication technologies. Some developing countries lack adequate resources that are essential for the development of information and communication technology; rather, they rely on foreign aid to take responsibility for the information and communication technology's development. However, foreign aids do not show significant support for the development of technologies in developing countries (Ejiaku, 2014).

On the basis of the above-mentioned context, it has been summarised that communication failure is the biggest issue for an organisation because it can be caused by technical or network issues. However, barriers or problems regarding the communication advances are also happening amongst the diversified workforce as the project manager is not able to manage them, which results in delay in project or quality of project becomes down that can bring a great loss for an organisation.

It has been elaborated by Liu (2013) that linguistics is also the main issue regarding communication in the IT sector that is concerned with the nature of language and communication. Linguistics needs to be understood in the sense of the specialised technology, which is used by the different disciplines, such as marketing, accounting and IT. In this regard, when people come together from diverse areas and discuss project-related matters, they spread information according to their level of knowledge as they all have their own assumptions regarding the project-related work, which can result in incomplete or incorrect communication.

It has been illustrated by the report given by Williams (2015) has been investigated that the economy of Britain is being damaged because of the shortage of foreign language skill. The small and medium-sized exporters are being face difficulty not because of the reason they do not have cash to employ the linguistics as the main reason is without the language skill or knowledge they are not able to trade at the international level as they face the issues regarding the delay in project delivery (Williams, 2015). With respect to this, the issue of linguistics may lead to failure of projects because all different groups of people give their point of views according to their knowledge and it is not necessary that their assumptions are correct or may not be sufficient for accomplishing or completing the IT projects (Liu, 2013).

On the other side, Karippery Francis (2013) has argued that privacy issue is another potential hazard or issue related to advancement in communication. It means that in the IT industry when the project related information is sent on the internet for communication help regarding the same; it creates high chances of breaching of data. The Internet may be insecure because it allows another person or a third party to read the e-mail conversation. Hence, this can lead to an increase in the chances of loss and all the information related to the project might reach the wrong hands. This kind of situation can negatively impact the performance of an organisation and force it to incur a massive range of losses. In relation to this, it has been analysed by the report presented by Doffman (2019) that hackers have targeted the FSB-Russia's Federal Security Services and have stolen 7.5 terabytes of data from the major contractors while exposing the secret information related to the FSB's projects on social media. It was investigated after this incident that the data was passed to the larger hacking group, who shared the files related to the FSB's projects with various media outlets (Karippery Francis, 2013; Doffman, 2019).

Based on the above analysis, it can be revealed that linguistics and breach of data are also crucial problems related to technological advancement in communication. Linguistics may come across with the wrong assumptions that adversely affect the project, and on the different side, communication technology also increases the chances of breach of information, which results in a loss for the organisation.

2.4 Critically Identifying the Impact of Communication Advances on The IT Projects

Singh Bhambra (2009) has suggests that technology plays an essential role in the project management as it ensures appropriate or proper communication between the managers, stakeholders and team members within an organisation. For example, with the help of email, the project manager can replace the less reliable forms of communication, which are in the form of memos, fax, and voice messages from social collaboration tools and initiate communication innovation that leads to increase the efficiency of the work process. However, it has been illustrated by the report presented by Kelion (2015) has been found that Atos is the multinational information technology service and consultancy, which is specialised in high-tech transactional services. The company believes that email solves many of the problems, however; it has also been revealed that use of internal email banned in the organisation which result in decreasing the rate of revenue because profit of the company is only derived by providing email services to others, but the email tool is not properly used in the organisation. The company allows its staff members to send a message to each other, but not the emails as emails can sometimes have adverse effects also is they are not handled professionally and efficiently (Kelion, 2015). Thus, through this innovation, the project manager can be able to achieve a successful project. With the help of communication advancement or innovation, project managers can share the latest updates and critical information related to project and documents with their project team members. With reference to this context, it has been identified that innovation in communication leads to improvement in the quality level of projects delivered (Singh Bhambra, 2009). It has been further discussed by Philiponet (2009) that for accomplishing a successful project, the IT sectors are using the project management software, and these applications are expanding their functional benefits across the geographical boundaries with the combination of smart features. It has been elaborated that project management software is helpful for both project manager, as well as for the project team members. With the help of project management software, they are able to complete the requirement of clients and manage time, schedule and budget (Philiponet, 2009). In alignment to the aforementioned context, Ribeiro Braha (2019) defined Theory of Project Management, which states that there is a transformation of input into output, which means that to achieve the success of any project, there is a need to break or divide the tasks into smaller sections that lead to an increase specialisation in work, and it would also be a cost-effective process (Ribeiro Braha, 2019).

It has been described by Pankajakshan (2009) that there are some of the smart featured web-based project management software leading to an increased level of productivity, as well as the quality of projects. ProWorkflow implies with project management software that enables the project workforce to manage the tasks, keep a track record of the tasks' execution, schedule tasks, organise time and generate a valid report regarding the projects. It provides a comprehensive set of features, which is easily used by all the project team members. Hence, this software is beneficial in improving the quality of the projects and delivering them on time (Pankajakshan, 2009).

On the contrary, Ding (2008) had argued that ProWorkflow is the project management solution that allows smooth collaboration between the project managers and team members by keeping track of the projects and easily monitoring and managing them. However, it has been derived from the English speaking countries that it does not support the other languages, which can be a problem of this software; therefore, it needs to support other languages in order to fulfil the requirement of projects’ clients in an adequate manner (Ding, 2008). It has also been estimated in an article, which was presented by Bloch (2012) that the IT software or systems that are used in the IT sectors have a high value worth over $15 Million. The average IT projects run 45 % over the budget and 7 % over time and at the time of delivery, they are of 56 % of less value than predicted. In this regard, it has been analysed that software projects are run at a high risk of price or cost. It has also been found that when the project is longer than it will be scheduled last and it also takes more time for completion and budget also get increased. Moreover, it has also been found that every additional year spend on the project will lead to increased cost by 15% (Bloch, 2012).

On the basis of this discussion, it can be inferred that project management software is the effective communication technology or solution that provides a satisfactory result of the project through managing the task, including the ProWorkflow. However, this software is also needed to function in other languages, which is suitable for the users, as well as for improving the quality of the projects.

In the views of Petter, DeLone and McLean (2012) the area or field of information technology is beneficial for maintaining and developing the technology, which means that those people who are working in the IT industry effectively communicate with each other when there is an existence of advanced communication technology. It implies that the project-based management software leads to enhance the level of communication within an organisation (Petter, DeLone and McLean, 2012). Further, Alzahrani and Emsley (2013) have revealed that the use of advanced communication technologies will perform the process of sharing and developing ideas. These are transforming the ways of interaction, and additionally, the technological advancement changes the means of communication and allows connecting with each other that helps to solve any kind of issue associated with the business projects. It has been analysed by the report presented by Marotte (2012) that in the UK, 81% of employees are highly connected or have developed effective communication by adopting innovative communication approaches. It has been investigated that working with the help of mobile and consumerisation of IT is helpful for spreading the collaborative working environment in the IT sector. On the other hand, it has also been identified that 12% employees are satisfied or have accepted the technology in their work process as most of them are those who used to prefer the traditional method of communication concerning their particular project in the IT industry. Moreover, 46% of people also believe that employees do not make effective use of technology; hence, this may lead to the declination of the volume of productivity and performance of an organisation and thus, assert a negative impact on the projects (Alzahrani and Emsley, 2013; Marotte, 2012).

Based on the above-mentioned facts, it is inferred that for developing an effective IT project and achieving the set goals, advanced communication technology plays an essential role nowadays. Project software, mobile, social media, and cloud computing are some of the critical tools of advanced communication technology that significantly impact the organisation's performance and projects. However, communication technology can impact an organisation's performance adversely also when it is not be used properly.

Alzahrani and Emsley (2013) have evaluated that in order to manage a project in the IT industry; the project managers are using high-quality, innovative software that increases the accuracy and adequacy of the project. Hence, the industry is able to achieve the project goals. It has been analysed that IT projects are related to the development of IT infrastructure, wherein an information system, including software development activities or programming, is being framed. It involves web development, creating an online shopping site, updating the web pages and also developing the whole web infrastructure (Alzahrani and Emsley, 2013). In relation to this, Han, Capraro and Capraro (2015) have described that Redmine is effective open-source project management software as it is a cloud-based solution that can be downloaded and installed in the servers and then it can be arranged by the needs of the project manager. This software or solution will be beneficial for managing the multiple kinds of projects; moreover, the file can also be quickly uploaded and shared that would remove the cause of inaccuracy and ensure the project delivery on time (Capraro and Capraro, 2015). It has been further defined by Izang *et al.* (2016) that Redmine software also results in improving the users' experience and with its help, people can also execute project-related tasks quickly and make effective planning for the same. The price of this software depends upon the size and number of the users, for instance, when the volume of use is 25, then it will cost $33 annually, and $43 on a monthly basis. Relatively, this is an advanced project management software that will efficiently tackle the complex tasks also (Izang *et al.,* 2016). In this regard, for developing web-based activities and managing the project tasks effectively, Redmine software is becoming an adequate approach being followed in the IT sector.

On the basis of the aforementioned analysis, it is determined that to develop web-based programming and processes in the IT industry, Redmine has been identified as a practical solution that manages multiple tasks and also improves the users' experience.

It has been found by Riņģis and Bērziša (2016) that with the introduction of advanced communication and software technologies, an organisation can enjoy the smooth flow of work and timely delivery of the project. Advancement in communication is becoming an efficient business practice as it is increasing the adequacy of online projects and improving the flow of information (Riņģis and Bērziša, 2016). It is further evaluated by Yang et al. (2015) that virtualised networks are changing the scenario of the IT industry as they combine the hardware and software network resources and functionality unite them into a single software. This network saves money for the IT industry by increasing the use of the internet with the application and operating software. It has been determined that instead of purchasing the servers, protective hardware, network storage devices and software, the IT industries are executing their operations and running the information directly from the data centres (Yang et al., 2015).

