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# ROLE OF TECHNOLOGY IN MANAGING INTERNATIONAL TEAMS

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## ABSTRACT

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In today's globalized business environment, work teams running across borders now heavily depend on technology for communication, collaboration, and team management at large. This study examines the nature of managing international teams through technology with respect to efficiency in communication, productivity and cross-cultural collaboration. Using a qualitative research approach, the study consists semi-structured interviews with professionals from different companies who work in fully virtual or hybrid teams.

The research is analyzed understand the effectiveness of virtual communication tools and the factors influencing their adoption. The findings suggest that although video conferencing and collaborative platforms help in attaining effective real-time communication, they have their own problems, such as time zone differences, technology-related inadequacies, and culture differences.

The study identifies challenges and best practices in optimizing technology use for international team management. Organizations should consider investing more into user-friendly tools, training programs, and an inclusive culture to offset the impacts of virtual communication challenges.

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Keywords Virtual teams, technology adoption, communication technologies, challenges and barriers in teams

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# 1 INTRODUCTION

## 1.1 Background

The concept of team based work structures began gaining recognition in the United States as early as the 1960s. However, it wasn't until the surge of interest in Total Quality Management (TQM) during the 1980s that widespread implementation of teams and quality circles took place. This movement emphasized continuous improvement and employee involvement, paving the way for organizational restructuring. Several organizations in the latter part of the 1980s and the early 1990s adopted the employee-managed or self-directed team approach, shifting decision making and problem solving responsibilities from managers to front line employees to enhance efficiency and responsiveness. Major names like Motorola, Texas Instruments, General Electric, forayed beyond national frontiers to reach global dimensions these team oriented practices in the mid-1990s extending them to their operations in Europe, Asia and Latin America as part of a broader strategy to align global human resource management. With the advancement of communication technologies and ongoing globalization, the use of virtual teams has expanded significantly allowing organizations to cooperate across borders more effectively (Kirkman et al., 2005). In today's era, virtual team structures are becoming increasingly popular within organizations. The review of literature concerning virtual teams revealed that almost all organizational teams, with a few exceptions, have engaged in some form of virtual interaction today.(Martins et al., 2004).

The online work is becoming popular in many countries, especially where internet access is strong and reliable. Technology has changed how business operate and manage their daily activities. To stay competitive in global markets, many companies have had to adjust and become more flexible. Over the past 30 years, business around the world has become more connected. Most experts agree that globalization has grown largely

because of advances in technology, which plays a key role in bringing the world closer together. (Baldwin, 2016).

Global teams were first created to bring together experts from different parts of the world to share ideas and work on projects more efficiently, without needing to travel. This helped save both time and cost. Over time, with the rise of online tools, these teams became even more effective. Now, global teams often include members from different countries who work together using shared communication and information technologies. (Maznevski & Chudoba, 2000; Hertel et al., 2005)

As work becomes more global and less centralized, many companies have started using virtual teams. These teams consists of individuals based on various locations who work together using tools like email and video calls. The fast growth of technologies like the internet has made this even more common, and now most major companies use virtual teams in some other way. (Gibson & Gibbs, 2006). A virtual team is made up of individuals who rely on each other to complete tasks and share responsibility for the results. These team members are spread out across different times or locations and use various communication technologies to work together. (Gibson & Cohen, 2003).

The COVID-19 pandemic changed how people work, leading to a major move toward working from home or remotely. According to the RW3 Cultural Wizard 2022, Global Virtual Team survey report, 75% of employees are still working from home in some capacity. While remote work offer flexibility and reduced commuting time, many employees 58% prefer hybrid work arrangement, combining remote work with in office work. Remote communication is still a potential challenge as 40% of respondents are having difficulty with the quality of virtual communication and how these others are affecting their productivity and creativity.

The study founded that leadership will have to look for other ways of creating spaces for innovation and collaboration rather than simply getting their people to talk face-to-face. This is especially acute for creative teams, where an either/or position with respect to in-person collaboration could easily be disengaging and create talent loss.

The survey done by Vorecol Remote Work and Digital Transformation. The evolution of technology and the preferences of employees and employers have hugely impacted the upgrade in supporting remote work. The Global Workplace Analytics report has put forth an estimate of a 173% increase in remote working in the U.S., from 2005 to the present. So big has been the contribution of the developed nations that it is predicted that by 2025, 70% of the work-from-home population will be composed of those working remotely at least five days a month. Based on a study conducted by Gartner, around 82% of executives planned to retain work-from-home provisions in their companies, even after the pandemic. This decision is influenced by benefits like increased flexibility, better work life and cost savings companies can saver around \$11,000 per year of each employee working remotely.

In the past, research on virtual teams mostly looked at how team members work together within a single team, assuming they only belong to that one team (Martins et al., 2004). But more recent studies have found that many people are actually part of several teams at once, so researcher are now also looking at how they interact with people outside their main team. (Gibbs, 2017).

The paper will study the influence of technology upon international teams with a focus on communication, technology acceptance, role of technology, and the performance of teams. This investigation will consider how technology can help enhance teamwork in order to offer useful insights to organizations and leaders confronting the realities of the digital age.

## **Key characteristics of International Teams**

Cultural diversity- International teams bring together people from different cultures, each with unique communication styles, work ethics, and methods for problem solving. This diversity can encourage creativity and innovation but also presents challenges in terms of understanding and respect for different cultural norms. (Adler & Aycan, 2018).

Technology enabled collaboration: International teams commonly depend on tools like video conferencing, collaboration platforms, and instant messaging apps to support effective communication and team work (Sjøvold et al., 2022; Duranti & Carvalho De Almeida, 2012).

Language Differences: While English frequently serves as common language in international teams, language barriers can still create challenge in communication. Misunderstandings may arise, and the team must work towards clear and efficient communication methods.(Morrison-Smith & Ruiz, 2020).

Communication challenges: International may face communication challenges due to language barrier, cultural differences, and technological limitations. (Morrison-Smith & Ruiz, 2020).

### **1.2 Purpose, Objectives and Methods**

This research aims to understand how technology affects the management and performance of international teams. It focuses on exploring the tools these teams use and evaluating how those technologies influence communication and teamwork.

## **Objectives**

- 1.** To explore the different technologies utilized in international virtual teams.
- 2.** To explore how technology affects the functioning of international teams.
- 3.** To explore what are the challenges and barriers of using technology in international teams.
- 4.** To provide recommendations for enhancing the utilization of technology in managing international teams.

## **Methods**

The literature review will mainly look at existing studies related to how technology affects communication and teamwork, the use of technology in international teams, and the challenges global businesses face when adopting these technologies. The qualitative methodology will be applied in this research, specifically by semi-structured interviews, which are going to be conducted among different team members holding different positions.

Secondary data will be collected from existing sources such as reports, academic journals, and peer reviewed articles that discuss the use of technology in remote work and managing international teams.

### **1.3 Key concepts and framework**

- **Virtual Teams:** Groups that collaborate from various geographic locations, frequently depending on technology for communication and teamwork.
- **Technology Adoption:** The way in which people and groups are inclined to adopt and adapt to new technology.

- **Cross-Cultural Communication:** Understanding how different cultural backgrounds affect communication and teamwork among groups.
- **Challenges in teams:** To explore the communication problems faced by international teams and how technology help reduce misunderstandings.
- **Communication technologies:** Tools like email, instant messaging, and video calls play an important role in managing international teams. Members of the teams stay connected and communicate quickly, even when the members come from different time zones and backgrounds.

