



**Executive Doctorate in Business Administration (EDBA) –  
Swiss School of Business and Management (SSBM)**

Title: A practical model for building and enhancing trust in virtual teams

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## Table of Contents

1	Introduction	1
1.1	Background	1
1.2	Problem definition and research question	2
1.3	Research aim and objectives	4
2	Literature Review	5
2.1	Introduction	5
2.2	Understanding the Concept and Importance of Virtual Teams	5
2.3	Outlining the Eminence of Trust in Virtual Teams	7
2.4	Highlighting the factors affecting trust of Virtual Teams vs Conventional Teams	12
2.5	Delineating the Implications of Leadership on trust and performance of employees	16
2.6	Accentuating the existing theories and model of trust	19
2.6.1	Chosen Theory and Model	19
2.7	Research Gaps	25
3	Methodology	27
3.1	Research philosophy	27
3.2	Research approach	27
3.3	Research strategy	27
4	Method	29
4.1	Preparation	29
4.2	Administration	30
4.3	Sampling	30
4.4	Analysis	32
4.5	Validity and Reliability	33
4.6	Ethics	33
4.7	Reflections	33
5	Findings	34
5.1	Preface	34
5.2	Virtual Teams and organizations	34
5.2.1	The structure of the teams in the virtual environment	36
5.2.2	The benefits of virtual teams	38
5.2.3	The negatives of virtual teams	39

5.3	Communication - technology-mediated communication	41
5.3.1	Socialisation and Virtual environment	43
5.3.2	Improving the virtual environment	44
5.3.3	Policies for virtual environment	45
5.4	Trust and Leadership	46
5.4.1	Trust between team members in a virtual environment	47
5.4.2	The problems related to training and technology	48
5.4.3	The aspect of individual communication within organisations	49
5.4.4	Virtual Celebrations	50
5.5	How to build and enhance trust in virtual teams?	51
5.6	How to prioritize the framework components?	54
6	Discussion	58
6.1	Used Methods	59
6.2	Discussion of the findings regarding theoretical and empirical background	61
6.2.1	Virtual teams and Organizations	61
6.2.2	Communication - Technology mediated communication	66
6.2.3	Trust and Leadership	70
6.3	Practical Implications	74
6.3.1	Link of study findings with the research objectives	77
6.4	Research Limitations	79
6.5	Recommendations for further research	80
7	Conclusion	82
	References	84
	Appendices	108

### **List of Tables**

<b>Table 1</b>	- <i>Summary of the Literature Review</i> .....	21
<b>Table 2</b>	- <i>Sampling of interviewees</i> .....	30
<b>Table 3</b>	- <i>Sampling of focus group meeting 1 - Framework validation</i> .....	31
<b>Table 4</b>	- <i>Sampling of focus group meeting 2 – Framework Revalidation &amp; Prioritization (BSC approach)</i> .....	31
<b>Table 5</b>	- <i>Means of communication in different scenarios according to practitioners.</i>	68

### **List of Figures**

<b>Figure 1</b>	- <i>Details of Sub-sections</i> .....	5
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<b>Figure 2</b> - Process framework for virtual team (Adapted from Marlow, Lacerenza and Salas, 2017, p. 576).....	6
<b>Figure 3</b> - Trust behaviour (Adapted from Hill <i>et al.</i> , 2009, p. 196) .....	13
<b>Figure 4</b> - Impact of risks and costs of changes over time (PMBok 2017, p.549).....	14
<b>Figure 5</b> - Proposed model of trust (modified from Mayer, Davis and Schoorman, 1995, p. 715) .....	20
<b>Figure 6</b> - Trust outcomes model (modified from Alsharo, Gregg and Ramirez, 2017, p. 481). .....	21
<b>Figure 7</b> - Suggestion of gap to be closed by virtual teams. Compilation made by the author. ....	42
<b>Figure 8</b> - How to build and enhance trust .....	52
<b>Figure 9</b> - Framework to build and enhance trust .....	53
<b>Figure 10</b> - Framework with the identification for prioritization process.....	55
<b>Figure 11</b> - What to do first? Result of the prioritization from experts .....	56
<b>Figure 12</b> - What is easier to do? Result of the prioritization from experts.....	56
<b>Figure 13</b> - What is cheaper to do? Result of the prioritization from experts.....	57
<b>Figure 14</b> - Process framework for virtual team (Adapted from Marlow, Lacerenza and Salas, 2017, p. 576).....	62
<b>Figure 15</b> - Proposed model of trust (modified from Mayer, Davis and Schoorman, 1995, p. 715) .....	78

# 1 Introduction

This chapter intends to cover certain aspects that establish the foundation of this research, including the background of the topic, as well as the problem definition, research aim and objectives.

## 1.1 Background

Studies confirm that information technology has been rapidly advancing in the last decades and, as an outcome, dramatically increasing the opportunities for companies to apply new tools for their own benefit (Liao, 2017). Morrison-Smith and Ruiz (2020) estimated that more than 85% of working professionals were engaged in some sort of virtual team, supporting the fact that this type of team is becoming vital to perpetuating our increasingly globalized environment. This is also supported by Krumm *et al.* (2016), who argue that the process of globalization involves collaborating to reduce the distance and increase the possibilities for companies and organizations to optimize their resources, especially human resources. This is possible through the introduction of new technology-mediated tools, which can create a wide range of possibilities for grouping people from different continents into the same virtual room. The concept of virtual teams topic is discussed widely in the literature (Backmann *et al.*, 2020). Ford, Piccolo and Ford (2017), Laitinen and Valo (2018) and Lee, Park and Lee (2015) defined virtual teams as a skilled group of task-oriented individuals who are, to some extent, geographically dispersed and mostly working toward a common goal in a technology-mediated environment. In addition, organizations have shifted from team-based work to virtual teams in order to increase savings and flexibility, and this is predicted to keep evolving in the future (Laitinen and Valo, 2018).

However, between the end of 2019 and the beginning of 2020, society experienced a dramatic shift due to the crisis created by the coronavirus (COVID-19) pandemic. Most companies were forced to move to the ‘working from home’ or ‘working from anywhere’ model, which generated an urgent need to adopt the infrastructure required for such a demand (George, Lakhani and Puranam, 2020; Robert, 2020). Mysirlaki and Paraskeva (2020), Brynjolfsson *et al.* (2020) and Turesky, Smith and Turesky (2020) posit that the number and size of virtual teams grew exponentially due to COVID-19. The sharp increase of video conferencing in the professional realm has brought about significant challenges for leaders as well as new forms of teamwork (Ben Sedrine, Bouderbala and Nasraoui, 2020). Many new tools were introduced to the market to support the higher demand for video conferences, not only for daily work meetings but also for national meetings, international conferences, workshops and more. Therefore, the use of tools such as Microsoft Teams, GoToMeeting, or Zoom has also increased exponentially (Ben Sedrine, Bouderbala and Nasraoui, 2020; Oeppen, Shaw and Brennan, 2020).