On the contrary, it has been argued by Stock and Seliger (2016) that implementing the virtualised network for effective delivery of the project demands from the IT industry a high cost, as certain hardware and software are required at some points, which depict that suitable devices must be developed and purchased for the implementation. Moreover, a project manager may also require a hybrid system for the functioning of virtual networking process correctly (Stock and Seliger, 2016). Furthermore, Zhang et al. (2017) elaborated that virtual network also creates the chances of security risk, which adversely affect the performance and project work of the IT sector. Advance communication technology is an essential part of every business that helps to share the data from one place to another and also to increase the interaction amongst thousands of people, which helps to achieve the project goal adequately and well in time. But it also creates an issue regarding the breach of data and information, which negatively affects the goodwill and productivity of the organisation. It is evident by the report presented by Wall (2018) that virtual networks are a threat for the companies because when the members are talking with each other about their respective projects, then it increases the chances of hacking concerning the location, text, phone calls as all the things are directly linked with each other. It is investigated that 99% of hackers attack the IoT devices by routing the communication with the help of an intermediary server and by preventing the inbound connections. The smartphones, which are used by the project team members, have also been targeted by hackers. In this regard, this can lead to increasing the chances of information breach because of which, companies are facing a huge loss. When the data is stolen by the hackers, then they use it in a negative manner that adversely impacts the goodwill and level of productivity of an organisation. The virtual networks lead to an increase in the risk of information breach that negatively impacts the project work (Zhang et al., 2017; Wall, 2018).

On the basis of above-mentioned studies, it has been inferred that virtualised network enhances the communication between the project team members; however, it also comes up with some negative aspects; such as high cost and chances of a security risk or breach of information.

2.5 Examining the Strategic Measures That Help to Improve the Quality of Projects and Deliver Them on Time in the IT Industry

Arora (2008) has suggested that in order to deliver the quality project on time, the project managers need to take some strategic measures that lead to achieving the successful accomplishment of project work. In this regard, it has been recommended that in the IT industry, there is a need to provide an opportunity to team members to add value in their project work with the innovation and expert knowledge. Moreover, for achieving a successful project aim, the project managers are required to know about the belief and thinking of all the stakeholders regarding the project work. In this regard, it can be a strong start of the project or building a robust team that helps to gather requirements related to the project work.

On the other side, Balogun (2013) have argued that for achieving the requirement of the project, it is important to know the expectation of all the stakeholders as this aspect may define the criteria of user acceptance. It means that it is the responsibility of the project managers to define the success factors related to the projects to their team members, which are related to the purpose of the project, material, and components provide to stakeholders to complete the projects. In addition, the project managers also need to work with the project team members in order to enable them for doing effective communication, providing valuable guidance, building a healthy relationship, and supporting them, which helps to increase their level of engagement towards the project work. In this regard, this practice helps in gaining the increased chances of enhancing the project quality and its timely delivery (Balogun, 2013). In support of this concept, Orji (2014) stated the Stakeholder Theory, which describes according to which a stakeholder is anyone who has an interest in the project work of an organisation. The theory reveals that there is a need to address the business ethics, values, motivation, and morale of stakeholders while managing them and also increase their involvement in the project through maintenance of good relations with them (Orji, 2014).

Based on the above-mentioned studies, it has been argued that for improving the quality level of the project and delivering it on time, there is a need to identify the expectation of all the project team members and increase their engagement for accomplishing the project successfully.

It is suggested by Wang (2008) that for achieving the aim of a successful project in the IT industry; firstly, there is a need to create a skill matrix for identifying the experience level and skills required for the particular project. After that, developing a skilled team that is able to match their talents and knowledge as per the requirement of the project is required. Thirdly, identification of the gaps related to the tasks and filling them by providing training to the project workforce is mandatory as it enables them to understand the standards of the task (Wang, 2008). Later on, Zhao (2008) recommended that it needs to make sure that all the team members know their roles and responsibilities, which means that when the project managers gather the skilled workforce at one place, it is important for them to update or review the work plan, schedules, requirements with the team members, and identify the issues that are needed to be resolved. This process can also be linked to dealing with the past situation and reviewing all the practices to analyse any problem related to the project work (Zhao, 2008).

However, it has been identified by the above study that everyone participates in the project work, but Baux (2013) evaluated that there is a need to maintain momentum or enthusiasm among the project workforce. It is necessary to define and communicate the approach of the project and categorise them depending on their connection with the Waterfall, Kanban, Scrum, and Hybrid approaches. These approaches are beneficial for projects because these lead to breaking up the projects into milestones, and after that, within each milestone, there are two-week sprints that are developed with the sprint planning, daily scrum meeting, and demos. After that, the tasks will be tracked within each sprint. There is also a need to ensure that the large projects will be broken down in a series of small projects, which can be easily performed by the team members (Baux, 2013). Based on the above scholarly studies, it has been argued that there is a need to fill the identified gaps of projects with the training and communicate with all the team members regarding the project approaches.

Beggs (2010) had discussed that successful project delivery depends upon the team of experts who are working on the project. It is necessary to transfer the ownership of the projects to the team members and empower them to complete the projects by contributing their efforts. After that, there is a need to utilise the project management software and tracking tools for getting the solutions in regard to tracking the conversation, updates, decisions, efforts, milestones, sprints, task budgets, and timelines.

On the different hand, Asmundsson (2012) revealed that in order to deliver the quality project, it is also needed to be ensured that all the stakeholders are aware of the impact of changes and thus, can adjust the budget and schedule accordingly. This is being followed by providing visibility to the project team members, which means building a communication plan to keep the project workforce and stakeholders engaged with the aim of eliminating the mistakes and wastage of work efforts. The communication schemes can be recognised as daily, weekly, and monthly that include formal status reports, decisions, emails, tracking documents, and conference calls (Asmundsson, 2012). Miara (2009) further describes that it is necessary to take feedback from the stakeholders regarding the project work's progress, which gives an idea of taking an effective course of action in the future. With the help of the feedback, the project managers get the idea of whether the work of project team members is aligned with the goals and objectives of the project or not (Miara, 2009).

On the basis of the above description, it can be summarised that to increase the quality level of the project; there is a need to maintain effective communication with the stakeholders and take feedback from them in order to maintain the quality of projects and for timely delivery of the project.

Bloch, Blumberg and Laartz (2012) have suggested that in order to deliver the quality project on time, there is a need to develop a disciplined and strategically managed office and also a need to establish an effective process for managing the requirements of engineering. Moreover, for delivering a project task of effective quality, a manager should define the cost, which reduces the chances of confusion for the future activities of the project. It is determined that in the IT sector, stakeholders need to manage the projects according to the budget and scheduled target (Bloch, Blumberg and Laartz, 2012). Furthermore, it has been recommended by Büyüközkan and Çifçi (2012) that a project manager needs to build a high performing project team for enhancing the ways in which the company manages its internal and external stakeholders that include IT executives, regulators, business partners and vendors. The project team members will make sure that the project is aligned with the strategy of the business, and they are analyzing the position of the stakeholders in detail. In addition to this, a project leader should also continuously engage with the project team members for ensuring that the work process is aligned with the needs of the business, and it results in developing IT solutions. In this regard, the IT sector is able to achieve the project goals, and in alignment with the business objectives, the project can be delivered on time (Büyüközkan, and Çifçi, 2012). Alternatively, Edison, Bin Ali and Torkar (2013) have argued that for improving the project's quality and delivering it in the specified time, it is necessary that the project team members understand the technical aspects of the related project, including IT infrastructure, rollout plan, quality assurance and project scope, well in advance. With respect to this concern, the IT sector needs to assign a highly performing and experienced personality who has the required knowledge concerning advanced technology. It has been revealed that the experts are responsible for increasing the performance to 100% because they can adequately judge and also have the ability to interpret data pattern. In relation to this, the IT industry is able to present a superior quality project, which is beneficial for improving the productivity of the organization (Edison, Bin Ali and Torkar, 2013). Alternatively, Young *et al*. (2012) justified that sometimes the team focuses disproportionately on the issues related to technology and targets. It means that a bank wants to create a central data warehouse to cover the issues of inconsistency that come up with the business financial data and risk data. Contrarily, sometimes project team members are only focused on developing the IT architecture solution for the data warehouse instead of identifying the project goals, and this leads to create an inconsistency in the work process. Hence, due to these kinds of activities, the project budget tends to increase, and it leads to an increased number of complexities (Young *et al*., 2012).

On the basis of the aforementioned context, it has been examined that for delivering the quality projects on time, a project manager needs to build an effective project team that is able to manage the operation effectively and a project manager should ensure that the operations of IT are aligned with the business needs. Moreover, IT experts also play an important role in delivering quality projects because they have a vast range of knowledge in regard to the technical processes.

Serrador and Pinto (2015) have suggested that in an IT industry, there is a need to accomplish effective project management as it is necessary to increase excellence in project management practices. IT industry needs to follow the core project practices that are being helpful for achieving the goals. A company needs to build a team who participates in the project from beginning till the completion of the project and from defining the requirement of the task till the testing. This kind of practice may help to avoid misunderstanding and complexity and also lead to ensure a clear responsibility. Moreover, the project team members and their practices are promoting the efficiency of quality projects (Serrador and Pinto, 2015). Moreover, Špundak (2014) has recommended that many of the IT projects are failed due to the lack of access to decision-makers and inadequacy of communication. In relation to this, for managing the large IT projects and arrange their delivery on a particular time, it is necessary to keep the decision-making process active by organising a working group meeting on a weekly basis, and the purpose of this meeting should be to make a decision regarding the detailed requirement of the projects and resolution of issues if any. The workgroup meeting is also helpful for informing every team member about the work progress and increasing the participation of team members in taking the adequate decision, sharing their opinions and ideas regarding the project work (Špundak, 2014).