The emergence in telecommuting or hybrid work models has completely changed how teams communicate and work together, especially with the global phenomena like the COVID-19 pandemic. Virtual teams depend on communication technologies like video conferencing, instant messaging, and many more in the event of either contingent number work with one's team. Although technology has brought considerable opportunities for cross border collaboration, it also entails some challenges concerning engagement, clarity and performance. This is why understanding how successfully such communication tools can be employed to facilitate interaction and what might encourage or discourage their adoption is vital. The present study takes care of those issues in a twofold way: Media Richness Theory (MRT) and Unified theory of acceptance and use of technology (UTAUT).

This study is based on Media richness theory, which explains that different types of communication vary in how well they can deliver information. According to the theory, richer form of communication like video calls are better for handling complex or unclear tasks, while simpler methods like emails are more suited for clear, straight forwards messages. This theory has talked about how different communication tools are used in virtual teams.

As outlined in the theoretical framework, Media richness theory ranks different communication channels based on their level of richness. This is determined by factors such as how quickly feedback can be given, the number of social and nonverbal cues involved, the variety of language used, and the degree of personal connection (Daft & Lengel, 1986).

The UTAUT model developed by Venkatesh (2003), offers a strong framework for understanding how technology is accepted within organizational setting. Performance expectancy, effort expectancy, social influence, and facilitating conditions are the primary constructs that provide a strong basis for understanding factors that determine technology acceptance. It allows you to explore more what drives the use of communication platform within virtual or hybrid teams. Thus using these two theoretical approaches will help in understanding the interplay of both the technical and human sides of virtual collaboration.

#### **1.4 Justification**

The topic of "The Role of Technology in Managing International Teams" is especially pertinent today in the firewall of international business. Globalization is advancing, and outsourcing and remote have much attracted many countries to work along such lines in freely making international teams your choice of work. (Gibbs et al., 2017).

There is no doubt that topic is highly important. Effectively managing international teams is essential for a company's success in the global marketplace. Technology is an important factor in success-it also poses challenges such as cultural and linguistic barriers, varying time zones, and-technical issues. To remain competitive a company needs to understand how to use technology effectively for managing international teams. (Morrison-Smith & Ruiz, 2020).

The benefits of researching this topic are numerous:

**Improved team performance:** By understanding how to use technology effectively, global teams can improve their communication, collaboration, and coordination, leading to better results.

**Enhanced international competitiveness:** companies that can effectively manage international teams through technology that can acquire an advantage in the worldwide market.

**Enhanced efficiency:** Technology can handle many tasks, automatically allowing team members to concentrate on more valuable activities.

**Better decision-making:** Real time data and analytics help team leaders make more informed and accurate decisions.

This research is important and relevant for several reasons:

**Role of technology:** Technology plays an important role in enabling international team management, understanding its role is essential for businesses and professionals.

**Growing demand for international teams:** As organizations expand their work across borders the necessity for effective communication, collaboration and performance among remote teams has become a vital element for success.

**Limited research** although international team management is becoming important nowadays, There is very little research conducted in this regard regarding technology, about the roles of this context.

This research will help create a framework for development of effective usage of technology in the international teams, which will be benefited to businesses, professionals and researchers. This research will improve my understanding of international business, team management and technology adoption and also prepare me for a career in global business.

### **1.5 Research Questions**

1. What technologies are most frequently utilized for international teams?
2. What are the challenges and benefits of technology adoption in international team management?
3. What effective strategies can be identified for using technology to improve the management of global teams?

## **2 THEORETICAL BACKGROUND**

### **2.1 Theoretical Background**

This study aims to enhance understanding of how technology adoption and communication dynamic work within the international virtual teams by utilizing two theoretical models: Media Richness Theory and Unified theory of acceptance and use of technology. The Media Richness Theory explains that degree of effectiveness provided by certain channels of communication, while the UTAUT model provides insights into the factors that influence whether an individual or group decides to adopt a technology. The next sections will describe each theory and illustrate their embedment into this study context.

#### **2.1.1 Media Richness Theory**

Media Richness Theory will help in evaluating the effectiveness of different communication tools used and their impact on improving team interactions.

Lengel argue that the richness of communication medium depends on its ability to transmit detailed information. Draft and Lengel developed the Media Richness Theory (MRT), which suggests that different media have varying capacities to carry information. This capacity is enhanced by how well the medium meets the four key criteria. (Daft & Lengel, 1986)

Feedback capability: This refers to how well the medium allows for immediate feedback and the ability to clarify issues during communications.

Communication channels: The variety of communication channels (such as body language, tone of voice, or physical signals) that medium can support.

Language variety: In the course of communication, language variety is the potential of a medium to convey quantified information and actual natural language.

Personal focus: A personal focus is when a medium is capable of reflecting the feelings and emotions of the persons involved.

Daft and Lengel found that lean channels are valid for simple topics, while rich channels are suitable for more complex organizational discussions. They concerned with the traditional forms of communication by distinguishing face-to-face meetings as the richest medium and formal, impersonal documents like memos as the leanest. Media were ranked along a continuum of information richness, with each medium's richness being considered a fixed characteristics.(Daft & Lengel, 1986).

Draft and Lengel were pioneers in testing Media Richness Theory MRT by exploring the connection between media choice and managerial performance. Their research found that high performing middle and upper level managers were those who carefully selected the appropriate media for their communications. By "sensitivity" the researcher meant the ability of these managers to choose richer media for ambiguous task and leaner media for clear, and straightforward tasks.

### **Application of Media Richness Theory**

Organizations can use MRT to select appropriate communication tools based on the nature of the task. For example, video calls might be selected for brainstorming meetings, whereas emails could be utilized for regular updates. Understanding the diversity of various media can enhance training programs for staff, assisting them to selecting the right tools for their communication requirements and improving overall effectiveness. Within international teams, MRT can guide leaders to choose communication methods that foster collaboration and promote understanding, factoring in cultural differences in communication styles. In

time of crises or sensitive situations, richer media can augment the expression of sympathy and urgency, thus making the choice of medium of communication very essential.

Klitmøller and Luring (2013) the study found that ICT based communication and knowledge sharing are becoming increasingly vital for multinational companies across the globe. By applying Media Richness theory the research offers valuable insights into the challenges involved in the process. In their study suggest that cultural differences are most effectively managed through the use of rich communication media. On the other hand while dealing with variations in the use of a common language, leaner media may be more appropriate. They argue that in selecting media to enable cross-cultural international transfer exchange processes between geographically dispersed units of MNCs, one should take into consideration the medium of language itself. (Klitmøller & Luring, 2013).

The results of the research conducted by Duranti and Carvalho De Almeida (2012), show that the perception among the respondents regarding the adequate fit of different communication technologies would vary according to (1) the communication task and (2) national culture. This perception fits within the richness of medium theory, which does not concern itself with culture as a moderating factor. These findings lend support to the idea that even when comparing western or culturally similar groups, the value placed on different features of communication tools varies based on each cultural typical communication style. (Duranti & Carvalho De Almeida, 2012).

Although the Media Richness Theory provided insight into the various channels of communication, it also states that the richness of the medium contributes largely in managing complex messages. These include text and visuals, and sometimes the inclusion of voice - all these virtual tools because of their combinations affect richness while communicating among teams. (Agarwal, 2024).

### **2.1.2 Unified theory of acceptance and use of technology**

The Unified Theory of Acceptance and Use of Technology or UTAUT is a framework that has been developed by Venkatesh to explain what drives each individual to adopt something new in technology or maybe how it has been applied by that individual. It combines different models and theories related to technology acceptance to help understand the key factors that affect whether individuals choose to use new technologies. The UTAUT study was conducted as a longitudinal field study across four different organizations, focusing on employees who were being introduced to a new technology. To strengthen the reliability of the model, the researchers incorporated a variety of technologies, industries, organizational types, business functions, and degree of user choice in adopting the technology. (Venkatesh et al., 2003).