In this sort of environment, communication has an essential role, and some questions are important to be understood, such as Who? Said what? In which channel? To whom? And with what effect? The intent behind this is to make sure that it covers the widest possible range of variables (Sapienza, Iyer and Veenstra, 2015). Communication is an essential process of our day-by-day lives, and our entire world revolves around it. Communication is particularly

important as a tool for project success, as the success of a project depends on how efficiently the communication network is managed by providing updates and status notifications (Chiang and Lin, 2020; Hohenstein and Jung, 2020).

With the aforementioned scenario, some problems are occurring, mainly due to the low level of socialization offered by the structure of virtual teams (Oshri, Kotlarsky and Willcocks, 2007). This low level of social interaction and social capital is reducing the interpersonal connection required by some tasks (Alsharo, Gregg and Ramirez, 2017). This reflects a lack of trust in the teams (Purvanova *et al.*, 2020), which makes the teams vulnerable to conflict, isolation, and high levels of stress (De Jong, Dirks, and Gillespie, 2016), thus, also affecting the team and communication performance (Laitinen and Valo, 2018).

The specific theme of trust within virtual teams has been approached by several researchers (Ben Sedrine, Bouderbala and Nasraoui, 2020; Breuer *et al.*, 2020; Jarvenpaa, Cantu and Lim, 2017; Jarvenpaa, Knoll and Leidner, 1998; Morris, Marshall and Rainer, 2002; Robert, Denis and Hung 2009; Wilson, Straus and McEvily, 2006), whose studies relate to several variables that influence trust, such time zones, cultural similarities, geographical proximity and level of virtuality or face-to-face contact. Ben Sedrine, Bouderbala and Nasraoui (2020) contextualize these variables concerning trust and its impacts on virtual teams' performance and leadership styles.

Crane (2020) developed an alluring concept of trust being a social lubricant between stakeholders. This concept can be profoundly connected with the argument brought by Gustafsson *et al.* (2020), which suggests that in times of disruption triggered by events such as economic crises, technological advances, or a pandemic, such as the one we are currently living through, trust can be of greatest importance. This raises the question of how organizations can preserve trust in such times.

Within this context, trust receives special attention throughout this research, as the author aims to connect previous research regarding the definitions, theories and main drivers of trust with the experience of practitioners, as gathered from interviews by the researcher. This study will cover the correlation between virtual teams and trust.

## **1.2 Problem definition and research question**

A primary concern regarding the sharp increase in the use of technology and virtual teams is how to manage those teams efficiently (Liao, 2017). Rapid technological progress has led to new ways of thinking, behaviours, remunerations, and work itself, thus, creating a new context of leadership, teamwork, and challenges (Ben Sedrine, Bouderbala and Nasraoui, 2020). Backmann *et al.* (2020) and Ben Sedrine, Bouderbala and Nasraoui (2020) argue that these rapid changes are having serious effects on cultural diversity challenges in multinational teams, including relationship conflicts, debilitated team identities, and lack of trust. Hoffmann and Baracscai (2020) discuss the importance of trust in the virtual environment as a fundamental element for resolving the main challenges mentioned, such as reducing differences in cultural aspects, language difficulties, lack of non-verbal communication, and even technical barriers. In the same way, Ben Sedrine, Bouderbala and Nasraoui (2020) have raised the importance of

trust in a virtual team, more specifically with the difficulties that the lack of trust can bring for the establishment of a sense of collective and common perspectives. Although scholars have covered a wide range of knowledge about how to manage physically present teams, usually in a single location, there is far less knowledge about how leaders can manage their virtual teams effectively using technology-mediated communication (Ford, Piccolo and Ford, 2017).

Garcia-Guardado and Mendoza-Gomez (2020) argue that as a key aspect of virtual team success, trust is a required element for the intelligent management of virtual teams, among other variables such as performance of feedback, technical communication, and structural capital skills. In the same vein, Hoffmann and Baracscai (2020) purport that trust is an essential variable in building and supporting collaboration as well as diminishing cultural differences and major challenges in personal relationships. Conversely, a lack of trust within virtual teams can cause various negative consequences, such as a weakening willingness for collaboration and impaired learning, which can be exponentially problematic in high-risk situations (Hohenstein and Jung, 2020). Maynard *et al.* (2019), De Jong *et al.* (2020), and Gustafsson *et al.* (2020) also posit that contexts of disruption are replete with challenges, and evidence confirms that employees often lose trust during such periods. Therefore, it is of high value to understand how to preserve trust during a crisis.

Recent studies have engaged in understanding the impacts of COVID-19 in organizations, more specifically, in virtual teams, which have increased exponentially during this period. The findings show that these teams suffered from frustration, performance reduction, lower effectiveness, and social withdrawal, which have strong connections with a lack of trust (Moysidou and Hausberg, 2020; Mysirlaki and Paraskeva, 2020; Oeppen, Shaw and Brennan, 2020).

Previous studies extensively covered the theme of trust as it relates to virtual teams (Ben Sedrine, Bouderbala and Nasraoui, 2020; Breuer *et al.*, 2020; Jarvenpaa, Knoll and Leidner, 1998; Jarvenpaa, Cantu and Lim, 2017; Morrison-Smith and Ruiz, 2020; Purvanova, 2014; Purvanova *et al.*, 2020; Robert, 2020; Wilson, Straus and McEvily, 2006) and several other variables related to trust, virtual teams and leadership. Further studies suggest that trust is key for project effectiveness and success, although building trust among virtual teams is a complex task (Jarvenpaa and Leidner, 1998). In addition, Alsharo, Gregg and Ramirez (2017) and Ford, Piccolo and Ford (2017) stated that the lower socialization level and face-to-face contact between team members, among other issues, such as different time zones and different languages and cultures, create an environment with low levels of trust.

However, so far, there has been little discussion about how to deliver a consistent framework to build, maintain, and even enhance trust in virtual teams, and many experts have indicated that the literature has failed to create this knowledge (Crisp and Jarvenpaa, 2013; Dennis *et al.*, 2012; Jarvenpaa, Knoll and Leidner, 1998; Jarvenpaa, Cantu and Lim, 2017; Jarvenpaa and Leidner, 1998; Robert, 2020; Turesky, Smith and Turesky, 2020). In addition, several other researchers indicate the need for further research on the topic of trust. Breuer *et al.* (2020), George, Lakhani and Puranam (2020), and De Jong *et al.* (2020) claim that further research should explore and enrich the literature on trust within organizations and its

implications for business and management. Hoffmann and Baracscai (2020), Morrison-Smith and Ruiz (2020), and Robert (2020) affirm that further research might cover aspects of interpersonal trust and the development of new models regarding topics such as communication and social withdrawal.