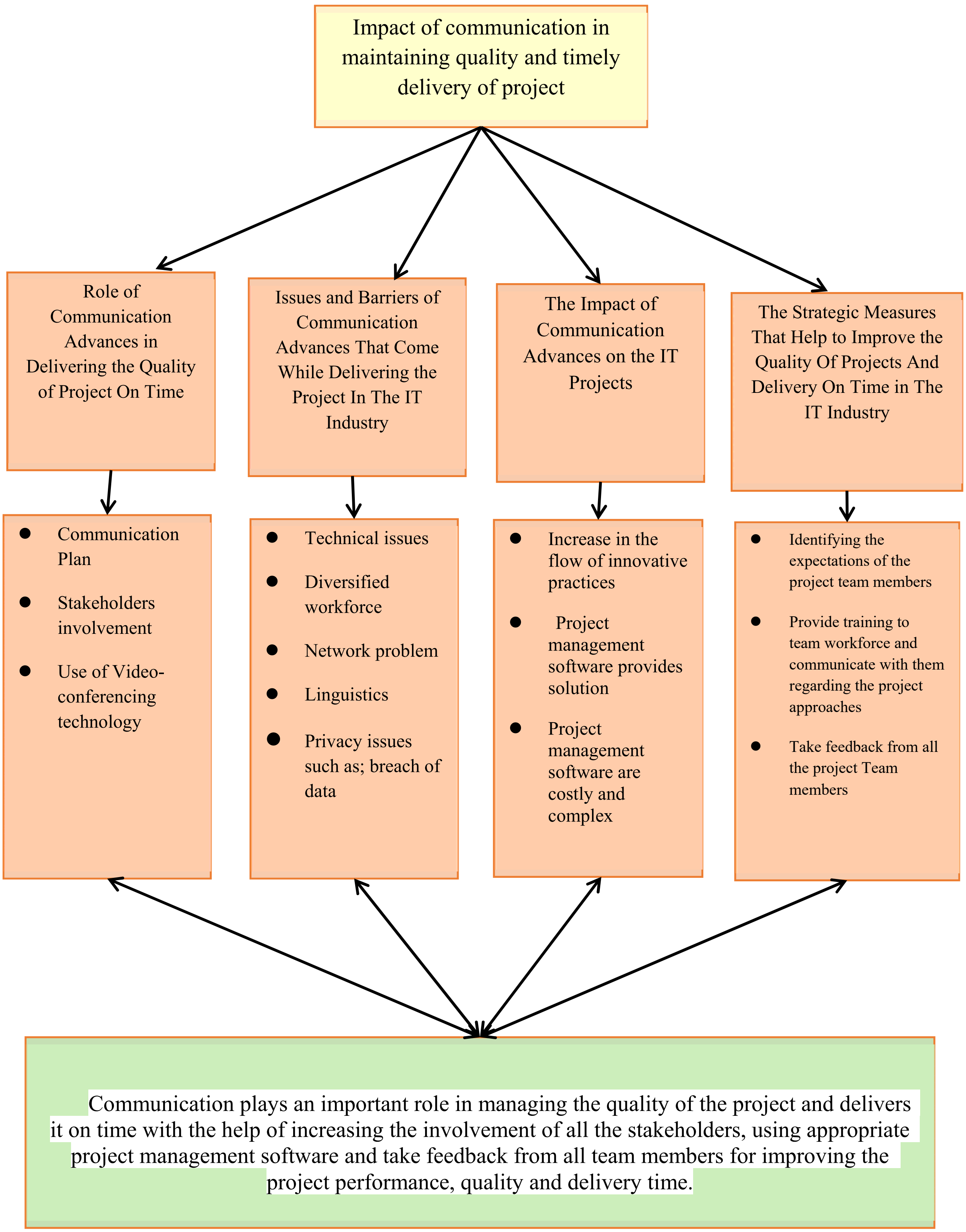
On the basis of the above-mentioned studies, it has been analysed that team members are the crucial aspect as they participate and contribute their efforts in order to accomplish the projects on time. Moreover, the weekly meeting is an effective strategic measure through which the organisational members can identify the progress of the project, and accordingly, they can further take a decision.

It has been suggested by Conforto *et al.* (2014) that a project manager needs to control time or manage it because clients mostly judge the failure and success of the project by its delivery time. Therefore, a project manager needs to make sure that the set deadlines are realistic in nature, and they are achievable. Additionally, with respect to the timeline of the IT project, there is a need to communicate constantly with the team members, which means that a project leader defines the sequence and duration of activities and also needs to develop a schedule and maintain it properly. Hence, by applying these practices, the IT industry is able to deliver quality projects on time. In relation to this, it has been identified that 89% of organisations are supporting the directions of project manager, which implies that they are professionals who understand the core aspects of the project, and through their understanding, they maintain a consistency regarding the efficiency and productivity of the organisation (Conforto *et al*., 2014; My Ideal Virtual Assistant, 2019).

On the other side, it has been recommended by Too and Weaver (2014) that project management methodologies also play an essential role in the timely completion of the project. With respect to this, agile is one of the effective project management approaches that break or divide the project into smaller parts and then run them from the design phase to the testing or quality assurance stage. The agile methodology helps to increase the specialisation of work among the team members as they perform their work well, and this practice also leads to reducing the chance of the project's failure. Moreover, the role of a project manager is lesser in this method because, in case of agile project management, all the work is divided among the team members; for example, the project goals are set by the project owner or leader, and team members divide or share the scheduling task and progress report. Therefore, the IT industry needs to use this methodology that leads to an increase in the quality level of the project, and it can be completed on time (Too and Weaver, 2014).

Based on the above-mentioned scholarly articles, it has been examined that project manager plays an essential role for achieving the desired quality of project because they communicate with their team members about the projects and guide them about each and every course of action. However, agile project management methodology leads to increase the specialisation in work and IT industry is able to deliver the quality projects on time.

2.6 Conceptual Framework



2.7 Literature Gap

It has been identified that in the existing literature, there is a lack of practical knowledge and real evidence-based material related to the impact of communication in maintaining the quality of the project and timely delivery of the project. Moreover, in the current literature, no practical knowledge has been found regarding the strategic tools or measures, which are used to improve the quality of projects and deliver them on time with special reference to the IT industry. Therefore, for addressing these identified gaps, the current study undertakes the primary investigation, in order to explore the real-time and first-handed information regarding the impact of communication for maintaining the quality and timely delivery of the project.

2.8 Summary

On the basis of the overall literature study, it has been analysed that communication among the stakeholders is the most significant part of a successful project. It is beneficial for increasing the engagement of all the project team members, as technical advancement reduces the manual errors, which results in delivering the project on time with good quality. However, communication advances are expensive and complicated in nature, as these may sometimes be associated with few issues. Additionally, to manage a diversified workforce is also a challenging task for the project managers. For removing these problems, it is pertinent to give value to the expectations of stakeholders and provide valuable training to them for achieving the successful completion of a useful project.

Chapter 3. Methodology

The research methodology section provides a detailed description of participants, research design elements, ethics and materials integrated into the study to accomplish the central aim and key objectives. In addition, the section illustrates the process followed by the researcher for data collection and analysis.

3.1 Participants

The research is primarily focused on analysing views of project professionals on project communication, finding barriers to communication in projects in the IT industry in India and assessing the impact of IT project communication on quality and project delivery. Therefore, the primary data is acquired from project managers and project team members working in the IT sector. In order to collect accurate information about issues and advantages of different communication advances and communication innovation on meeting the needs of team members in group projects, it is necessary to select participants that possess valid information about the topic area and can provide realistic information.

The survey is conducted with project managers and team members that are currently working with their team in the IT industry to collect their views about the role of communication in ensuring project quality, success and timely delivery. Total 20 participants are selected for carrying out the survey wherein survey includes closed-ended questions as well as open-ended questions. Overall, the research includes 20 participants, so the sample size for the current study is 20. The participants are selected with due consideration to their various characteristics such as current location, work experience and current role so that they provide relevant information about the research problem. Sampling strategy denotes the process of selecting a subset from the target population, and it indicates the plan which is used for selecting participants for the purpose of data collection (Saunders *et al.,* 2009).

The researcher can use either probability sampling or non-probability sampling for selection of sample in which probability sampling advocates random selection of participants by placing greater confidence on the representation of sample and equal opportunity to each participant (Hair *et al.,* 2015). On the contrary, non-probability sampling consists of three methods such as convenience, purposive and quota sampling, and it focused on the selection of sample through non-random methods (Zikmund *et al.,* 2013). This particular research utilised non-probability sampling strategy and purposive technique to select managers and team members that are working in the IT industry and have sufficient experience to work on a group project in a virtual environment and on-site project management.

3.2 Design

Research design can be explained in the form of philosophy and approach in the undertaken study as it depicts the philosophical standpoint of the researcher and sets the direction of the work. Research design is dependent on the strategy followed by the researcher for meeting key objectives wherein strategy is divided into the categories such as case study, action research, experiment, grounded theory and survey (Mackenzie and Knipe, 2006).

The present research uses a survey method, and it emphasises on the quantitative investigation. Qualitative methods stress upon finding hidden aspects of the research while quantitative methods focus on the collection of facts and logical reasoning. Hence, the researcher adopted quantitative methods and used a descriptive design to carry out the investigation work in a structured format. The research uses a survey method in combination with the descriptive design to describe key facts and statistics generated from the survey responses(Bryman, 2006).