#### **Key technologies**

Video conferencing tools: Applications like Zoom, Skype and Google Meet are used for real time, face to face virtual communication.

Collaboration platforms: Tools such as Microsoft Teams, and slack are designed to support team collaboration and ongoing communication.

Digital whiteboard tools: Tools such as Google jam board utilized for brainstorming and generating ideas.

#### **Key components**

Performance expectancy- Technology can raise individual's performance at work, so employees can think they'll boost their skills at work from the use of particular technology. It reflects the expectations that adopting the system will lead to improvements or benefits in their work outcomes. Effort expectancy- This concept represent that perceived simplicity for using technology. When users believe that a technology is user friendly, they are more likely to adopt it. This refers to how easy a person believes it is to use a particular system or technology. Social influence- Social influence refers to how many persons feel that important others (e.g., peers, supervisors, or families) expect them to adopt the

new technology. Positive social influence can promote the acceptance of technology, especially in collaborative environments. This refers to the degree to which an individual feels that important people around them think they should use the new technology or system. Facilitating conditions- This concept includes the resources and support available to individuals for using the technology, including access to necessary infrastructure, training, and technical support. This describes how much an individual believes in the organizational and technical resources present to support system use.

The UTAUT theory or models was joined or combined into one that provides a whole view on an acceptance of technology. It has extensively been proven-in studies-to possess high predictive capability. This makes it a very trustworthy resource for research and practice. It is much adaptable across different contexts and technologies, which means it is applicable in diverse sectors.

Batucan (2022) in his paper, extended the UTAUT model by adding factors like enjoyment, interactivity, flexibility and quality which are believed to vary in developing economies. The analysis revealed that the model showed high internal consistency and reliability, which directly indicates high explanatory capability. Behavior among students was significantly determined by their intention to use online learning. Further, it has been established that students' enjoyment of the system was significantly related to performance expectancy and effort expectancy. The negative effect of system enjoyment on behavior intention highlights the need for further research into the unexpected results in developing economies. Technical and organizational infrastructure availability, such as special instructions and necessary resources for online learning, influenced the positive relationship between facilitating conditions and behavioral intentions. Understanding the motivation behind online learning may provide much better quality and could be useful for pedagogical and instructional purposes. (Batucan et al., 2022).

MRT provide insights into the characteristics of technology that facilitates communication and collaboration, while UTAUT explains how individuals form attitudes and intentions towards technology.

Propose an integrated model where MRT explains the communication tool choice based on task complexity and UTAUT explains the factors influencing technology adoption.

The integration of MRT and UTAUT in International teamsThe richness of media relates to the adoption and utilization of technology within international teams. Teams might be inclined to utilize more effective communication tools if they believe it will be helpful for the upcoming communication challenges as described in UTAUT.

International teams might adopt technology more effectively if they recognize the technology ability to overcome barriers like cultural differences and time zone issues.

## **2.2 Literature review**

This chapter outlines a detailed literature review of existing works on role of technology, technology acceptance, and communication, collaboration, challenges in international teams and businesses.

### **2.2.1 Virtual teams**

The literature evidence of virtual teams reveals absence of definitions that are both clear and wide. Though virtual teamwork is a subject widely discussed among researchers studying global organizations, it remains challenging to establish a consistent definition of virtual across different institutional context (Gibson & Gibbs, 2006). A team can be defined as a small group of people with varied but complementary competencies in which the commitment to a common purpose, mutual goals, and mostly collaborative working strategies is very strong; thus, team members hold each other accountable for results. (Ale Ebrahim, 2012). Virtual teams across time and geographical boundaries by using modern, technology driven tools. The term virtual team encompasses the variety of activities and technology enabled work. These teams are made up of members who are situated in different physical location. (Lipnack & Stamps, 2000).

Business and social pressures favor working virtually. The paper presents a comprehensive review of the literature and related resources and concludes that the success of virtual teams depends more on people and processes and less on technology. Virtual teams provide numerous advantages for organizations seeking to manage a more challenging work environment, but they also come with several challenges and potential risks. (Ebrahim et al., 2009)

Virtual teams can be described as collaborations that are spread across different geographic locations, relying on technology for communication and operations, as note by Morrison-Smith & Ruiz (2020). As the authors

highlight, these collaboration involves both synchronous and asynchronous interactions, as well as tasks carried out to achieve the shared goals of the group.(Morrison-Smith & Ruiz, 2020).

Virtual teams are essential in agile systems, which allows for better efficiency, cooperation, and sharing of expertise among team members. On the other hand, technology-speeding advancement-in information systems and computer-mediated communication has brought much focus to this domain. (Velez-Calle et al., 2021).

Organizations have employed virtual teams for many years, yet there still remains a fair amount of unanswered questions regarding how to make these teams perform more effectively. This paper seeks to extend previous research and consider current trends in the area of virtual team project studies.(Gilson et al., 2015) .

Today, organizations are increasingly faced with instances when project teams are required to operate in a virtual environment. Virtual teams are the lifeblood of any agile system. The findings offer a full synthesis of contemporary and relevant knowledge concerning virtual teams, which can be useful to the agile system manager in further enhancing the processes. (Bhat et al., 2017).

The study aims to identify key factors that managers of virtual teams can use to foster effective relationships among team members. Since virtual teams bring together talented, highly skilled individuals from various locations to collaborate on specific tasks without the need for relocation, these factors can be applied by both team members and organizations to assess their teams and individual members. Researchers argue that geographic separation among team members can negatively impact communication, knowledge sharing, and work coordination. (Bhat et al., 2017).

Organizations are increasingly utilizing virtual teams to tap into employee's skills and knowledge, regardless of their geographic location.

However, there is limited understanding of how knowledge sharing impacts virtual team members relationships, collaboration, and overall team effectiveness. This research proposed a conceptual model hypothesizing a link between knowledge sharing, trust, collaboration, and team effectiveness within virtual teams. The study concludes that collaboration mediates the relationship between knowledge sharing and team effectiveness. (Alsharo et al., 2017)

Finding time to address the various social issues that arise with virtual teams is very vital. Forming friendships and social identities within virtual teams, however, usually takes longer; members who have worked together longer, therefore, report higher chances of success, with more interaction time and opportunities for getting to know one another. (Elofsson & Martins, 2023). Although maintaining a satisfactory level of motivation among virtual team members can be challenging, it was found that team members generally remain motivated. This motivation is largely attributed to the independence and focus provided by the virtual environment, as well as the nature of tasks, which are highly valued by the team members. (Elofsson & Martins, 2023).

### **Effective virtual teams**

Virtual teams are usually challenge further uncertainties and complexities created by distance, time, and ethnicity, thus further complicating information processing and communication in the accomplishment of work tasks. Full virtualize also typically magnifies some of the difficulties of team and, simultaneously, enhancing the benefits of collaboration in various ways. (Berry, 2011).

Five factors that contribute to the effectiveness of virtual teams are: a supportive organizational cultural, the nature of tasks, the use of appropriate technology, team members characteristics enhanced through learning and growth, or well defined work and team dynamics. (Gibson & Cohen, 2003).

Formation activities such as setting up clear communication channels, understanding the technology to be used, providing technology training, and establishing clear startup norms and expectations for team members, are more crucial in virtual teams than in team working in the same location. (Gibson & Cohen, 2003).

### **2.2.2 Technology adoption in global teams**

Performance expectancy, effort expectancy, social influence, and facilitating conditions all significantly affect technology adoption and usage by team members (Venkatesh, 2003). This paper discuss the technology Acceptance Model and its expansion concerning elements affecting technology adoption within teams.

Developed by Venkatesh (2003), the UTAUT framework is a renowned theoretical model in the field of understanding technology adoption and usage. The framework states that four vital aspects lead to an individual's intention to use technology. Attitudes toward technology are also known to be dynamic: in the case of team members, their attitudes after communication-technological work may differ widely from those retained before this work was carried out with the technology.