Based on the above, this dissertation will examine two main research questions:

**Research Question 1:** *“How can we develop a conceptual model to build and enhance trust in virtual teams?”*

**Research Question 2:** *“What elements of a model to build and enhance trust in virtual teams should be prioritized during its implementation?”*

### 1.3 Research aim and objectives

In furtherance of answering the research questions, this thesis aims to identify the main factors and tools for building and enhancing trust in virtual teams and provides a model to be applied in these organizations. The current study seeks to extend previous research in this area, covering three main pillars. First, we provide an extensive review of previous studies in this area, focusing on the factors of trustworthiness, trust in teams, and risk-taking behaviour and comparing and contrasting their findings with existing models on trust, for instance, that of Mayer, Davis and Schoorman (1995), with the aim to integrate this within the virtual teams context and expand the model as such. Second, we consider the level of virtuality and integrate this concept with the objective of building, maintaining, and enhancing trust in these organizations, as suggested by Jarvenpaa *et al.* (1998). Finally, we analyse the experience of field practitioners in different areas and in face-to-face and virtual team environments. This approach might contribute to a higher level of understanding of trust in virtual teams, which will be beneficial to occupational teams in their daily business.

In order to achieve the proposed aim of the research, the researcher has established the following objectives:

1. To appraise the definitions, theories, models and techniques regarding trust and virtual teams.
2. To analyse the critical factors affecting trust in virtual teams compared with trust in face-to-face teams
3. To compare and contrast practitioners’ perspectives and opinions about trust in virtual teams in order to develop a model and validate it based on the experiences of professionals and researchers.
4. To prioritize the model's elements to facilitate and maximize the effectiveness and efficiency of the implementation focus and harvest faster results.

These objectives are grounded in different sources. The first two objectives will be achieved by reviewing the existing literature in the fields of trust and virtual teams. To

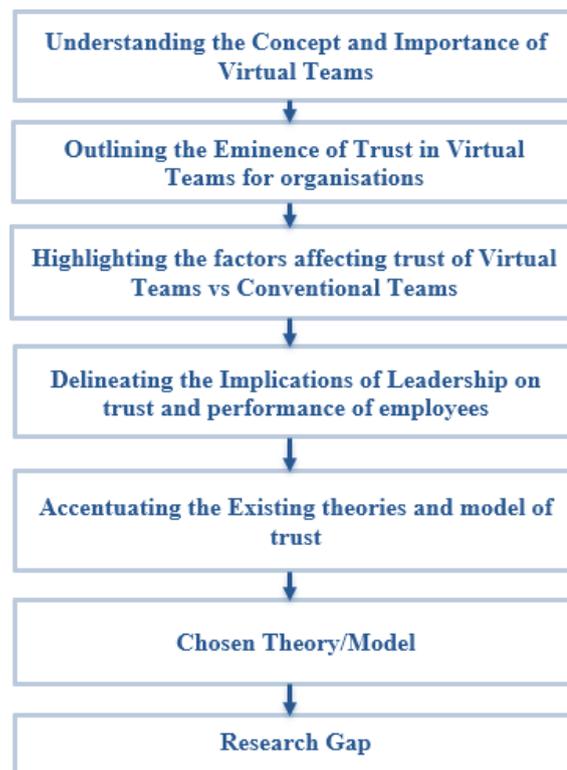
accomplish the third objective, the researcher will conduct interviews with experienced professionals with an extensive background in virtual team and face-to-face management in order to gather their insights and knowledge. The fourth objective will prioritize the many elements of the proposed model, thereby increasing the possibilities of its successful implementation.

## 2 Literature Review

This chapter reviews the main definitions, concepts and theories surrounding virtual team management and organization, communication and trust in virtual teams.

### 2.1 Introduction

In studying a research topic, it becomes very important that the contributions of previous researchers are reviewed in detail. Therefore, in this chapter, a detailed analysis of related topics in the field is presented in the chapter sub-sections. This chapter reviews the main definitions, concepts and theories surrounding virtual team management and organization, communication, and trust in virtual teams. The flow chart below shows the sub-sections being considered in this chapter.

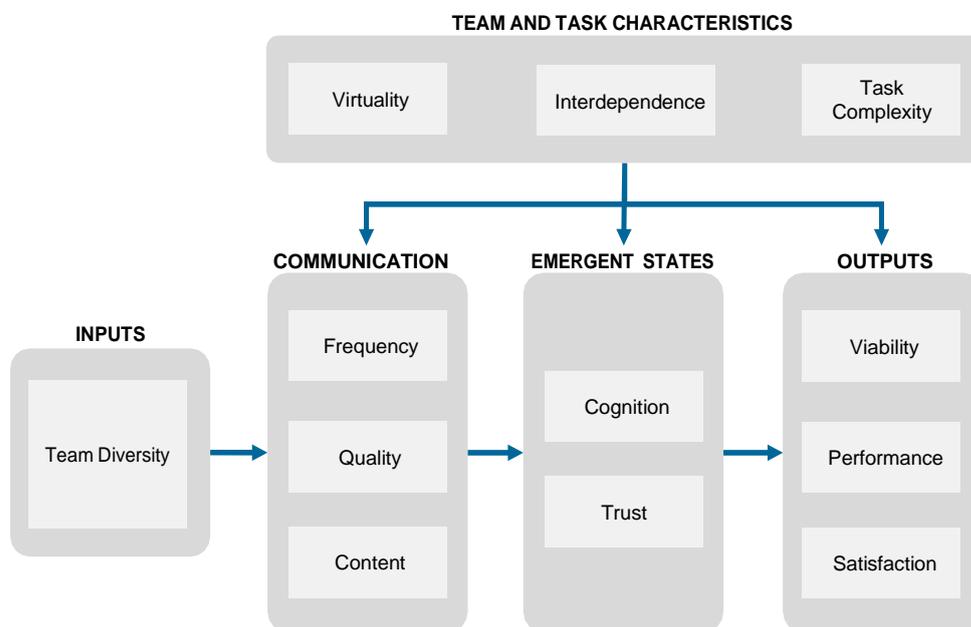


*Figure 1 - Details of Sub-sections*

### 2.2 Understanding the Concept and Importance of Virtual Teams

Ahuja and Galvin (2003, p.163) defined virtual teams as "a group of people who interact through interdependent tasks, guided by a common purpose, with links strengthened by webs

of communication technologies." Lee (2015) and Ford, Piccolo and Ford (2017) have also stated that virtual teams are groups of two or more people who are geographically dispersed and managed through a combination of technologies to achieve a specific common goal. While virtual teams can have different characteristics, there is a common understanding among researchers that they predominantly use technology-mediated communication (TMC) to communicate and manage their work, with at least one member working in a different location or time zone (Schmidtke and Cummings 2017). Laitinen and Valo (2018) reinforce that virtual teams are technology-mediated, to some extent, which conveys the level of the virtuality of each team. Team virtuality is the degree to which the virtual team is exposed to technology-mediated communication tools, as the less the level of face-to-face contact, the higher the level of virtuality (De Jong, Dirks and Gillespie, 2016). To better understand the structure of virtual teams, as well as their characteristics, such as inputs, outputs, and interactions, the researcher has decided to adopt the model proposed by Marlow, Lacerenza and Salas (2017).