The research philosophy portrays the belief system and ideological framework governing the data collection and the whole research process. In this study, the positivist philosophy is applied to carry out a research inquiry centred on facts, logic and statistics as this philosophy argues that the research problem or phenomenon is static in nature that does not change or influence by the external environment or external forces (Edmonds and Kennedy, 2012). In contrast, the interpretivist philosophy stresses the dynamic nature of the research phenomenon, and it does not consider the research phenomenon to the separate from the reality and external forces. In addition, this philosophy is most suitable for studies that intend to perform a qualitative investigation (Mackenzie and Knipe, 2006).

Therefore, the positivist philosophy is implemented to examine the actual impact of communication advances in project work and the most appropriate communication innovation and strategies to successfully complete the project work. Further, in this series, the researcher employed the descriptive design instead of the exploratory design as the exploratory design does not stress upon following a particular structure, and it is not appropriate for the researcher that aims to conduct a systematic investigation. The descriptive design helps in completing the work in an organised manner, and it allows in carrying out the analysis work with equal emphasis on primary and secondary questions along with main objectives (Brannen, 2017).

The research approach is applied as per philosophy, research strategy and research methods and this study mainly focus on the integration of survey method and the positivist philosophy. Therefore, the inductive approach is excluded from the study and the deductive approach is used for examining the credibility of assumptions or notions that are present in literature and prominent secondary sources. The inductive approach is mostly employed in qualitative studies to generate new insights and build new theories (Yilmaz, 2013). The deductive approach is regarded to be appropriate for generating specific information about the most effective communication strategies for maintaining project quality and ensuring timely delivery of projects in the IT industry (Roberts, 2010).

The study intends to highlight key barriers to communication in group projects in the IT industry, so the use of the deductive approach is appropriate for the study.

3.3 Materials

In order to gather crucial insight into the role of communication in ensuring project quality and delivery, the research has made use of primary and secondary both the nature of data on the research topic. For collecting first-hand data directly from distinct sources, the primary method of data collection is used in the research. The information gathered through this method is claimed to be original in nature and examined specifically to the problem chosen under the research study (Walliman, 2017). Under the primary method, the research has collected data via a survey method, that is performed in the study using online channels. The survey is chosen in the study due to its characteristics of easy to develop, cost-effectiveness, access to mass reach, the capability of gathering data from a large set of respondents living at distant places and relatively easy ability to administer. This has helped in collecting a wide range of data on the research topic (Sreejesh, Mohapatra and Anusree, 2014). The survey is performed in the research with the chosen sample of the population comprising of 20 participants, including project managers, team members, senior managers and delivery managers. The selection of all these participants has been made in the research due to their significant and direct involvement in the IT projects that have helped in collecting crucial evidence on the role of communication in project quality and delivery.

In addition to this, the research has also obtained data from secondary sources. A secondary source can be defined as the source of data, that contains either data either in published form or unpublished form. Such data is available in different sources such as publications of government, trade and technical journals, books, business reports, public records and historical or statistical documents (Walliman, 2017). All these sources are accessed and used in the present research to collect crucial insight into the challenges faced in using the communications tools for the IT projects in India. Along with this, on the role of communication in ensuring project quality and delivery also, the sources have provided crucial evidence.

3.4 Procedure

In order to perform a survey, a systematic procedure and a comprehensive range of efforts have been taken in the research. For this purpose, primarily, a large array of respondents is contacted personally to make them aware of the research aim, context and the information which the present research seeks to gather from the respondents. After making them aware, the respondents were asked to provide their e-mail ids on which a consent form has been mailed to each selected participant using purposive sampling technique (Paradi and Zhu, 2013). Once the participants provided positive consent, a link of Google survey form has been mailed to all the participants. The link contains the complete survey questionnaire that encompasses open-ended, as well as close-ended questions, both. On the mail, it is clearly mentioned that the respondents can skip any question that they may think, intrusive and harming their privacy. It is also stated clearly that no misuse of the data provided by them will be made on the completion of the survey. The answers marked by them are directly shown in the researcher account, which is used further to analyse it in detail (Sreejesh, Mohapatra and Anusree, 2014).

3.5 Ethics

The research is based on examining the impact of communication on project quality and delivery and on fulfilling the main aim, the researcher employed primary research instruments such as survey questionnaire method in addition to the secondary research tools. Therefore, the researcher adhered to the ethics related to non-disclosure of identities and responses of participants, taking advance permission before commencing with the data collection process and giving them sufficient time to alleviate the probability of inconvenience (Roberts, 2010).

An online survey is filled by the project managers and team members involved in different projects within the IT industry. The participants were made aware of academic nature, and the prime purpose of the study and they were given utmost flexibility and freedom in the course of data collection to avoid infringement of ethical guidelines of research work. The researcher safeguarded responses and personal information of participants and protected the responses by password protection mechanism (Bryman, 2006). Further, the researcher made sure that only credible academic books and peer-reviewed articles are evaluated and reviewed while conducting secondary research and performing the literature review to erase ethical concerns. In addition, the use of grey literature is avoided to produce quality outcomes and maintain the high quality of the study. The researcher strictly followed all the university guidelines of carrying out research and prohibited the practice of data manipulation, copying of data and plagiarism to meet the quality benchmarks of reliability, originality, accuracy and authenticity (Brannen, 2017).

3.6 Data Analysis

The data analysis technique is applied according to the use of research methods and the type of data accumulated by applying different data collection instruments (Yilmaz, 2013). This study integrates quantitative research methods and the descriptive design wherein it utilises survey questionnaire tool for data collection. Hence, the graphical representation method has been employed for examining survey data in the form of bar graphs and pie charts. Graphical representation method and statistical analysis are extensively used in studies comprising quantitative methods as these tools are helpful in examining numerical and quantifiable information. On the other side, qualitative analysis and thematic analysis are some of the widely used approaches of examining interview data, theoretical information and nay information collected from qualitative data collection tools (Edmonds and Kennedy, 2012).

The use of graphical representation method has several advantages such as simplified presentation, easy interpretation, easily comparable and quick to grasp. Along with this, the graphical representation method is universally acceptable, and it gives a quick idea to the reader about research outcomes and key findings. However, the graphical representation method has low precision, and it offers vague ideas and portrays limited attributes of the research problem. In addition, quantitative tools lack detailed information as it does not focus on deep analysis of the research phenomenon (Yilmaz, 2013).

Chapter 4. Data Analysis

4.1 Results

1. Years of working in the company

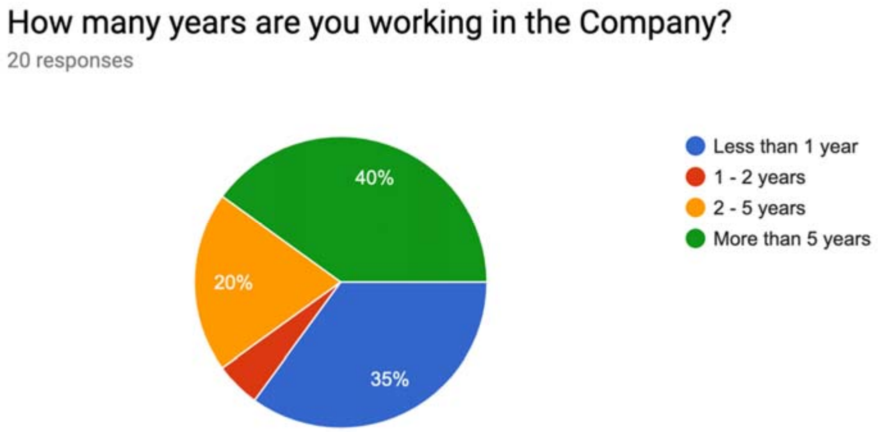


Figure 2:Years of working in company

In order to obtain insight into the working experience of the chosen sample research participants, the respondents were asked in regard to the number of years they are working in the company. On asking it is examined that from the 20 responses, 35% of them were working in the company for less than 1 year, 5% of them found were having 1-2 years of experience, and 20% is examined to have working experience of 2-5 years. In addition to this, majority of the respondents that were 40% of the total respondents is found to have working experience of more than 5 years. On analysing critically, it is analysed that the majority of the project managers, team members, senior managers and delivery managers are working in the company and handling the IT projects for more than 5 years. This reveals that the people working on IT projects have significant experience, knowledge and expertise in handling the projects effectively in the company (Figure 2).

2. Duration of working on this project

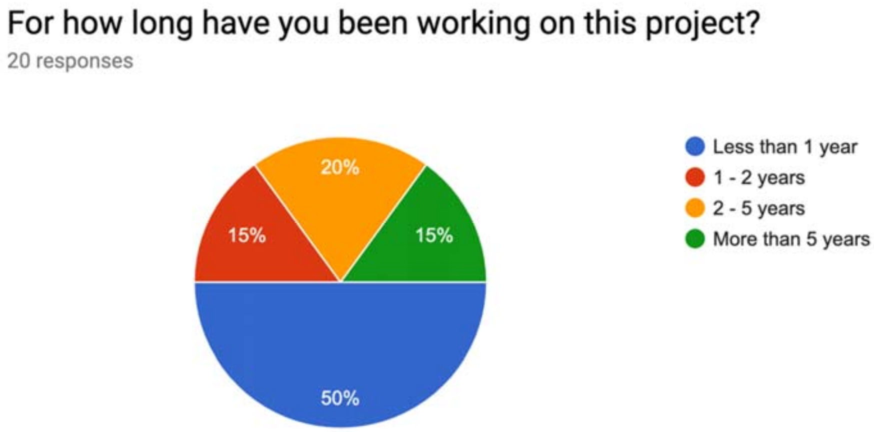


Figure 3:Duration of working on this project

In order to obtain insight into the duration of working on Indian IT projects, the respondents had asked in this regard. On asking, it is examined that half of the respondents that were 50% are found to have experience of less than 1 year. In contrast to this, 15% had working experience of 1-2 years, 20% had working experience of 2-5 years and rested 15% are evident to claiming that they are working on the IT projects for 2-5 years. Based on the views made, it is examined that the majority of the views gathered from the respondents are reflecting that respondents are working on IT projects for less than 1 year. This reveals that in regard to IT projects, the respondents are not having significant experience of working on such projects. This reveals the challenges and limitations pertaining to the effectiveness, efficiency, knowledge and expertise in the IT projects. It can directly affect the quality and timely delivery of IT projects (Figure 3).