The UTAUT is the foundational paper which combine elements from multiple models to explain how individual perceptions influence technology adoption. The key constructs performance expectancy, efforts expectancy, social influence and facilitating conditions are crucial for understanding how technology is adopted in international teams.

In an endeavor to bring together people from different regions to a single platform, technology has had a huge say. Nowadays, global projects depend a lot upon technology that creates an atmosphere aiding the entire process of communication and cooperation. A team works on the fundamental principle of common goals and objectives to be pre-set before collaboration. Beginning at the same time define-how objectives and goals are to be worked on that teams will function efficiently. The

process of communication and working together is speeded up by technology (Chudoba et al., 2005). This study examines how various communication technologies impact team performance, which ties directly research question about the role of technology in managing international teams.

Technology serves as a means to coordinate activities, share knowledge, and interact within a team project. Communication is the major process enhanced by Technology whereby information transfer can be done through Multi Channeled means thus enhancing trust and performance levels. A team distributed over a large geographic area is now being brought together in these modern days via Technology for the future coordination of team activities of those other working in varying styles. Greater information exchange will be required by those working under varying situations to assure coordination and integration of an entire task to meet project objectives. With the correct Technology, communication problems associated with certain restraints and delays of communication could be solved, e.g., the inability to understand the language will be easy due to lost in translation, different cultures, perception, and past experiences. (Kirkman et al., 2005; Martins et al., 2004).

Technology forms the foundation for communication within virtual teams. However choosing the right tool is essential for success. (Lumseyfai, 2020). The chosen technology must align with both the organization's needs and team members experience to prevent issues and misuse. (Gibbs et al., 2017).

The special study on how technology use influences global virtual teams done as part of action research aimed at long-term studies of global virtual teams, collaborative technologies, and international collaboration. The authors contend that these techniques may inform our understanding and capacity to handle collaborative technologies better. Therefore, they argue that any study into the nature of global virtual teamwork, including technology-use mediation as a specific phenomenon, must adopt new methodologies and good practices to address the

complexity inherent to such situated work, which is paramount to the practice of the field. (Clear & MacDonell, 2011)

This study specifically, though, is focused on mediation through technology use in global virtual teams, and will indeed form part of action research long-term at global virtual teams, collaborative computing, and international collaboration. The authors contend that these techniques may inform our understanding and capability of managing technologies together. Therefore, they argue that any study into the nature of global virtual teamwork, including technology-use mediation as a specific phenomenon, must adopt new methodologies and good practices to address the complexity inherent to such situated work, which is paramount to the practice of the field. (Laitinen & Valo, 2018).

With the advent of technology, virtual mobility is available that allows students to participate in international programs and activities without the necessity of travel. While cross-border collaboration was easier, the challenges have also increased, security issues, language differences, and cultural misunderstandings. (Chasokela et al., 2024).

Collaborative technologies are the avenues through which members of global virtual teams perceive each other, interact, and coordinate their activities. Accordingly, the technology in question directly influences the way, in which the members perceive and define their reality in a team environment. Therefore, collaborative technologies are extremely important to the individual, perhaps even more so than to the organization that surrounds them. (Anttila, 2024).

### **2.2.3 Challenges and barriers in teams**

The literature review gives a comprehensive look into the challenges faced by virtual teams when it comes to collaboration, and outlines some very current strategies that are proposed to mitigate these issues. (Morrison-Smith & Ruiz, 2020). Parse out the findings from the selected studies that situate challenges into five categories: geographical distance, temporal distance, perceived distance, configuration of dispersed teams,

and diversity of workers. The findings would continue opening up avenues for further research and a lot more questions in this respect. Also, there were a number of recommendations which would improve groupware design to better support collaborative work of virtual teams. These recommendations circled four important design principles: supporting building common ground and standardized ways of working through improved communication, ensuring transparency of work, and using lightweight, user-friendly technologies.(Gibson & Cohen, 2003). Morrison-Smith and Ruiz (2020) provide an in depth look at the challenges faced by international teams including technological barriers, time zone differences and cultural issues. It discusses strategies to overcome these barriers, including the role of technology.

Research has indicated that cultural and language barriers can pose significant challenges to international team management (Kayworth & Leidner, 2002) (Duarte & Snyder, 2001). Another way technology helps to overcome barriers is through tools for culture and language training and cross-cultural communication.

**Language Translation Tools:** Language translation tools such as Google Translate and Microsoft Translator remove the language barrier for team members. (Kayworth & Leidner, 2002).

**Cultural Training Tools:** Cultural training tools, such as Culture Wizard and Global Vision, enable team members to learn about different cultures and communicate effectively across cultural boundaries. (Duarte & Snyder, 2001)

Although it has many theoretical advantages, such as being well-suited for the modern work environment, the reality is that virtual teams have been shown to fall short of their expected outputs and actually rate themselves as unsuccessful. It is technology nature upon which communication and collaboration within globally distributed virtual teams is heavily dependent. Different technologies enable better communication

and collaboration while minimizing issues of communication and coordination within teams.(Bordia, 2017).

#### **2.2.4 Cross cultural communication in teams**

Research have indicated that technology plays crucial role in effectively managing international teams. A study done by Duarte and Synder (2001) found that technology can improve communication, collaboration and coordination among team members located in different time zones. And another study conducted by Kayworth and Leindner (2002) identified aspects like cultural differences, language barriers and technological infrastructure as significant factors affecting technology adoption in international teams.

International Team Management Framework developed by Duarte and Snyder, is a theoretical framework for understanding the management of international teams. The framework suggests that four essential factors impact on the effectiveness of managing international teams. (Duarte & Snyder, 2001)

**Communication:** The capability of team members to communicate efficiently and effectively across various time zones and cultures.

**Collaboration:** The ability of team members to collaborate effectively across different time zones and diverse cultural backgrounds is essential for success.

**Coordination:** Successful collaboration is made possible when team members can coordinate across time zones and cultural backgrounds as effectively as achievable.

**Cultural Intelligence:** The ability of team members to understand and value various different cultures.

Communication can be described as the sharing of information, understanding, or cognitive content, depending on the focus of the discussion.

This sharing may occur with varying levels of intentionality and awareness, and communication can sometimes happen subconsciously. Moreover, communication with another person is considered to occur only when a sender's actions or their outcomes—such as text, symbols, or images—affect the recipient in a way that leads to a shared cognitive understanding between them.(Hertel et al., 2005)

### **2.2.5 Communication technologies**

Research has shown that communication technologies, including email, instant messaging, and video conferencing, are critical in managing international teams (Duarte & Snyder, 2001; Kayworth & Leidner, 2002). Communication technologies encompass real-time, interactive communication tools, secure and shared workspaces, and an organizational framework and social norms that bear upon the accumulation, processing, and exchange of information with others; these technologies support communication across different times, zones, and culture for effective team collaboration.

**Email:** Email refers to an asynchronous communication medium that allows a group of people to send and receive messages. (Duarte & Snyder, 2001).

**Instant Messaging:** The above technologies would be Slack, WhatsApp, and Microsoft Teams, allowing real-time communication for their members.

**Video Conferencing:** Video conferences allow members to communicate face-to-face with others in real-time due to examples such as Zoom, Skype, and Microsoft Teams. (Hertel et al., 2005).