**Figure 2** - Process framework for virtual team (Adapted from Marlow, Lacerenza and Salas, 2017, p. 576).

Furthermore, virtual teams are often culturally diverse, with team members located in 2 or more locations across different states, countries or even continents. As a result, the level of virtuality may also vary, with some teams having low virtuality and the ability to easily connect with other members face-to-face, while others have the highest degree of virtuality, where members are located in different continents and mainly communicate through asynchronous tools such as email (Gibbs, Sivunen and Boyraz, 2017; Serrat, 2017). However, some researchers argue that higher levels of virtuality can have a negative impact on communication, leading to decreased performance and other outcomes, based on the media richness theory (Schmidtke and Cummings, 2017; Marlow, Lacerenza and Salas, 2017), which will be discussed in section 2.2.

In addition to the challenges associated with virtual communication, recent advances in technological capabilities have led to new challenges and opportunities for virtual teamwork,

self-management skills, willingness to trust, and performance (Krumm *et al.* 2016; Liao 2017; Marlow, Lacerenza and Salas, 2017). However, virtual teams often face difficulties in communication, such as audio delays, slow internet connections, and difficulties with text interpretation due to the lack of voice tone (Marlow, Lacerenza and Salas, 2017). Furthermore, technology-mediated communication has its costs, including the investment in good infrastructure to support virtual communication and the maintenance required to keep systems in good condition. Nevertheless, virtual teams can benefit from the advantages of exchanging information and documents quickly and saving costs associated with travel and postage (Bloom *et al.*, 2009; Gibbs, Sivunen and Boyraz, 2017).

As teams become more virtual, their communication dynamics and mental models change, and the quality of communication can be affected by the media used. This implies that the cognitive structures of virtual teams may differ from those of face-to-face teams, as virtual teams add more complexity and uncertainties to interactions (Schmidtke and Cummings 2017). Additionally, Marlow, Lacerenza and Salas (2017) suggest that as the informational richness of each media increases, the communication quality and team performance are also enhanced. Therefore, virtual teams that use tools with a high level of informational richness are likely to have better performance outcomes.

While some scholars suggested that virtual teams are less suitable to be relationship-oriented, when compared to face-to-face teams, others have focused on the importance of team building and social-emotional connections for virtual teams (Krumm *et al.*, 2016; Liao 2017). Consequently, researchers argue that when virtuality increases, trust is the main factor in maintaining the consistency and integrity of the virtual teams, since the lack of face-to-face interaction may shorten the team lifespan and prevent communication in real-time, which can negatively impact team performance. A higher degree of trust helps reduce the uncertainties among team members when they feel that they can rely on their co-workers to achieve common goals (Greenberg, Greenberg and Antonucci, 2007; Marlow, Lacerenza and Salas, 2017).

### **2.3 Outlining the Eminence of Trust in Virtual Teams**

Information technology quickly advances, thus virtual teams are dramatically increasing their use in today's business worldwide (Liao 2017). In the same way, Krumm *et al.* (2016) support that, in the pace of ongoing globalisation and digitalisation of the work process, collaborating with others - and in some cases across long distances, different time zones and cultures - is becoming more prevalent. Moreover, '80% of the companies with more than 10,000 employees considered or employed collaboration in virtual forms'. In this context, a virtual team is a functioning team that has a collection of individuals who can work on tasks simultaneously or not, in order to accomplish a common goal (Liao 2017).

In the literature, there is a wide range of studies relating to the low level of trust in virtual teams, such as Purvanova's (2014) qualitative research about virtual teams. One of the main findings was that members of virtual teams generally report low trust in fellow teammates and also feel that virtual communication is no substitute for face-to-face communication. Additionally, they are less satisfied with the communication media used. Building trust in new

virtual teams is also difficult as their members may lack a history of working together or even not know each other. Furthermore, this can have extra factors that negatively impact, such as cultural factors, different time zones and language (Alsharo, Gregg and Ramirez, 2017). Similarly, Dulebohn and Hoch (2017) argue that these difficulties in creating trust in virtual teams can also lead to isolation, a high level of distance between members and challenges for leadership. Nevertheless, it is still important to define what trust is, which are the theories behind it, and one of the objectives of this research is to assess how trust is built.

As a complex and multifaceted topic, trust has attracted scholars' attention from different disciplines and theoretical orientations. Consequently, researchers have identified several different forms, benefits, and constraints of trust. Although multiple empirical studies have been conducted over several decades and despite the heterogeneity of the disciplines and theoretical orientations, most organizational researchers would agree on a wide definition that suggests trust as an expectation or intention concerning the behaviour of others (Killingsworth *et al.*, 2016; Maurer, 2010; Mayer, Davis and Schoorman, 1995; Rousseau *et al.*, 1998). Similarly, King *et al.* (2014) stated that trust has historically proved to be a topic that is constructed with a wide variety of interpretations. Nevertheless, several definitions could be chosen by the author. One possible definition is 'trust as a psychological state, we draw on behavioural definitions of cooperation to define collaborative behaviours as interactive and relational behaviours that occur between members of a workgroup and that are directed at task achievement' (Hill *et al.*, 2009, p. 188). Similarly, Manu *et al.* (2015, p. 1497) stated that 'trust is a psychological state that enables a party to accept vulnerability based on positive expectations regarding the intentions and behaviours of other parties'. Furthermore, Rhoads (2010) defines trust as the member identification or sense of belonging among team members with the team and organisation, which results in less uncertainty, higher compliance, motivation, and satisfaction. In a similar way, Jarvenpaa and Leidner (1998, p. 580) define trust in three points: "(a) makes a good-faith effort to behave in accordance with both explicit or implicit commitments, (b) is honest in whatever negotiations preceded such commitments, and (c) does not take excessive advantage of another, even when the opportunity is available". Although several definitions of trust exist, the researcher prefers to consider the definition of trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, David and Schoorman, 1995, p. 712). This conceptualization differs trust itself from its results, which can be a different sort of risk-taking relationship with the trustee (to-be-trusted party). This definition of trust does not involve only risk per se, but a willingness to employ risk-taking between the parties. Consequently, it holds that the trustor (trusting party) will be willing to be vulnerable to the trustee; thus, the outcome of this risk-taking relation will increase or decrease the trustor's propensity to trust the related trustee and their perception of the trustworthiness of the party (Maurer, 2010; Mayer and Davis, 1999; Wong *et al.*, 2008;).