3. Current role in the project

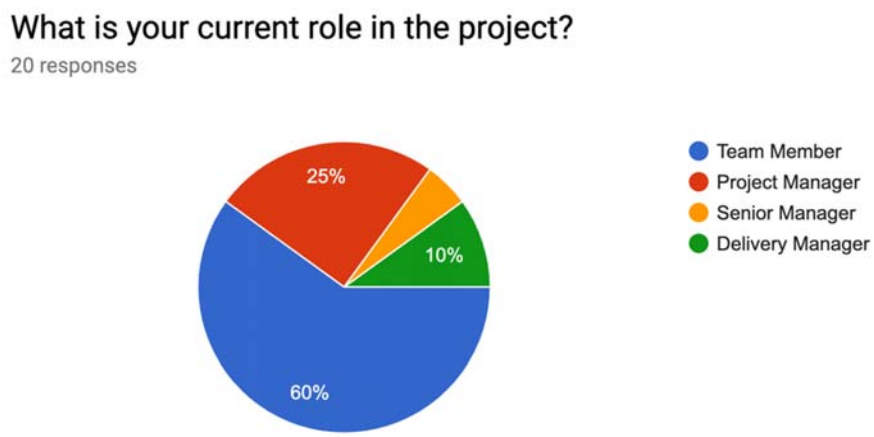


Figure 4:Current role in the project

All the participated respondents in the survey were asked to present their views on their current role in the project. On asking, it is examined that 60% of the total respondents are working as the team member on the project, whereas, 25% of them are found to working as the project manager on the chosen project. In addition to this, a total of 5% of respondents have found to working as the senior manager and rest, 10% are analysed to playing the role of the delivery manager in the project. Based on the overall analysis and interpretation of views, it is examined that majority of the gathered have revealed that currently on the chosen IT project, team members are working in the majority and thus, playing a crucial role in completing the IT projects effectively. The analysis and interpretation of the respondents' views have claimed that in ensuring the quality and timely delivery of projects, team members are playing the most vital role, establishment of effective communication with them is most pivotal (Figure 4).

4. Current Location of the Surveyed Respondents

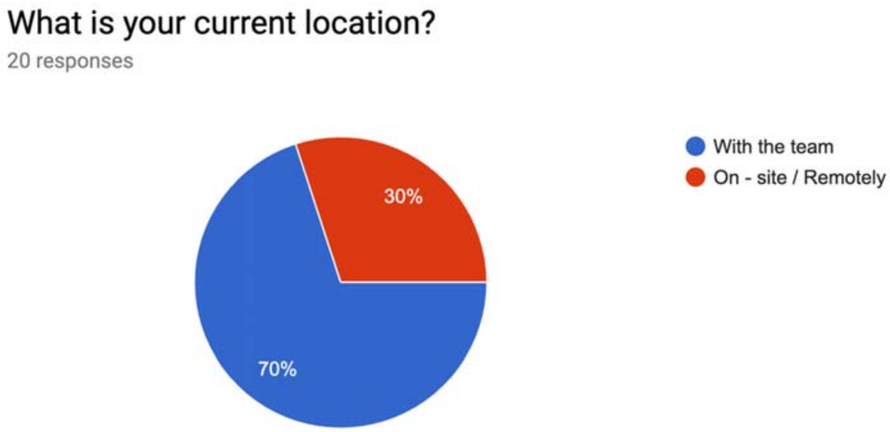


Figure 5:Current Location of the Surveyed Respondents

In order to gather insight into the type of work and handling responsibility, the respondents were asked in regard to their current job location. On asking, it is examined that 70% of the total respondents are currently working with the team and rest 30% are found to working at on-site/ remotely. On analysing the gathered views, it is examined that to handle and manage the IT projects effectively, the chosen respondents are working with the team, as well as on-site/ remotely. However, the majority of them are in-house and working with the teams to ensure all communication, resource allocation and streamline all operations. The information is transmitted for gathering crucial insight into the wants of consumers in a clear and effective manner by the people working with the team (Figure 5).

5. Frequency of Respondents communication with the team

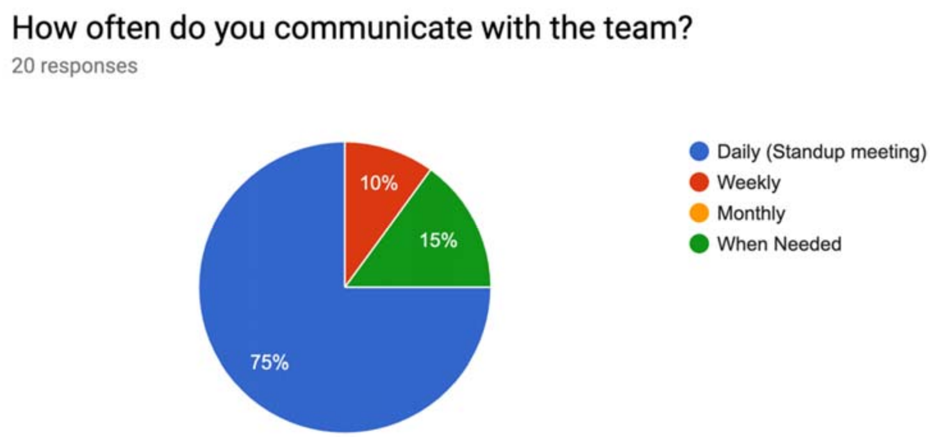


Figure 6:Frequency of Respondents communication with the team

In order to assess the transmission of information and other pertinent data, the frequency of communication is aimed to be assessed through the survey. In this context, the surveyed respondents were asked in regard to 'How often they communicate with the team?' On this, it is examined that 75% of the total respondents found to communicate with their team colleagues on a daily basis by performing stand-up meetings. In contrast to this, 10% of the total respondents are examined to communicate on weekly-basis with the team members and rest 15% are explored to communicate on monthly-basis. Along with this, nobody is evident to indulge in the practice of communication with the team members only when needed. This highlights that communication has remained a vital part of the IT projects. Moreover, from the overall analysis of findings, it is examined that majority of the respondents are communicating with their team members on a daily basis in stand-up meetings; however, still substantial segment of respondents are found to communicate on weekly and monthly basis, which raise the potential to create several communication issues that could create significant barrier to the quality and timely completion of the project (Figure 6).

6. Tools Utilised for Communicating with the Team

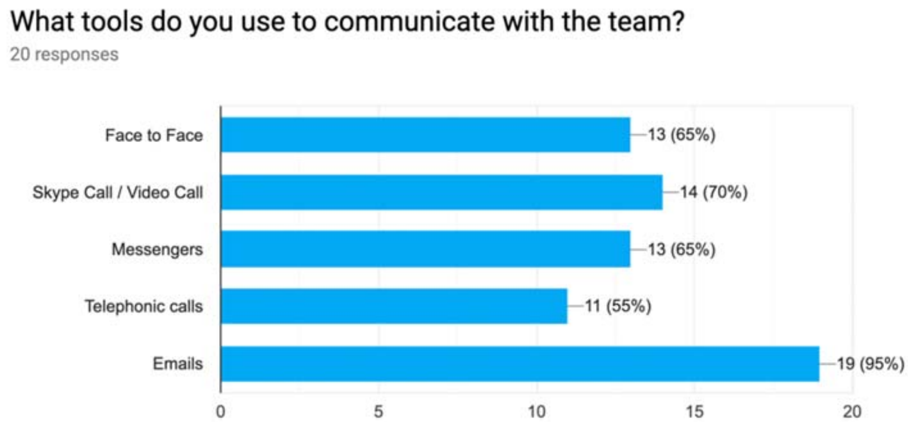


Figure 7:Tools Utilized for Communicating with the Team

Project managers, team members and delivery managers were asked about the tools used by them for communicating with the team for ensuring timely project delivery and monitoring progress of the project. It is depicted in figure 6 that Skype call or video call along with Emails are widely used by the participants for communication with the team. It is analysed that 95% of participants use Emails, 70% of participants use Skype call, and around 65% of participants use messengers for communication. Further, 65% of participants utilise face to face communication technique while only 55% of participants mentioned the use of telephonic calls. Overall, it is evaluated from the responses that project managers and team members in IT industry utilise Emails and Skype calls for discussing the project progress and conveying any necessary information.