Research on organizations has focused a lot on the different types of communication technology through different angles. So much has been said about myriads of processes like technology adaptation, users' attitude toward technology, and the role of technology in supporting several communication functions. A lot of studies compare the effects of face-

to-face communication and computer-mediated communication. (Chasokela et al., 2024)

The systems of group conferencing provide versatility for work and team communications. Nevertheless, the perception of people utilizing any technology sometimes distinguishes between enabling and disabling effects. It shows that such team members experience low levels of communication technology anxiety and tend to have less participation, send fewer task-directed messages, propose fewer topics, as well as get rated even worse by their fellow teammates. (Carter & Fuller, 2016).

Remote working has received a great deal of influence in digital tools. This paradigm has been much wider. It enables flexibility, opens up a much larger talent pool, and often increases productivity. And it poses some communication issues like team management and work-life-balance adjustments. All these depend much on digital tools. They tend to be more integrated, intuitive, and friendly. Remote work will entirely depend on innovations in digital tools for the future. They are going to bring even more immersive experiences. (EMB Global, 2024).

According to the results of the study, networks and centrality of networks within an organization should also be seen as important contributors to the virtual teams and high performers, with the necessity for members to occupy strong central positions within their communication and trust networks. Through high communication and trust-inducing behaviors, such an individual would occupy a central position and thus be made visible to all other distributed team members. (Sarker et al., 2011).

As different organizations allow employees to work from anywhere and create distributed teams, it becomes very vital to contemplate virtual collaboration concerning the degrees of ensuring employee satisfaction, productivity, and general team dynamics. (Agarwal, 2024).

## **3 RESEARCH METHODOLOGY**

### **3.1 Research design**

This study is on qualitative terms. Its aim is achieving descriptive qualitative information through answers to research questions. Also, such qualitative data would provide in-depth insights concerning experience and perceptions of team members from different nations.

This research approach is exploratory while the research strategy uses a literature approach and interviews conducted with team members using technology in virtual or hybrid teams. This study is based on the use of secondary data and qualitative analysis techniques. The literature review was designed initially to study the concept of international teams, technology adoption in teams, and cross-cultural communication concepts with importance-on-technology considerations developed mainly in the team so that the organization can achieve its overall objective.

The research strategy gives priority to a literature survey, revisiting existing theories and practices in international teams, technology in teams, and communication dynamics. The aim of the study is to identify barriers and challenges faced by international teams as well as the role technology can play in surmounting those challenges and adopting technology in virtual teams. This allows for a rigorous understanding of the elements that contribute to the successful formation and functioning of international teams under contemporary organizational contexts.

The qualitative aspect deals with the semi-structured interviews held with team members from different organizations. Questions would be posed about the participants' experiences regarding the virtual communication tools-their respective perceived benefits, challenges faced, and cooperation strategies employed.

### **3.2 Data collection**

In this study, interviews of the semi-structured nature were selected as the primary method of data collection. According to Strauss and Corbin (1990), qualitative interviews allow researchers to gain deep insights into participants' experiences and perceptions. By conducting semi-structured interviews with team members from diverse cultural backgrounds and different positions in companies, I can understand the most frequently used technologies, the benefits and challenges of technology adoption, and strategies for improving team collaboration.

A semi-structured interview approach was used, where 10 candidates provided qualitative responses. Semi-structured interviews will be conducted via video conferencing or personal meet. Each interview will last approx. 25-35min.

Qualitative data can be derived from interviews and analyzed thematically where themes within the data will be identified and analyzed through a process of identification and analysis of patterns (Braun & Clarke, 2006). This method can reveal common experiences or challenges faced by team members. This method is particularly suitable for my research as it will enable me to distill key themes related to the role of technology in facilitating or hindering collaboration among international teams.

Appendices contain the fundamental architecture and structure of the interview questions used in the study. The major interview consisted of three parts divided by topical discussion. The first topic focused on the background of the participant and his virtual team, going further into what collaborative technologies were used within the participant's team and how and why they were used. The second portion of the interview asked the participants to talk about how their team worked together, the good things, and the regular challenges they faced, especially concerning any adoption of the collaborative technologies. The third and

last part includes the strategies that they were used for effective use of technology.

Ten respondents worked in various companies and in certain teams, though different countries were involved to some extent. Table 1 illustrates the individual background details of the participants within the glance.

Table 1. List of interview participants

<b>Partic- ipants</b>	<b>Professions</b>	<b>Team mem- bers</b>	<b>virtual/hy- brid</b>	<b>Experience in teams</b>
1.	Marketing	4	Hybrid	2 years
2.	Marketing	4	Hybrid	1 year
3.	Training and Development	8	FV	2 years
4.	Accounts	7	FV	10 months
5.	Property Lawyer	5	Hybrid	6 months
6.	Project manager	6	FV	2 years
7.	Consultant	7	FV	1 year
8.	HR executive	6	FV	1.5 year
9.	Finance / ac- counts	12	Hybrid	4 months
10.	Manager	3	Hybrid	1 year

### **3.3 Data Analysis**

Bottom-up data processing and analysis are used following the processing carried out in these earlier systematic reviews. By HIMS analysis thus proposed by, (Braun & Clarke, 2006), was utilized to identify and interpret the themes that arose from the interview data. Themes will be identified and analyzed to answer the research questions.

Data can be analyzed thematically that is, thematic analysis identifies, interprets, and reports patterns or themes within data. It thus allows us to understand the experiences, difficulties, and solutions related to a topic, and therefore provides rich insights in qualitative terms. A process of thematic analysis with six stages is used to identify, interpret, and refine themes that emerge from experiential data. (Braun & Clarke, 2006)

The first phase involves becoming familiar with the data, taking notes on initial observations and patterns. In the second phase, the researcher generates initial codes or features of the data in a systematic way, emphasizing key elements. During the third phase, the researcher examines themes by grouping codes into potential themes and subthemes. In the fourth phase, the researcher reviews these themes in relation to both the coded excerpts and the entire dataset, creating a thematic map of the analysis. The fifth phase focuses on defining and naming the themes while refining the overall narrative of the analysis. Finally, in phase six, the report for the analysis is drafted. The report include quotes, interpretations and connections to research questions.(Braun & Clarke, 2006).

As far as the minimum structural requirements are concerned, the data provide maturity conveying a well- defined, coherent, sound and compelling narrative to the viewer, while also being convincing about the merit and validity of the research.

## 4 FINDINGS AND ANALYSIS

The analysis of data retrieved from the interview throws up the following themes: 1) Communication effectiveness, 2) Barriers to technology adoption, 3) Impacts on performance and productivity, 4) Strategy for effective use. These four major themes and their sub-themes can be analyzed more effectively by breaking down experiential data into single units. The thematic analysis with the sub-themes along with some of the example extracts is summarized in Table 2.

Table 2. Summary of findings

Themes	Sub themes	Statement
Communication effectiveness	<ul style="list-style-type: none"> <li>• Preferred communication tools</li> <li>• Perceived effectiveness</li> <li>• Time zone</li> </ul>	<p>"We primarily used zoom for daily meetings." "Video call helps in discussions, long email often leads to misunderstanding." "Drawing the line on contacting people can be very tough" "delay in decision making"</p>
Technology adoption & challenges	<ul style="list-style-type: none"> <li>• Ease/ difficulty of learning</li> <li>• Common challenges</li> <li>• Support from organization</li> </ul>	<p>"Found it easy to adopt, but senior members struggling"  "Technical issues and slow software disturb workflow"  "We had one short training session, but mostly I learned from others."</p>
Cultural & language barriers	<ul style="list-style-type: none"> <li>• Language difficulties</li> <li>• Work style differences</li> <li>• Strategies to overcome barriers</li> </ul>	<p>"Working with international colleagues, sometimes messages get lost in translation."  "Some colleagues prefer asynchronous updates, while others expect immediate responses." "Used standardized</p>

		template and translation tools to avoid miscommunication.”
Strategies and best practices	<ul style="list-style-type: none"> <li>• Training availability</li> <li>• Regular check-ins</li> <li>• Remote work policies</li> <li>• Feedback &amp; recognition</li> <li>• Maintaining engagement</li> </ul>	<p>“Learn by doing” “help in improve virtual collaboration”</p> <p>“still adapting remote work policies that there is lot of trial and error” “recognition is mainly through by emails”</p> <p>“We have virtual coffee chats to keep things informal and maintain morale.”</p>
Impact on team productivity	<ul style="list-style-type: none"> <li>• Performance management</li> <li>• Motivational and emotional productivity</li> <li>• Communication influence on output</li> </ul>	<p>“We track everything with shared dashboards now”</p> <p>“Productivity gone up because everything documented and deadlines are visible to all”.</p>

The five themes are meant to notate the thematic analysis of the data collected by the research methods articulated in the previous section, which provides the opportunities to use the identified examples to more seamlessly push forward the analysis. This thematic structure clearly highlights key themes, sub themes and real examples from participant responses. In the following section should be structured according to key themes, incorporating sub themes, and participant’s statements to provide depth.