Different disciplines conceive of the trust construct in numerous ways. Although the distinction between these styles of trust may seem nuanced and specific, the trust literature typically considers each as a unique construct (Lewicki and Bunker, 1995; Mayer, Davis and

Schoorman, 1995; McKnight, Cummings and Chervany, 1998). For instance, swift trust is a separate construct from varied trust, despite sharing the trust name. Therefore, the distinctions between them are important. Through the review by Choi and Mattila (2016), six main conceptualizations of trust were uncovered. These conceptualizations are alternative ways of understanding trust and include swift trust, generalized trust, time-based trust, multi-faceted trust, dispositional trust, and institution-based trust.

From an abstract position, there are interesting trends in terms of how every discipline has treated the trust construct. The time-based conceptualizations of trust tend to explore the dynamic and temporal characteristics of the context. Such dynamic conceptualizations are few in number and are more commonly found in the management and engineering science literatures, although the term was initially coined by management researchers (Meyerson *et al.*, 1996) and later explored by several psychology and management researchers (Bosch-Sijtsema, 2007). Most swift trust studies are from engineering science disciplines. This review is one opportunity to distribute findings to different disciplines. It is also necessary to note that all disciplines have underexplored dispositional and institution-based trust in virtual teams; more work needs to be done on these styles of trust.

First, the bulk of the reviewed analysis focuses on trust as a generalized, static construct, albeit with more nuanced, dynamic views introduced in the broader trust literature. In a virtual team context, groups are viewed as constantly dynamic and evolving (Kozlowski *et al.*, 2013). The importance of team development suggests that interest in a temporal view incorporating time-based trust should be drastically increasing, rather than stagnating as it currently is. Second, theoretical work has shown a multi-faceted, nuanced view of trust. Yet, the rapid rise of generalized trust studies calls into question the impact theoretical work in the broader trust literature has had thus far in informing the conduct of empirical studies regarding trust in virtual teams. Third, our review shows that more than a third of swift trust studies and the majority of time-based trust studies used intact student groups, calling into question whether the methods reflect theory. These intact groups may not be accurately capturing the evolution of trust or swift trust as it exists from the team's inception. Consequently, researchers may not be appropriately operationalizing the testing of relationships with theory.

In summary, the literature on trust in virtual teams so far explores trust by relying on static and generalized views of trust instead of richer, dynamic views of trust that may be more applicable. Virtual teams are classified based on their virtuality. In addition to its conceptualization, virtuality's operationalization has evolved over the past 10 years. Initially, when researchers simply viewed groups as entirely virtual or face-to-face, virtuality was measured by whether or not technology supported the team. As noted, virtuality was often measured in this way or the activity was not virtual at all. New measures of virtuality reflect the nuanced, complex view of virtuality (O'Leary and Cummings, 2007) and have developed indices for measuring virtuality that allow researchers to document and study the VT characteristics more accurately. The findings of multiple studies could be compared more easily if consistent indices of virtuality were used. Despite efforts to develop indices, only eight studies have measured the dimension of virtuality (Hoch and Kozlowski, 2014; Staples and Webster, 2008; Verburg *et al.*, 2013). Hoch and Kozlowski (2014) argued that not only should the size of

virtuality be incorporated into a composite operationalization, but the precise contribution of every element should also be determined. In summary, several of the reviewed studies consider virtuality because the mere presence or absence of technology has created additional nuanced views. Nonetheless, few researchers use these operationalizations.

Fewer studies verifying the consequences of trust in virtual teams (VTs) exist compared to their antecedents. For the purpose of this review, we followed accepted team frameworks and categorized consequences into three team classes: performance (relations between the cluster and the environmental context), member well-being (the development and maintenance of the cluster as a system), and member support (ways in which the individual is embedded among the group) (McGrath, 1991). Trust has been positively associated with a variety of performance types, including learning effectiveness (Edwards and Sridhar, 2005), creative problem solving (Murthy *et al.*, 2013), individual member performance and team performance (Sarker *et al.*, 2011), especially as reported by team members themselves (Peters and Karren, 2009). Higher levels of trust have also been linked to member well-being in the form of increased satisfaction and morale. Research also suggests that trust facilitates member support in terms of cooperation (e.g., Kanawattanachai and Yoo, 2007), although it can be more challenging to achieve in VTs (Bierly, Damanpour and Santoro, 2009). Trust is also associated with greater cohesion and lower turnover rates in VTs (Furumo and Pearson, 2006).

One unique consequence that has been studied in the trust in VTs literature is the ability to overcome failures due to technology use. This is both a significant benefit and a challenge of VTs, as they rely on various types of technology that can inevitably fail and interrupt operations. Trust has been found to be a central factor in VTs overcoming technological difficulties. When trust is high, team members give each other the benefit of the doubt when technology fails. For example, if something is posted or sent incorrectly through the technology, other members are not as displeased. Additionally, Theory Y leadership has been found to facilitate technology adoption, which in turn is linked to increased trust and better team outcomes (Thomas and Bostrom, 2008).

In contrast to the antecedents and consequences of trust, there is less information about the moderators of trust in VTs that strengthen, weaken, or nullify the relationships mentioned above. More or less one fifth of the articles studied a wide range of alleviatory relationships. The literature suggests that culture, task type, functional diversity, and task reciprocity are important alleviatory factors for how trust is built and translated into outcomes (Bierly, Damanpour and Santoro, 2009; Furumo and Pearson, 2006; Mukherjee *et al.*, 2012). Only four articles suggest that virtuality is a moderator. However, research designs based on the mere presence or absence of a technology like email might limit confidence in these findings. While important alleviatory effects are often underexplored, especially with regards to VT type and task type (Hertel, Geister and Konradt, 2005).

Various technologies support virtual team (VT) communication and information sharing, including email and video conferencing. These technologies differ in their synchronisation and ability to convey cues, meaning that certain aspects of technology can affect

relationships and trust within the VT space (Dennis and Valacich, 1999). While most articles do not explore the impact of technology variations on findings, three approaches stand out.

The first is the task-technology work approach, which matches tasks with technology (Goodhue and Thompson, 1995; Zigurs and Buckland, 1998). In the literature on trust in VTs, this approach has been used to suggest that technology can enhance a manager's selection of leadership styles (Thomas and Bostrom, 2008). The second approach is based on media synchronisation theory (Dennis and Valacich, 1999), which proposes that a communication medium's functionality can influence how a person performs a task (Maruping and Agarwal, 2004). The third approach is the design science approach, which suggests developing innovative artefacts to support trust building in VTs (Vassileva *et al.*, 2014). For instance, using this approach, some researchers compared wiki systems to optimise the design and implementation of systems that handle team conflict and motivate cooperative learning. They also used the approach to design, develop, and test the practicality of cooperative method engineering in virtual settings.