7. Effective and Useful Modes for Communication

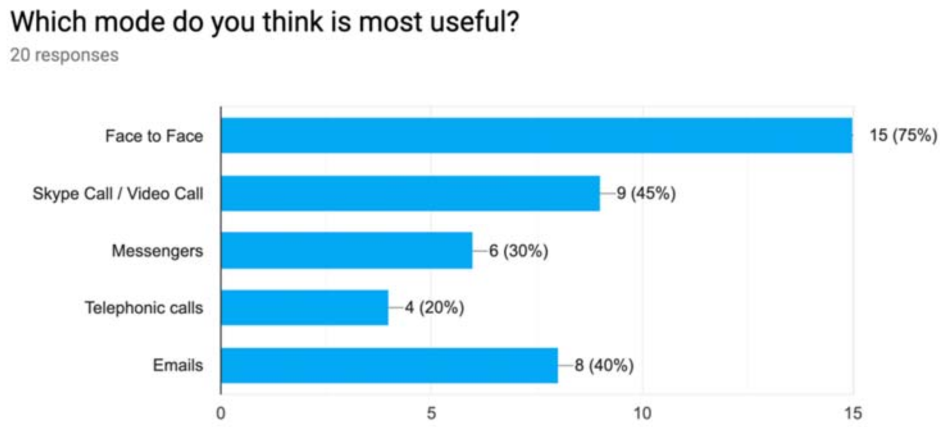


Figure 8:Effective and Useful Modes for Communication

The survey participants were asked about the usefulness of different communication modes and their perceptions in this regard and it is evident from figure 7 that face to face communication is one of the most useful ways of communication. It is found that around 75% of participants consider face to face communication to be a helpful mode of communication, while 45% of participants deem Skype or video call to be useful. In addition, around 30% of participants consider messengers to be a useful mode, while 40% of participants highlight the usefulness of Emails for communication. Other than this, it is found that only 20% of participants consider telephonic calls to be a useful mode of communication. As a whole, it is noted that Skype call and face to face communication are perceived as some of the most useful methods of communication in completing and delivering projects.

8. Challenges Faced During Communication with the Team

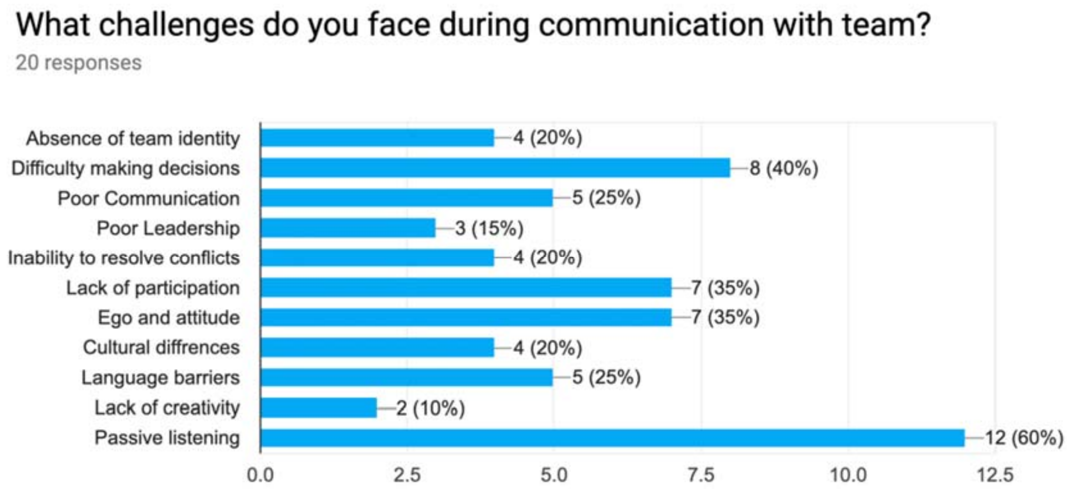


Figure 9:Challenges Faced During Communication with the Team

The participants were asked to point out the most prominent challenges encountered by them while communicating with the team and it is examined in the light of figure 8 that passive listening, difficulty in decision making, ego and attitude along with lack of participation are major challenges. Total 60% of participants face the issue of passive listening, and 20% of participants encounter the issue of absence of team identity, inability to resolve conflicts as well as cultural differences. Further, 40% of participants face problems concerning decision making, and 25% consider language barriers and poor communication. Furthermore, 15% of participants regard poor leadership as the main challenge, while 10% of participants consider lack of creativity to be the key issue. Apart from this, it is assessed from survey responses that 35% of participants face challenges relating to ego and lack of participation. Therefore, it is necessary to eradicate the prominent challenges of passive listening, lack of participation and decision-making difficulties.

9. Challenges faced while Using Communication Tools

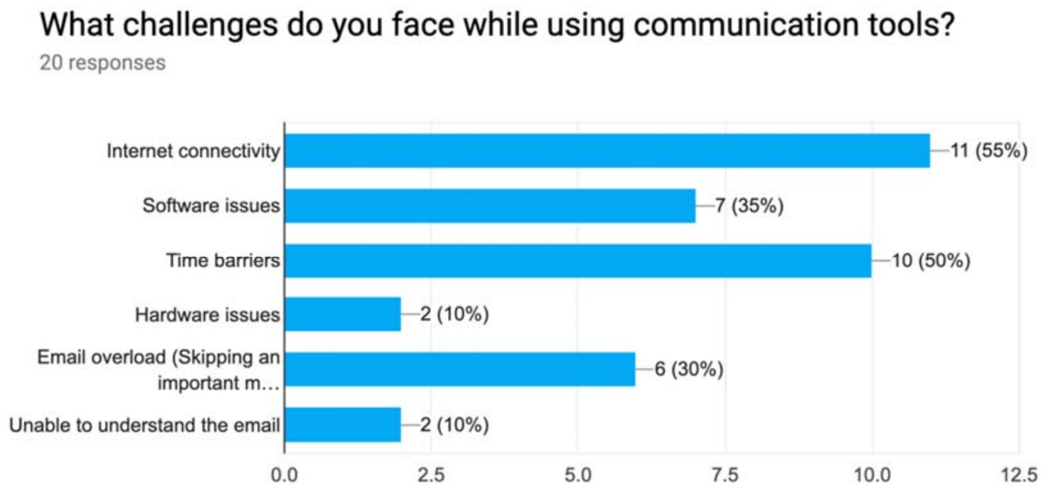


Figure 10:Challenges faced while Using Communication Tools

In order to understand the barriers or challenges to the use of communication tools, the survey participants were asked to give their viewpoint in the same concern wherein it is evaluated from the answers that internet connectivity is the main issue in the use of communication tactics. Apart from this, it is found from the responses that time barriers and software issues are also major challenges in utilising communication tools during project execution. It is clear from figure 9 that a total of 55% of participants encounter issue relating to internet connectivity, and 50% of participants encounter time barriers. In addition, the answers signify that around 30% of participants face issues due to Email overload as they tend to skip the important Email that may hamper the project work. It is expressed by 35% participants that they face software issues while 10% participants face hardware issues along with facing difficulties in understanding the mail, thereby obstructing with the project tasks and increasing the risk of time overrun. Hence, it is necessary for senior managers and project managers to take into account the difficult aspects associated with the use of different communication tools to promote smooth and effective communication and meet the project deadline.

10. Effectiveness of Communication Tool

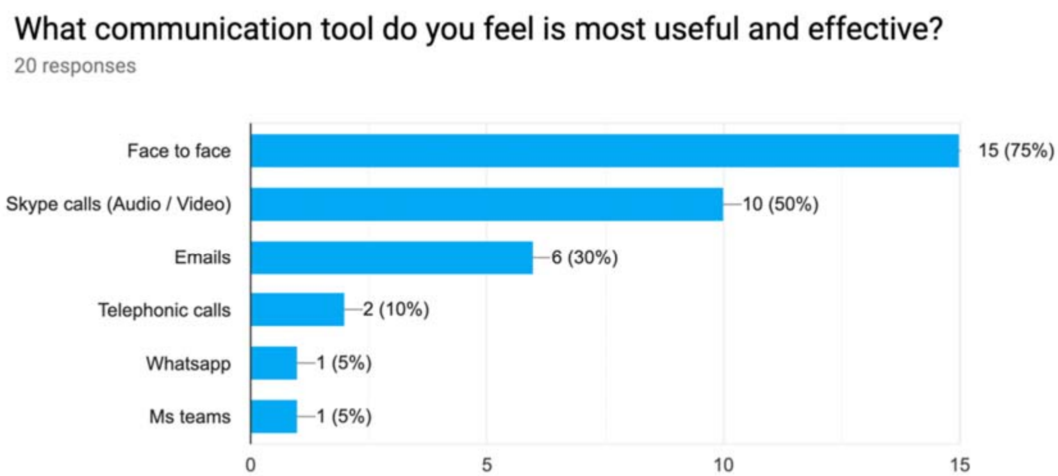


Figure 11:Effectiveness of Communication Tool

This question is targeted towards determining the most effective and useful communication tools for project managers and team members in the execution of projects in the IT industry. Figure 10 indicates that face to face communication is amongst the most effective tools to ensure project deliverables and accomplish project tasks with optimal use of resources. It is analysed from the response that face to face communication, Emails and Skype or video calls are the most useful ways of communication during projects. Out of a total of 20 participants, 75% said that face to face communication is an effective communication tool, but 50% highlighted the efficacy of Skype calls over face to face communication. Further, 30% of participants prefer using Emails for communication, and 10% of participants prefer telephonic calls. On the other side, it is found that only 5% of participants perceive MS Team and WhatsApp to be useful for communication purpose while working on a group project.

11. Benefits of tools in the effective communication

his is an open-ended question, on which the respondents have provided distinct views. Based on the examination of the views, different tools are explored to foster effective communication, such as Skype, telephonic communication, audio and video conferencing, daily meetings and use of e-mail are examined to play a pivotal role in facilitating effective communication. In this, one of the respondents has made crucial views by claiming that Direct Communication ensures that the information provided is acknowledged and understood by all parties. With WhatsApp, you know that the message has been delivered (double blue ticks). Other electronic forms do not indicate whether or not the recipient has received the information, which can lead to problems. Along with this, since half of the team is on-site, the IT project company uses Microsoft Teams to communicate with the on-site team. For this, chatting/calling (Stand-up meeting) is found as the usual mode of communication.