## **4.1 Analysis**

### **Theme 1. Communication effectiveness**

This theme captures the central role digital communication tools play in shaping team interaction. Successful communication is vital for virtual and hybrid teams since companies use a variety of tools for collaboration—such as email, video calls, and messaging applications. There was less spontaneity in virtual communication. In the office, it was easier to communicate casually with people, whereas now most real-time conversations get scheduled ahead of time, therefore minimizing spontaneous talks. The interviewee, a marketing executive, highlighted that the type of talking normally done in the office is sorely missed, yet work is more efficient this way.

An opportunity that was emphasized by all respondents with respect to communication was an issue of availability. Generally, it was perceived to be easier to connect with people, with a quick zoom call being more efficient than trying to set up an in-person meeting. Furthermore, as all meetings could be run on the same tool, there was more opportunity for meetings.

#### **Sub theme- Preferred communication tools**

Participants reported a strong preference platforms like Microsoft teams, Zoom for formal communication and WhatsApp for informal updates. While this multi tool setup allows flexibility and speed, it also create a sense of digital and notification overload. Most respondents indicated that instant messaging and video conferencing were their primarily communication tools. They had a notable mix of technologies and a couple of years of experience collaborating in virtual teams.

Training and development officer (fully virtual 2 years) mentioned: “We primarily use email and zoom for daily communication and meetings”.

“It is convenient but sometimes too many notifications.”

Out of all applications used in all teams, Zoom and email counted the most. The Training and Development Professionals attempted to implement Slack as a quick communication tool since it was thought to be a good complement to emails for shorter internal team communications; however, it never really worked for a long time and was not well accepted into the team, so with no one really using it since members had little hope of getting a reply if posting there, and a few didn't understand this tool.

### **Media Effectiveness and limitation**

While these tools help streamline collaboration, some participants noted that misinterpretations in text based communication still remain a challenge. Interviewee 1 marketing (2 years hybrid) mentioned: "Video calls on zoom and Microsoft teams helps in discussions, while long emails often lead to misinterpretations".

"We all belong to the same group in our team, so feel free to ask open-ended questions to anyone, and anyone can respond. On the other hand, communicating by email usually directs the message at a person."

For meetings, all teams were using Zoom as a means of communication. Every team thought of Zoom as the most logical choice, mainly because of the wide use and familiarity since the covid 19 outbreak began, but also because it was regarded as the best in terms of quality and features. One of the team consultants says that they even started with using Microsoft Teams but shifted to Zoom, feeling that it was easier since all external meetings were carried out on Zoom. It's easy and convenient to everyone in teams.

### **Time zone management**

Collaborating with dispersed teams gives rise to an opportunity of working with people with whom one may not share the same time zone. There is consideration as to how time zone changes can affect collabo-

rative dynamics of teams operating under dissimilar time zones. However, even a mere difference of 3 hours can effectively create a barrier for people.

HR executive (1.5 years FV) shared: "We record meetings and use shared documents to ensure everyone is aligned, but it effects productivity. In recorded meetings second person can't ask questions or many times unable to understand the point".

The project manage said that their team was spread in North America and Asia, creating challenges in scheduling meetings. Some team members would have to join meeting late at night and some join in early mornings, which cause disruptions and made the meeting less productive. To improve this, they started rotating the meeting times so that no single team member was always disadvantages. They also shared calendars to find overlapping hours that is convenient to everyone.

The consultant worked in Canada and handle teams in India virtually said that sometimes they faced fatigued. Than they implemented a free day meeting each week, allowing everyone to take a break from time zone adjusted meetings. This helped employees to recharged and work on their tasks without pressure.

Here is how participant's use various tools for communication like for video calls, messaging and each with different levels mentioned below in table 3.

Table 3. MRT plays out in their responses

Media richness level	Tool type	Observed used in research	Participants insights
<b>High richness</b>	Video calls (Zoom, MS teams)	Used for complex, sensitive and for collaborative discussions	"We use video calls for important discussions and planning, it's easier to read people tone and expressions".
<b>Moderate richness</b>	Messaging apps (whatsapp, slack)	Used for quick update, real time chat	"Chat gets instant updates but sometimes things get misunderstood due to high messages".
<b>Low richness</b>	Email	Used for formal documentation	"Emails are fine for sending files or summaries and documents but not ideal for real time discussions."

## Theme 2. Technology adoption and challenges

Adopting new technologies and communication tools in teams have been relatively easy for new younger employees but present difficulties for some senior employees and those in specific industries like legal and finance.

### **Ease of adoption**

While some employees quickly adapted the new tools and software, others faced difficulties due to lack of prior experience and technical limitations. Project manager (FV 2years) mentioned: "Learning new software wasn't difficult for me, but some colleagues found the transition overwhelming."

Marketing specialist (1 year hybrid) mentioned: "I had used similar tools before, so adopting them was seamless, but the lack of proper onboarding made it harder for some."

### **Common challenges**

Despite the benefits employees faced technical issues, slow software updates, and difficulty use of multiple tools. A finance professional interviewee (hybrid 4 months) mentioned: "Internet connectivity issues and software glitches make virtual meetings frustrating."

Another marketing specialist (hybrid 2 years) mentioned: "Using multiple communication platform means messages often get lost, making it harder to stay again organized".

## **Theme 3. Cultural and language barriers**

Many team consists of members from different culture and different countries, leading to challenges in communication and collaboration. In teams where cultural differences and language diversity are greater, perhaps the preferred method of sharing equivocal knowledge would have been face-to-face interaction, since it enabled members to utilize non-verbal cues, gestures, touch, and the manipulation of objects.

### **Language difficulties**

Language barriers often cause misunderstanding in virtual interactions, particularly in international teams. A marketing expert (hybrid 1 year)

said that: "Working with international colleagues, sometimes message get lost in translation".

### **Work style difference**

Cultural differences also impact on work expectations, with some employees preferring asynchronous communication while others expect immediate responses. An account professional (FV 10 months) mentioned: "In some cultures, people are more formal and hesitant to challenge ideas, which slows down decision making".

A manager (1year hybrid) mentioned: "Our team in Asia tends to wait for leadership direction, while western colleagues more imitative".

A HR executive (FV 1.5 year) said: "Colleagues from different countries have varying expectations for response times, some get frustrated if you don't reply immediately".

### **Strategies to overcome barriers**

To overcome these challenges, some teams used standardized templates, clear documentation, and translation tools. A consultant (FV 1 year) said that: "We have introduced real time translations in chat tools, which has improved collaborations dramatically".

A finance/account team member (hybrid 4 months) mentioned: "Now we rely on more visual aids and charts, which help break through language gaps".

A marketing professional (hybrid 2 years) gave views: "We created a glossary of common terms and abbreviations to help everyone to stay on the same page."