These approaches reveal that the type of technology used is not uniformly better or worse. The technology must be suitable for the context and the team members. For example, technologies that transmit visual and voice cues are most associated with trust during the early stages (Maruping and Agarwal, 2004). Additionally, the design science approach can inform the appropriate design and implementation of technology in each context (Gregor and Hevner, 2013). However, technological tools remain a poorly studied variable in this literature.

Only a few studies adopt a method approach in which processes evolve over time and can be captured in an overall temporal model. Most of these studies use stage models from the management literature, such as Tuckman's model of team development (Corbitt, Gardiner and Wright, 2004; Furst, Reeves, Rosen and Woodruff, 2004; Tseng and Qi, 2011), Gersick's (1988, 1989) theory of punctuated equilibrium (Kanawattanachai and Yoo, 2007; McNab, Basoglu, Sarker and Yu, 2012), or Lewicki and Bunker's (1995, 1996) stages of point trust (Gwebu, Wang and Troutt, 2007; Kuo and Yu, 2009) to explain the relevant processes and conditions that cause the development of trust in VTs over time. Others develop their own stages unique to VTs (Henttonen and Blomqvist, 2005; Hertel, Geister and Konradt, 2005; Suprateek Sarker and Sahay, 2003; Zander *et al.*, 2013). In these stage models, VTs go through distinct periods, representing a gradual and logical development towards effective goal fulfilment. Trust development can correspond to distinct stages of team development in a Vermont. However, few studies explain or test how trust and team development impact each other.

For instance, Kuo and Yu (2009) found that swift trust emerged as the team started its project, calculus and knowledge-based trust emerged gradually and peaked in the middle of the project before waning and team members displayed a low level of identification trust. The stage models around that the trust in Vermont literature have fused have sweet-faced abundant criticism. Some weaknesses include: a) cluster actions generally proceeding in unvarying cycles rather than in an exceedingly linear order (Fisher, 1970; Scheidel and Crowell, 1964), b) there area unit several attainable sequences of actions through that goals get

accomplished in teams, not only 1 (Poole, 1981, 1983), and c) however teams conduct actions to accomplish goals isn't a gradual and successive method (Gersick, 1988).

After reviewing the literature, we propose an integrated abstract model of the nomological network of trust in virtual teams (VTs) that identifies antecedents, consequences, processes, technology capabilities, and moderators of trust. This model represents the current state of the literature. As organisations increasingly rely on VTs, emerging new types of work, such as remote work and digital nomadism, will make “traditional” and “new types” of VTs even more prevalent in the future. Consequently, team management, which we identify as an antecedent of trust in VTs in our model, and specifically virtual team leaders, will need to find new ways to build and reinforce trust in their groups in order to achieve and maintain team effectiveness. While advanced technological solutions supporting VTs (e.g. by facilitating digital presence) are constantly being developed, building trust in VTs requires digital fluency (e.g. knowing when to use a particular tool) and effective (digital) leadership (Colbert, Yee and George, 2016; Henttonen and Blomqvist, 2005; Thomas and Bostrom, 2008; Zander *et al.*, 2013). Against this background, in the following sections, we discuss how future research might address shortcomings in the existing literature to effectively deal with issues in the work of the future. Additionally, to provide fresh insights into this area of study, we conclude with potential synergies across different disciplines dealing with trust in VTs and offer recommendations for the management of VTs in the constantly evolving world of work.

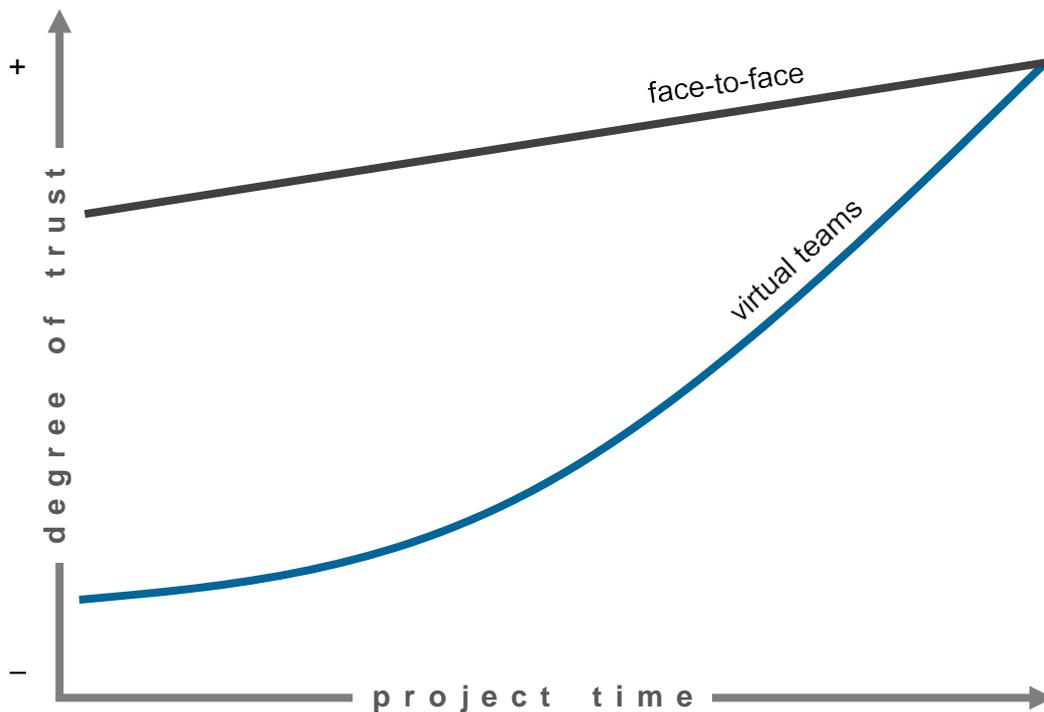
In their study, Hacker *et al.* (2019) aimed to understand the role of trust in virtual teams. As virtual teams are increasingly being used by organisations, it is important to consider the role of trust, which contains vital information. However, there are also challenges surrounding the use of virtual teams, as it is a novel concept for many companies. This study conducted a systematic review of 124 papers to examine the role of trust in virtual teams highlighted by previous researchers. The study used an integrated method to develop a model, which provides a clear idea of how trust can be utilised differently across various fields and disciplines in the case of virtual teams. The constantly evolving technology and emerging trends have made the role of trust in virtual teams more dynamic and crucial. Considering and measuring the role of trust separately across various disciplines and nature of work is an important aspect to update the literature on trust in virtual teams.