On this, majority of the respondents have presented views on the benefits of tools in facilitating effective communication. They claimed these tools foster the attainment of better productivity, helps in presenting communication in an appropriate manner, saves time and helps in keeping track of communication and facilitate in distant communication. The tools make sharing of ideas or views more convenient and easier, keep employees in touch, helps in organising, convey the message properly, and delegating roles and feedback channels. Based on the overall examination of the views, it is analysed that the majority of the views have supported the tools of communication that indicate the delivery of messages and ensure two-way communication.

12.Strategies important for effective communication

In order to obtain insight into the strategies that can be used by the organisations for completing the projects successfully by ensuring effective communication, the respondents were asked to provide their critical views. On asking, it is analysed that good team working; transparency, genuineness and focus on the issue; chosen method of communication; Active Listening and Participation; simple and to the point element in communication; effective communication skills; good manager/ scrum master to delegate tasks; and organised, clear and concise realistic goals are examined as the key strategies. A respondent has provided a detailed view by claiming that "Firstly, identifying ALL the stakeholders who have a direct or indirect impact on a project. Secondly, understanding what method of communication (and the detail of information) is best for each stakeholder. Thirdly, during the project, ensuring that the communication channels are kept open with all stakeholders, despite any conflict. This is vitally important for project success. Lastly, ensuring that what you are trying to communicate is clearly understood by the recipient. There can be no areas of doubt or ambiguity because if there is, it inevitably leads to problems."

In addition to this, active listening, trust and openness, listening, time gap, face to face communication or direct conversation, and good listening and understanding ability is found to claimed by the respondents as the crucial strategies to ensure effective communication. Along with this, a respondent claimed that "Before having any communication, be prepared with agenda of discussion". From the analysis of overall views of the respondents, it is examined that majority of the views have proposed face to face communication, active listening, participation and clarity in the transmission of information are analysed as the key strategies to ensure effective communication. All these elements should be effectively embraced in the communication strategy to facilitate the delivery of the right message at the right time.

13. Barriers to Communication

In order to recognise barriers to communication in completing project work in IT industry and issues faced in timely delivery of projects due to communication challenges, the researcher included an open-ended question in the survey and asked the participants to give a brief response to the question. In this relation, it is reflected from the responses that language barrier and time barrier create problems for the team members as well as project managers in maintaining quality of the project, completing different phases of the project as per the set schedule and delivering the final project on time. However, the majority of participants did not highlight any additional barrier to communication apart from the already mentioned list of barriers including decision-making issues, passive listening, ego problems and poor engagement. Other than this, lack of clearly defined goals in a team and absence of team identity create issues within team members regarding their responsibilities, individual role and contribution to the team project. It is necessary for team leaders and project managers to exhibit strong leadership and managerial qualities to minimise conflicting issues between team members and reduce cultural differences. Effective leadership and strong teamwork would deal with the issues of ego and attitude by inculcating the sense of belongingness and team spirit amid project members. In addition, effective leaders also play a pivotal role in increasing the participation of team members by inviting their inputs and directing their efforts toward project success and enhancing their performance. As a whole, it is evaluated from the survey results that the aspects of quality and timely delivery of projects are strongly dependent on the involvement of diverse stakeholders and the overall internal and external communication. Thus, network problems, language barriers, cultural differences and other key issues faced in the use of communication tools need to be addressed and resolved in an adequate manner.

4.2 Discussion

The research has undertaken detailed empirical research on examining the impact of communication on the overall quality and delivery of IT projects. In order to examine it, the use of the quantitative method has been made, to collect which survey has been performed with distinct people working as a team member, project manager, senior manager and delivery manager in the IT project. Based on the findings made, it is discussed that communication is the key considering element of project management, which the project professionals value the most. In support of this, the literature findings have revealed that significant focus on internet and advancement of technologies is found to act as the key fostering factor of communication, which provides an efficient and effective way to communicate with the clients. This helps in organising the people, ideas, fostering efficiency and collaboration in projects regardless of location. Effective communication ensures a better exchange of information regarding the project and project delivery to the respective clients (Onyegiri, Nwachukwu and Jamike, 2011). However, ineffective communication with the stakeholders of the project causes significant barriers to communication on the project.

However, on performing the survey, an issue of a substantial amount of communication on weekly and monthly basis is examined, which raise the need for integrating more effective communication. In order to communicate with the teams, the tools such as face to face communication, Skype call or video call, messengers, telephonic calls and e-mails are examined to use at a prominent basis. In support of this, video conferencing, WebEx and other technologically advanced tools of communication are found to play a crucial role in collaborating the working conductions with the shared applications. These tools help in developing and managing the virtual team members effectively, scattered at distinct geographic locations (Kannan, 2014; Naqvi, Aziz and Rehman, 2011). However, both the survey findings and literature findings have revealed that there are several challenges, issues or barriers faced by project members while delivering the projects in the IT industry. The challenges explored in this context includes the absence of team identity, poor communication, conflicts, ego and attitude, cultural differences, language barriers, lack of creativity, and passive learning are analysed as the key challenges. In this, lack of participation, difficulties in decision making and poor leadership are also explored as the key challenges. On the other hand, in using the communication tools, the challenges linked to internet connectivity, software issues, time barriers, hardware issues, e-mail overload and lack of understanding of e-mail are examined (Olufunmilola, 2009; Wilson, 2018; Vasista and Abone, 2018). In dealing with the challenges, the use of face-to-face communication tool is analysed most useful.

The findings made in this context has revealed that communication in IT project significantly affect the delivery of projects and overall quality. The literature findings have revealed that effective communication helps in sharing the latest updates and critical information pertaining to documents and other project linked information with the team members. Communication helps in mitigating barriers of geographical boundaries; helps in completing the requirement of clients effectively and manage time, schedule and budget; ensures specialisation of works, manages time and generate a valid report regarding the projects. It is also discussed based on the findings that innovation in communication is playing the crucial role in enhancing the quality of the project, planned to be delivered to clients (Ribeiro Braha, 2019; Bloch, 2012). Thus, based on the overall analysis, it is discussed that effective communication is a vital element of project management in the IT sector also that affect the quality of the project, as well as effective delivery.

Chapter 5: Conclusion and Recommendation

5.1 Conclusion

In adherence to the explored literature studies, the research has concluded that there is an occurrence of communication failure within the projects when the cases related to the misunderstanding of the information are identified. The communication process also tends to fail when the useful sources of data are interchanged as well as lost due to language barriers. However, the findings obtained by this study also help in realising that the method of maintaining track records about the useful sources of data that are interchanged across the e-mail platforms raise difficulty level among the team members. The findings have also highlighted the main causes associated with the failure of the projects. These causes are the breakdown of the communication network as well as incorrect interpretation of the lengthy e-mail threads by the virtual team members. The failed communication system also caused delays to the project.

Moreover, the findings of this research work have also emphasised on the issues surrounding the use of technology. During the use of technological aids like video conferencing, there is an inadequate face to face interaction. Further, the software, network, as well as hardware failures, also result in degrading the project quality by generating communication gaps. Moreover, another barrier like the lack of trained professionals to use the innovative communication technologies and correct handling of the advanced technologies impose a negative impact on project quality as well as the costs. The training costs may also raise project-related costs.

Furthermore, the primary findings of the study also reviewed that dissatisfaction among the employees regarding the ineffective leadership style also causes unwanted delays in the project. The inadequacy of the resources in small organisations also raises barriers in the application of evolving and recent communication technology. In addition to it, differences in languages also affect the accuracy of utilising a specialised technology. The linguistic barriers may also cause incomplete communication among the workers. Adding further data to the above findings, the research findings have also emphasised upon considering the privacy-oriented issues. The fear of hampering the privacy levels also causes problems in easy advancement of communication. It is further analysed that the information interchange is executed within the IT industry by the usage of the internet for establishing communication. This further raises the chances of the data breach and affects the efficiency of communication.

On the other side, the research findings gained from this research work also assists in understanding the impact as well as the implication of using technological innovation in communication. With the help of using technological advancements such as the e-mails, the project managers are capable of replacing the less efficient communication forms. The utilisation of the less reliable modes of communication such as fax, voice messages, memos as well as the social collaborations such as Facebook or twitter and communicational tools such as Microsoft project, internal tools developed by companies result in improving the effectiveness of the work activities. With the help of sharing e-mail, the updates and critical informative documents can be shared in an easy manner by the project managers.

Moreover, it is explored that utilising the software of project management as well as using software management applications, offer functional advantages. It also enables to interchange the details related to the project across the geographic boundaries by the usage of smart networking features. It is also evaluated that software directed towards management of the projects assists the project managers, as well as the project team members to develop smart featured website enabled projects like skype and Video conferencing calls. Usage of the software results in the enhancement of productivity, and it also raises the project quality. The research has helped in investigating the crucial project management software such as the ProWorkflow that allows managing the project-oriented tasks. It further maintains the track record of executing the tasks determining the schedule of the tasks as well as generating the project report.

However, the research work has also highlighted the implication related to the language-oriented differences that affect the quality of the projects. Findings of the research work have highlighted the issues surrounding the use of the English language in other countries. Some of the countries are not identified to show support for specific languages such as tools developed my companies. The project management software is also identified to differ in terms of their language, and it may create problems for the other clients of the project. Furthermore, this research has also emphasised upon the problems related to the costs involved in the development of the projects. It is also identified that the issues surrounding the usage of costly software of project management. People employed in the IT industry is not efficient to establish communication with each other by the existence of advanced communication technology. It implies that the innovative software developed for managing the projects lead to enhance the level of communication within an organisation. The open-source software of the project management that is based on the cloud-technologies are easily accessible. This software is also easy to be installed on the servers and is readily modifiable as per the needs of the project manager. By the introduction of the advanced software technologies as well as the communication sources workflow is transformed in a smooth manner. This can also contribute towards the timely delivery of the projects. Furthermore, research findings have also highlighted the negative implication of advanced technology like the security risks that are generated from the use of virtualised networks. Thus, the usage of virtual networks also contributes towards a negative project performance as well as delay.