## **Theme 4. Strategies and best practices**

Training and organizational support further enable employees to make effective use of virtual communication tools. The collection of technolo-

gies that constitute the backbone of remote working teams has developed a variety of best practices to be adopted for maximizing engagement, streamlining communication, and supporting digital adoption.

### **Training availability**

Some organizations provide structured training sessions so that employees give better productivity and performance, while others rely on the job learning or peer support. A manager (hybrid 1 year) commented: "There is no formal training, we learn by doing".

A project manager (FV, 2 years) mentioned: "We had an onboarding sessions, but most learning came from trial, error, and asking colleagues".

A training and development specialist (FV 2 years) said:

"Our team developed internal video tutorials to help others get started with new tools".

### **Regular check ins**

Mostly teams successfully integrate technology often follow best practices such as regular check-ins, structured agendas, and peer monitoring. A HR executive (FV, 1.5 year) said;

"Regular check- ins and structured agendas help improve virtual collaborations".

A marketing professional (Hybrid 2 years) said: "We start every week with a team stand up to align goals and tech use for upcoming task."

A consultant (FV, 1 year) said; "Documenting all processes and using shared calendars really helps reduce confusion in remote setting." "We follow a checklist during meetings to ensure everyone has clarity, especially with remote meeting deadline.

### **Remote work policies**

Some companies have well defined remote work policies, while some are still refining them through trial and error. A finance professional (hybrid, 4 months) said;

“Our company still adapting remote policies, so there is lot of trial and error”.

A training and development specialist (FV, 2 years) said:

“We had to push for clearer policies on availability hours because people were burning out”.

A consultant (FV 1 year) said: “Our remote work guidelines are informed, which offers flexibility but also create inconsistencies.

### **Team engagement**

Maintaining engagement and motivation in virtual teams requires intentional strategies, such activities related to team building and clear recognition programs. Virtual social events and team building activities help strengthen relationships. A marketing expert (hybrid, 2 year) said: “We have monthly virtual meet ups to keep morale high”.

A HR executive (FV, 1.5 years) said: “We run virtual coffee chats where people are randomly paired to just connect socially.”

A training and development specialist (FV, 2 years) said: “Every Friday we do a short virtual team game, which everyone looks forward to.

### **Feedback & recognition**

Acknowledgment is key in keeping motivation high but is usually confined to emails or messaging applications. Recognition is critical but often limited in virtual settings, with digital praise lacking the personal touch of in office compliments. A manager (hybrid, 1 year) said: “We have a monthly email highlighting top performers, but I wish it was most interactive.”

“Peer to peer recognition tools have helped, but it still feels impersonal sometimes.” Said by HR executive (hybrid, 1.5 year).

### **Theme 5. Impact on team productivity**

This theme explores how digital tools, communication styles, team structure (hybrid, virtual), and organizational practices have either enabled or hindered productivity. Participants reflected on both measurable and felt impacts- like task completion, performance monitoring, motivation and team alignment.

#### **Performance management**

This subtheme explores how virtual and hybrid teams are using digital platforms to track productivity and ensure team alignment. Marketing professional said that, “we use dashboards and KPI to track work, it keeps everyone aligned.”

The project manager FV states that, “When implemented transparently and collaboratively, performance tracking technology enhances productivity by setting clear expectations”.

However, if they overused or applied within team input, it may lead to burnout, restless or decreased intrinsic motivation, especially in fully virtual teams.

#### **Motivational or employee productivity**

It’s a crucial aspect of remote and hybrid work environment, as it directly influences team management, individual performance and overall morale. While in office have various ways to foster motivation like face to face interaction, immediate recognition. But virtual or hybrid teams require more intentional strategies to maintain high level of motivation and emotional well-being.

The property manager fully virtual team expressed frustration with lack of real time recognition. The teams was spread across multiple time

zones and feedback often came days later. This gap in recognition create a sense of disconnect, affecting emotional productivity. To counter this, they started monthly roundup emails where team achievements were highlighted in virtual teams.

The marketing professional said that in remote work they used zoom in video meetings for interaction and to ensure that team members felt emotionally connected. Regular engagement helped maintain high level of motivation and emotional wellbeing and improve productivity.

### **Communication influence on output**

Virtual teams very much rely on good communications to influence team productivity and output. The effectiveness of communication can directly impact both the quality and efficiency of work produced by the teams. A lack of clear, timely and ineffective communication can lead to misunderstanding, delays and decrease morale which have negatively effect on output.

A finance team member shared his views that they shared Google documents and shared dashboards to track the progress of financial transactions and monitor deadlines. This transparency allowed all team members to see who was worked on what and the status of each task. As a result the team work more collaboratively with better understanding of each other's workloads and responsibilities, which directly improved output.

The training and development team member said that high level of engagement of teams in team building activities and interactive training sessions. The positive tone during the discussions and give recognition of individual contribution during discussion kept morale high of team members.

## **4.2 Practical implications**

The research will be based on two theoretical models that induce Media Richness Theory (MRT) and Unified theory of acceptance and use of technology (UTAUT). These frameworks guided the investigation of how virtual teams adopt technology in communication tool usage and how the richness of communication tools impact collaboration and effectiveness.

### **4.2.1 Media richness theory (MRT)**

Media richness theory indicates that richer media of communication (such as video calls) are more effective in completing complex or ambiguous tasks, while leaner media (such as email) can be used for more straightforward communications. The theoretical framework explains the overall congruence of Media Richness Theory on how different modes may be laid out on a map of media richness based on (1) the immediacy of feedback; (2) the number of social and non-verbal cues; (3) the variety of language; and (4) the personal orientation. (Daft & Lengel, 1986)

These media were preferred for meetings, sensitive conversation and collaborative planning. Participants noted the importance of real time feedback in virtual meetings. Analyzing the results yields conclusions about the preference for richer media keeping the social aspect of work in virtual teamwork, meaning that the results could support the original theory of media richness. This led to delays or misunderstandings, especially in cross cultural context. Language barrier were cited as challenge with highlighting the limitation of email and text.

The successful navigation of cultural and language differences were mostly dependent on the media richness of the multicultural teams. Visuals, templates, and video conferencing are major needs of the participants in order to avoid misunderstandings.

The MRT framework came in handy in making evaluations on what kinds of tools were selected for different tasks and the degree of richness on

communication and its effect on team effectiveness. Virtual teams should therefore employ communication tools which correspond to their complexity of task and cultural diversity. Use of richer media can therefore reduce misinformation, induce people to participate more, and stimulate co-working especially in international teams.

#### **4.2.2 Unified theory of acceptance and use of technology**

The UTAUT consists that technology adoption is influenced by four key constructs in UTAUT. The findings in this research align closely with these constructs are:

The UTAUT theory explains user acceptance and use of technology base on four core constraints. (Performance expectancy) Most participants recognize that tools like Microsoft teams, and Zoom helped in improving productivity and task management. (Effort expectancy) Most of the time, simplicity is a major entry point for adoption. Staff who are younger age, or in a technology field, would quickly adapt as opposed to most senior staff, who would have trouble doing this without rigid training. It reflects differences in perception about the effort involved. (Social influence) Peer-values and managerial expectation cause usage of tools. For example, employees reported that if their particular team leaders or peers used a specific platform consistently, others were inclined to adopt it as well. (Facilitates conditions) Organizations indeed had great experience in facilitating adoption where the training and templates and tech support were there. However, if they were lacking within any of these components, the adoption speed was unsustainable and inconsistent.