In their study, Choi and Cho (2019) investigated the role of trust in organising collaborative tasks in virtual teams, as well as the role of the culture of autonomy and complexity of the tasks involved. The need for virtual teams to work together by maintaining proper coordination and cooperation is crucial. The virtual team trust medium allows for maintaining all three dimensions. To understand the role of trust more effectively, the study included data from 483 respondents in South Korea and highlighted the results. The study found that coordination and cooperation in virtual teams allow for high levels of knowledge sharing, and the role of trust in this aspect is crucial. Additionally, the study found that goal congruence, integrity, and ability are important aspects related to the performance of the system design and also in elaborating the role played by trust in this aspect. Furthermore, virtual teams carrying out complex tasks in an organisation showed higher levels of trust and collaboration compared to virtual teams completing relatively simpler tasks.

## 2.4 Highlighting the factors affecting trust of Virtual Teams vs Conventional Teams

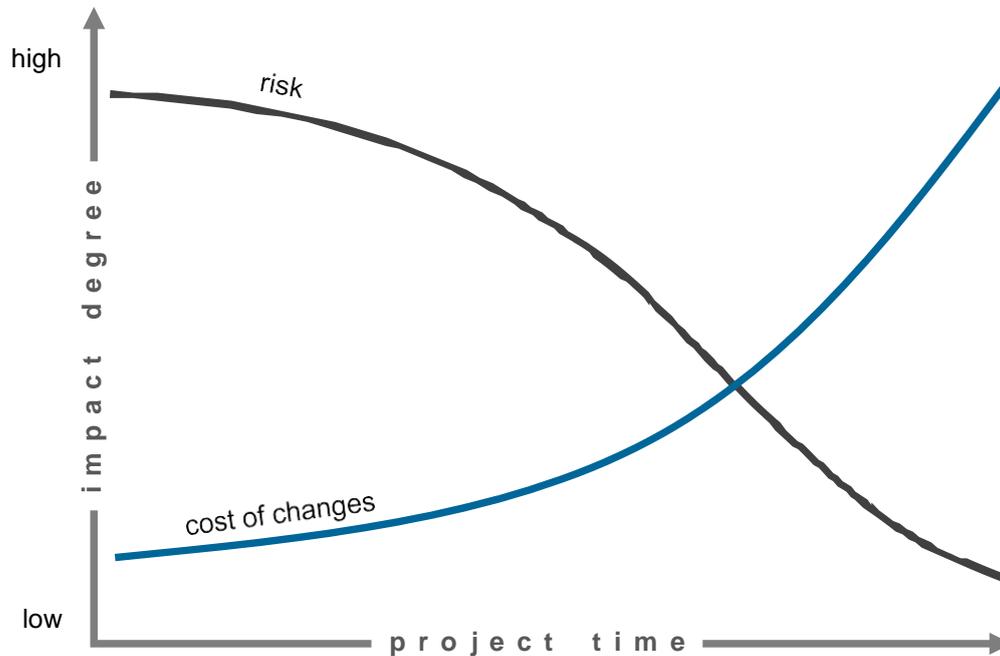
Building trust is crucial to maintaining relationships among virtual team members, especially when there is critical interdependence between them (Lee, Park and Lee, 2015). However, team members in situations with a high level of virtuality are likely to reside in different time zones, cultures, languages, and environments. This can feel like a disruption in trust when they are not well aligned (Marlow, Lacerenza and Salas, 2017). Furthermore, O'Hara-Devereaux and Johansen (1994), Jarvenpaa and Leidner (1998), and Liao (2017) argue that trust is particularly important in a virtual environment because it reduces the psychological feeling of distance. Therefore, trust has the function of connecting isolated individuals. However, virtual teams are likely to be more task-oriented, which may be challenging to build trust. Similarly, Marlow, Lacerenza and Salas (2017) propose that trust becomes essential in virtual teams since it reduces the concerns of team members regarding completing their tasks without the need to monitor or control progress. Consequently, studying how to build trust is fundamental to virtual team success. This involves analyzing the elements that contribute to establishing trust, such as impaired communication quality, enhancing the capability to establish an interpersonal relationship, stimulating casual conversations, offering opportunities for face-to-face interactions, creating a culture of knowledge sharing, and enhancing transparency in decision-making to create a sense of belonging among team members (Liao, 2017).

Marlow, Lacerenza and Salas (2017) conducted an empirical study analyzing important factors, such as the importance of high-quality communication, especially the interpersonal sort, to engage team members in frequent dialogue. This helps to develop trust and mutual understanding. Research also suggests that establishing communication early on, such as organizing an introductory face-to-face meeting, increases trust among team members. Liao (2017) also argues that a face-to-face meeting in a newly launched team will develop trust and generate a high sense of belonging. Social communication is also crucial to maintain trust and a sense of belonging. In this case, leaders may create a routine of periodic meetings with media-rich communication tools in a synchronous scheme. Another key aspect is task-oriented communication, which is more important in building trust than social-oriented communication at the beginning of a project (Rhoads, 2010). This argument is supported by Hill *et al.* (2009), who studied virtual teams and found that trust was lower in computer-mediated teams when compared with face-to-face communication, as shown in figure 3.



**Figure 3** – Trust behaviour (Adapted from Hill et al., 2009, p. 196).

In contrast with this the Project Management Body of Knowledge (PMBok 2017), shows the impacts of variables over time (figure 4), where it states that the degree of risk at the beginning of the project is at a high level, which suggests that at this point the influence of stakeholders are also high. This implies that if the level of trust between the stakeholder is at a low level at the beginning of the project, consequently the level of uncertainties will be even higher, requiring an extra managerial effort.



**Figure 4** – Impact of risks and costs of changes over time (PMBok 2017, p.549).

Particularly in terms of task complexity, there is task interdependence, which evaluates the extent to which the team needs to interact or depend on each other. In an environment with high task interdependencies, team members are expected to communicate more effectively and frequently to achieve the common goal. This increases the chance of building trust among them (Liao 2017). Similarly, Drescher *et al.* (2014) argue that trust is more likely to increase the overall effort that individuals will apply to achieve collective goals. Therefore, more individuals may be willing to exert extra effort to help the trusted colleague and the group. Once trust spreads through the group, cooperative behavior can escalate to higher levels, increasing performance. Additionally, achievement and reward are strongly connected to trust. Transparent and objective criteria in rewarding systems are essential to build trust. Team members are more likely to trust when they are sure about the benefits and measurable reward criteria. Furthermore, this also motivates them to achieve common goals and build trust within the team (Kong, Dirks and Ferrin, 2014; Maurer, 2010; Manu *et al.*, 2015; Robson *et al.*, 2008).