It is further concluded from the research that communication holds high value in making people to adequately exchange ideas and strategies to establish required collaboration for managing the projects effectively. In specific context to the IT industry-based projects, it is derived from the primary findings with the guidance of secondary data that with the advancement of internet technology, communication process has become highly convenient and strong to share information, coordinate with the project team and provide regular updates about the progress of the project. For supporting these findings, the illustrations are retrieved that by conducting the online meeting, sending emails and sharing messages through websites, the IT project team keeps constant check and monitoring on the ongoing activities, issues and progress attained in the project. The analysed survey findings also inferred that advanced technology allowed the team of IT projects to communicate in face to face manner through Skype calls. In this way, the communication supported in managing project quality by allowing the people involved in the project to share crucial data regarding any alterations in scope or requirements of the project, need of new resources, the achievement of deadlines as per the allocated schedule and any issues encountered in executing project phases. In such a manner, the fast means of communication on online platforms such as Skype and online meetings help in mitigating IT project issues, maintaining quality as well as saving time.

However, at the same time, it is also noted that electronic communication mechanism might also generate problems such as misinterpretations of communicated ideas, poor connectivity and miscommunication. In this sense, the need for improving the flow of communication by raising the internet service standard and enhancing the use of videoconferencing for avoiding miscommunication among the virtually connected members of the IT project. However, while considering the positive implication of advanced communication on projects undertaken by IT industry, it is reflected that with use of project management software and advanced internet-based communication, the project team adequately cooperate with all the stakeholders by listening to their specific needs. For example, regardless of the issues concerned with geographical distances, the project team can easily manage smooth communication with clients for putting sufficient insight into their concerns for project-related specifications. The strong and constant communication also supports the team members to know the alterations demanded by the client in the requirements during project execution. Therefore, the quality of IT projects can be adequately managed by the team by engaging clients in the project processes by effective communication to avoid any ambiguity and information gap.

In contrast, the primary data also highlighted some issues that even after incorporation of the modern communication technologies like video conferencing, WhatsApp application, email and Skype, the IT project team still sometimes encounter considerable challenges in context to lack of engagement of some participants, passive listening, coordination difficulty in virtual environment as well as complex decision-making. In this regard, the findings also represented that there is need of proper values and motivational environment wherein all project stakeholders get actively engaged in the communication process for sharing their expert knowledge and identifying solutions to eradicate IT project-oriented problems. Moreover, the findings also highlighted the requirement of tracking online conversations and recording them to use it for reminding the team about the essential measures that have been coordinated by the members to be taken during project execution. In this way, the IT projects' quality level, as well as their timely delivery, can be well managed as per the anticipations of stakeholders.

Apart from it, the findings also deduced that if the communication process gets carried out on a regular basis such as on weekly, daily as well as monthly basis then a sequential progress can be maintained of the project by addressing the issues and executing phases in a logical manner through tracking documents, timely reporting updates and systematically making decisions. Moreover, the advanced ways of communication such as Skype calls and video conferences assist the IT project manager in receiving adequate feedback from the team and stakeholders based on which it is be analysed whether the progress of work is in line with the defined objectives as well as the scope of the project or not. Moreover, it can also be tracked with the help of adequate communication that the project deadlines are timely achieved.

Yet, for fostering the benefits of strong communication to manage IT projects' quality as well as delivery in a timely manner, the problems about internet connections, low team engagement, cultural differences, team conflicts and complexity regarding virtual communication are yet to be mitigated.

5.2 Recommendation

For raising the implication of communication for managing IT projects' effective quality along with time-efficient delivery, some recommendations are provided as follows:

A) In order to improve the flow of communication, the internet connectivity can be raised by increasing the bandwidth and using communication API (Application Program Interface) for strengthening the ability of project team to conduct text messaging and voice calling conveniently.

B) Moreover, IT project teams can also use cloud-based communication platforms that can assist the developers to easily as well as quickly emerge calling features with the online applications with the use of APIs of communication. In this manner, the IT project team can become capable of conducting strong communication through smooth messaging, voice calls and video calls on a cloud-based virtual environment.

C) Further, in regard to managing the cross-cultural issues that generate constraints for project team members to communicate from geographically different regions, IT firms can organise cross-cultural training programmes for mitigating language barriers and fostering coordination about the project team while communicating about the project related aspects. In this way, proper communication can be managed among the cross-cultural team to manage the project's quality and carry out project tasks as per the allocated time.

D) The message translation software or services can also be utilised by the IT project team to understand the communicated information easily and avoid the issue regarding miscommunication of important project details. For example, Skype facilitates services for audio translation in phone or video calls for the messages to be understandable for the team members who know different languages (Uklinkology, 2019).

E) The IT project manager should also encourage the entire team to get engaged in the process of communication by conveying them about the project benefits for all the stakeholders. Further, the professional developments of the project team should also be taken into account while involving them in the projects. The engaged team can adequately communicate about the project and exchange their valuable feedbacks so as to raise project progress.

F) IT project team must decide on the schedule of project-oriented meetings. For example, the meeting should be conducted either on monthly, daily as well as weekly basis. After this decision, regular communication can be confirmed about the project issues and project progress so as to maintain proper coordination and attain desired quality into project outcomes.

G) The research has focused upon the challenges arising in the project management process due to the presence of barriers like inadequate leaderships, dissatisfied employees and less technical awareness. Therefore, for resolving this issue, the application of the reciprocal feedback mechanism is also important. Strategies such as constructive criticism can be implemented for raising the effectiveness of the feedback process. Provision must be initiated for the launching of clear and logical feedback. The feedback is also required to be detailed and publicised in a respectable manner so that the other employees are capable of learning from it. It would provide the opportunity to learn and develop the organisational process (Jonasson and Ingason, 2018).

H) Apart from it, the research has also revealed issues about the ineffective distribution of ideas among the project members. This problem is identified to be generated due to less emphasis offered to the viewpoints of the project members. Hence, in order to resolve the issues regarding the awareness levels of the employees, the active listening strategy must be implemented. Active listening enhances the communication mechanism by providing an opportunity to understand the viewpoints and ideas of fellow teammates. The active listening also allows identifying the areas where risks can be developed, and it raises the focus of the project head upon the activities and information that is being shared among the project members (Lindstrom, 2014).

I) Implementation of the training programs regarding the non-verbal communication strategies can also assist in examining the viewpoints of the workers about the project as well as their working attitudes. It is analysed that almost half of the interactions in organisations happen due to the help of non-verbal ways of communication that involves body languages, gestures, and behavioural actions. Identification of the non-verbal signs can limit the chances of miscommunication (Peña-Acuña, 2018).

Future Research

A) The contemporary research is emphasised only on the importance of the aspect of communication for ensuring the project's quality maintenance as well as prompt delivery of the project. However, future research can also cover some other vital aspects of project management, such as resource acquisition, leadership, advanced software for project management and logistics management for adequately managing major IT projects.

B) Further, it is also suggested for future research to be carried out with the application of interpretivism philosophy as unlike positivism; this philosophy tends to cover wider insights of the research subject by interpreting the findings from multiple viewpoints and worldly perspectives. Interpretivism also supports in fostering human interest towards the research project.

C) Further, for enhancing the usefulness and informative potential of the present research subject, the interview method can also be applied in this research in the place of the survey method. The interview method can provide an opportunity to explore the primary data in relation to the research subject. The method can also enhance the validity of the explored findings as it retrieves useful information from the human perspectives that are closely relatable to the real world. In addition to it, the method would provide highly applicable data from the most suitable and apt sample size that are capable of highlighting the impact of using communication techniques for assuring the timely delivery of the projects without compromised quality (Brannen, 2017).

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Appendix: Survey Questionnaire

1. How many years are you working in the Company? *

a) Less than 1 year

b) 1-2 years

c) 2-5 years

d) More than 5 years

2. For how long have you been working on this project? *

a) Less than 1 year

b) 1-2 years

c) 2-5 years

d) More than 5 years

3. What is your current role in the project? *

a) Team Member

b) Project Manager

c) Senior Manager

d) Delivery Manager

4. What is your current location?

a) With the team

b) On-site / Remotely

5. How often do you communicate with the team?

a) Daily (Stand-up meeting)

b) Weekly

c) Monthly

d) When Needed

6. What tools do you use to communicate with the team? *

a) Face to Face

b) Skype Call / Video Call Messengers

c) Telephonic calls

d) Emails

7. Which mode do you think is most useful? *

a) Face to Face

b) Skype Call / Video Call Messengers

c) Telephonic calls

d) Emails

8. What challenges do you face during communication with team? *

a) Absence of team identity

b) Difficulty making decisions

c) Poor Communication

d) Poor Leadership

e) Inability to resolve conflicts

f) Lack of participation

g) Ego and attitude

h) Cultural differences

i) Language barriers

j) Lack of creativity

k) Passive listening

9. What challenges do you face while using communication tools?

a) Internet connectivity

b) Software issues

c) Time barriers

d) Hardware issues

e) Email overload (Skipping an important mail due to excess emails)

f) Unable to understand the email

10. What communication tool do you feel is most useful and effective?

a) Face to face

b) Skype calls (Audio / Video) Emails

c) Telephonic calls

d) Other:

11. How do the tools benefit in effective communication? *

12. In your opinion what strategies are important for effective communication?

13. Any other highlights / barriers you need to mention. *