The UTAUT framework has served well in explaining varying degrees of acceptance and utilization of communication technologies in international teams. The model was helpful in understanding the differences in individual tool adoption. UTAUT serves as an explanation for lower adoption levels across individuals and teams. To support general and effective communication technology usage, organizations need to provide

Regular training to all staff, strong leadership modeling tool use, clear and enforceable policies, and accessible support systems to provide technical help in solving issues. By actively working on such factors, companies can hasten the pace of adoption while also improving the user experience and therefore providing maximum return on investment from virtual collaboration tools.

### **4.3 Contributions to knowledge**

This thesis contributes several aspects to the area of digital collaboration and virtual team management:

Combination of UTAUT and MRT helps provide a more complete understanding of virtual tool use explaining both why employees adopt the tools and how competent they are in using them in a particular communication context.

It expands current literature by applying these theories to hybrid and fully virtual teams across different companies on different positions (marketing, HR, law, finance, consultant and project manager). The study identifies practical obstacles- such as inconsistent training, integration issues, and cultural barriers that can hinder the success of virtual tools, offering real world insights.

Findings shows real world adaptations of MRT, where users naturally adjust their communication choices even without formal structure. And UTAUT also highlight how social influence and adaptive learning are strong drivers in remote context.

## **5 SUMMARY AND CONCLUSION**

This thesis explore the adoption experience, and team dynamics, this thesis investigated the use of communication technologies in virtual and hybrid teams. The study aims to comprehend how team members view, embrace, adjust to digital technologies in a variety of work environments by drawing on the Media Richness theory and Unified theory of acceptance and use of technology.

The study found that those communication platforms are very commonly used and are reasonably effective when it comes to e.g., Microsoft Teams, Zoom. However, it was found that contextual factors-such as the number of people in the team, their familiarity with the technology, the level of organizational support, and the cultural diversity-were vital in their effectiveness.

Employees who have prior work experience in peer assistance and technology transitioned more readily. Others faced difficulties as a result of inadequate training which was consistent with UTAUT's emphasis on effort expectancy and facilitate condition.

Language barriers or varying expectations for responding company's response times frequently caused global teams to struggle with miscommunication, despite MRT claims that richer media are necessary for complex exchanges.

Organizations that offered training, clear policies and organized engagement strategies like virtual check ins and recognition systems were associated with successful adoption.

Qualitative responses from experts in a range of fields, including project manager, marketing, finance, accounts and human resource were used to gather data. Important trends pertaining to tool use, productivity engagement, and cultural difficulties were identified using thematic analysis. To this end, the study attempts to answer the under listed research questions:

RQ1. What technologies are most frequently utilized for international teams?

Findings showed that a strong preference for Microsoft Teams, and Zoom for richer and real time collaboration. Email was still widely used but considered ineffective for discussions.

RQ2. What are the benefits and challenges of technology adoption in international team management?

Participants highlighted increased transparency and productivity, but also reported technical issues, and concerns about surveillance and micromanagement. Some teams used templates and tools to translation to address language barriers.

RQ3. What effective strategies can be identified for using technology to improve the management of global teams?

Best practices included structured agendas, regular check-ins, and informal virtual events. However not all organizations had formal policies in place.

## **5.1 Ethical consideration**

Every research project must take ethical consideration into account to project participant's rights, integrity and overall research validity. All research participants were made aware of the goal and parameters of the study, about which they provided informed consent, and their involvement was entirely voluntary with no obligations. To maintain confidentiality, no personally identifiable information was gathered, and responses were anonymized. To maintain anonymity, findings were reported using only role descriptions. Their responses would not affect their professional position and would solely be used for academic pur-

poses. Maintaining academic integrity also required making sure the literature was evaluated morally with appropriate reference and without plagiarism.

## **5.2 Execution and evaluation of topic**

The topic proved timely and relevant, particularly in the context of a post pandemic shift toward remote and hybrid work. The decision to combine UTAUT and MRT allowed for a dual analysis: one focused on technology adoption behaviors and other on communication effectiveness.

Methodologically the use of semi structure questions enabled rich qualitative insights while maintaining focus on the research objectives. Participants came from different industries and experience levels, which enriched the data set and made the findings more generalizable within knowledge based profession.

## **5.3 Personal reflections and perspectives**

Conducting this research has deepened my understanding of how technology and human behavior relate in the evolving landscape of work. One of the most compelling insights was that tools alone do not drive performance, it's the way people use them, the support structure around them, and the human connections they foster that determine their success.

I was affect by the empathy and adaptability shown by participants, especially in teams navigating cultural and language barriers. It emphasized the importance of designing systems with both technical and emotional intelligence in mind.

From researcher's point, I have gained valuable skills in qualitative analysis, theoretical applications and academic writing. I have found that

strategic communication planning can help in organizational dynamics and stress in the network working environment.

#### **5.4 Emerging questions and future research possibilities**

This study discusses the dynamics relating to issues of communication, technology adoption, and collaboration within virtual and hybrid teams. Through the findings several questions arise for future research:

How does leadership style evolve in virtual environment?

How does digital fatigue influence long term productivity and communication quality in international teams?

How can AI and automation further support communication in international teams?

#### **5.5 Limitations**

The current study has certain limitations that may affect the interpretability of its results. The study involved a small group of professionals (10 participants) from different industries. While their responses were rich and diverse, the sample may not fully represent broader organizational context or geographical diversity. The generalizability of finding is limited due to small sample.

Data was collected through self-reported responses, which may be subject to biases. Responses may reflect what participants believe or wish to portray, rather than objective behavior or outcomes.

The study provides a snapshot in time rather than tracking changes in communication effectiveness or tool adoption over an extended period. Long term patterns such as evolving technology habits or digital fatigue, could not be captured.

The study focuses on communication technologies, technology adoption, leaving out other dimensions of virtual teamwork such as leadership, performance evaluation system, and mental well-being. A more realistic view of virtual work dynamics may have provided deeper context.

## **5.6 Conclusions**

Keeping in mind the limitations of the present study, recommendations for future work have been suggested which could hopefully open up new avenues of research to improve our understanding of the topic, generalizable findings, hence adding to the literature on virtual teams, communication technologies, and effectiveness. Future researcher might consider the following:

Monitoring participants over several months or years would provide deeper insights into the evolving nature ooh how digital collaboration, adaptation and tool effectiveness.

Including participants from different countries, cultures, sectors and job levels would provide a more and comprehensive understanding of technology use in remote teams.

Studying the emotional and psychological effects of extended technology use such as digital fatigue, isolation, and work life balance is becoming more and more crucial as remote work persists.

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## **APPENDICES- INTERVIEW QUESTIONNAIRE**

### **A. Demographic questions**

1. What is your current job title/role?
2. What industry do you work in?
3. How long have you been working in virtual or hybrid teams?
4. What type of team do you primarily work in?
  - Fully remote/virtual
  - Hybrid (mix of remote and in-office)

### **B. Evaluating Communication Effectiveness**

1. What communication tools do you primarily use in your virtual team?
2. How effective do you find these tools in conveying information?
3. How does your organization handle time zone differences in scheduling meetings?
4. What factors influenced your willingness to use these tools? (e.g., ease of use, organizational support, peer influence)

### **C. Benefits and challenges of technology adoption**

8. How easy or difficult was it for you to adopt the virtual communication tools used in your team?
9. Has technology helped in managing employee performance and productivity? If yes, how?
10. What challenges do you face when using these technologies, and how do you think they could be improved?
11. How does your organization support the adoption and training of new communication tools?
12. Have there been any cultural or language barriers when using digital collaboration tools? How were they addressed?

**D. Strategies for effective technology use**

13. What best practices do you follow to maximize technology's impact on team collaboration?
14. How does your company provide training for employees to adapt to new technologies?
15. What measures are taken to maintain engagement and motivation among remote team members?
16. Are there any specific policies or protocols in place to guide the use of technology in global team management?