In conclusion, trust is easier to destroy than to build, and several conditions must be met, including social context, values, beliefs, culture, physical proximity, communication quality, and frequency. These are factors that are not easily met in virtual environments, allowing the members' performance over time to deny or build trust, depending on the results of their interactions. Trust is not only one-dimensional; it depends on several aspects, such as trustworthiness, clear and concise objectives, policies for rewarding, effective communication flow, and a certain level of socialization (Gibbs, Sivunen and Boyraz, 2017; Killingsworth, Xue and Liu, 2016; Serrat, 2017).

(Morrison-Smith and Ruiz, 2020) based their study on finding the challenges and barriers that exist in the implementation of virtual team projects. The concept of virtual teams was established to rely on technological advancements and communicate and cooperate despite

geographical boundaries. Virtual teams are a crucial part of maintaining the social and economic infrastructure at an optimum level, following globalization. The study analysed 225 previous studies to highlight the possible factors that can act as a challenge in using virtual teams. The physical factors that the study has highlighted as important methods of overcoming barriers to the implementation of virtual teams include cognitive, social, and emotional barriers. The challenges encountered are broadly classified into five categories: geographical and temporal distance, diversity of the workers involved in the team, the relevant configuration of the teams, and perceived distance. The study suggests that by encouraging the solving of these problems across various boundaries, virtual teams can collaboratively work more effectively.

(Flavian, Guinalú and Jordan, 2019) examined various aspects of virtual teams to determine the antecedents and consequences resulting from the use of trust in a virtual team leader. The success of virtual team work depends on various antecedents that impact it. Therefore, it is important to determine the factors that significantly influence the team's success with respect to the role played by trust. The study used a survey method to understand the factors involved, formulated a model using structural equation modelling, and highlighted some important findings. The study found that trust in the virtual team leader plays a significant role. The physical and behavioural characteristics shown by the leader significantly impact the building of measured trust in that particular leader. In the end, trust generation helps in achieving greater organizational efficiencies.

Hao, Yang and Shi (2019) investigated the relationship between the knowledge sharing behaviour of virtual teams and conscientiousness using an interactionist approach. Several studies have focused on knowledge sharing behaviour in virtual teams as it promotes the growth and development of individuals in an organisation. This study took a person-interactionist approach to identify relevant factors in this matter. Empirical evidence was collected from 219 virtual team members in an Information Technology company to validate the study. The results revealed that conscientiousness, knowledge sharing self-efficacy, and job demands of skill variety jointly influence knowledge sharing behaviour. The variable of knowledge sharing self-efficacy effectively moderates the relationship between conscientiousness and knowledge sharing behaviour. Furthermore, the factors of job demands of skill variety and knowledge sharing self-efficacy moderate the existing relationship between conscientiousness and knowledge sharing behaviour.

Jaakson, Reino and McClenaghan (2019) conducted a study on trust in both individual and team performance in virtual teams. The study recognises the importance of understanding the role of trust in virtual teams, as it plays a crucial role in connecting activities in an organisation through virtual teams. The study focuses on the evolution of trust and its mediating role in relationships. The study is longitudinal, and a quantitative survey was conducted on 71 international student teams working virtually in the universities of Latvia, Estonia, Russia, and Finland. The study found that a high level of trust at the beginning does not change the project period. However, negative feedback on performance has a negative effect on both trust and trustworthiness. Although there is a significant mediating role of trust, it is relatively small. Past performances have an impact on trust, but there is no mediating role of trust found for individual and team performance.

Bhat, Pande and Ahuja (2017) conducted a study to determine the effectiveness of virtual teams using the structural equation modelling approach. Advances in communication platforms have created new opportunities for organisations to conduct day-to-day activities using virtual platforms, overcoming geographical challenges. Virtual teams are composed of diverse people, irrespective of their gender, geographic locations, backgrounds, and experiences. The study aimed to determine the role of trust and information sharing, communication, etc. when forming virtual teams. Using snowball sampling, a total of 520 responses were analysed using structural equation modelling. The resulting factors highlighted include dependability on one another while working in virtual teams, collaboration, information penetration, communication tools, reliance on technology, time management, variety of information received, and implementation of research. These particular factors can easily measure and enhance the efficacy of working with virtual teams and provide valuable insights into their effective usefulness.

## **2.5 Delineating the Implications of Leadership on trust and performance of employees**

In their study, Li *et al.* (2019) aimed to investigate the effect of transformational leadership on the innovative work behavior of employees in sustainable organisations. The study examined how transformational leaders could enhance their followers' innovative work behavior through trust in a leader, direction, and work engagement. The researchers collected data from 281 employees working in transnational organisations in China and used the Statistical Package for the Social Sciences (SPSS) to test their hypotheses. The findings revealed a significant positive relationship between transformational leadership and work engagement with innovative work behavior. The study also demonstrated the significant impact of transformational leadership on trust in a leader, and its subsequent positive impact on the work engagement of employees. Additionally, the results indicated a significant serial mediation between transformational leadership, trust, work engagement, and employees' innovative behavior. The findings also highlighted the significant alleviatory effect of direction on transformational leadership and innovative work behavior. To enhance employees' innovative work behavior, leaders within organisations should strive to effectively engage them in their work by gaining their trust, which can facilitate their participation in creative activities. This study is crucial as it explores how transformational leadership can stimulate followers' innovative behavior through trust in the leader and work engagement within the Chinese organizational context.

Karatepe, Ozturk and Kim (2019) conducted a study on servant leadership, organizational trust, and their outcomes within the banking sector culture. The researchers collected primary data from frontline employees and managers working in banks in Saint Petersburg, Russia, for a week. The study aimed to investigate the role of servant leadership and organizational trust in determining three performance measures, namely intention to be late at work, creative performance, and service recovery performance. The results showed that trust played a significant role as a mediator between servant leadership and the three performance measures.

Meng and Berger (2019) focused on the impact of organizational structure and leadership performance on job satisfaction of public relations professionals, as well as the

mediating role of trust and engagement. The study employed a quantitative approach and collected data from 838 professionals through an online survey conducted nationwide. The results revealed a significant relationship between organizational culture and leadership performance with work engagement, job satisfaction, and trust among public relations professionals. The study also found that engagement and trust had a mediating effect on the relationship between organizational culture and job satisfaction. Work engagement was a strong predictor of job satisfaction due to its direct influence on trust. Overall, the study suggests that leadership and trust have significant influences on job satisfaction in the PR sector.

In their study, Yue, Men and Ferguson (2019) examined the role of trust as a mediating variable in the relationship between transformational leadership, transparent communication, and employee openness to change. The researchers collected data from 439 employees from various organisations in the United States of America through empirical research. The study aimed to determine how transformational leadership and transparent communication impact the development of trust among employees during situational changes within an organisation. The results showed that transformational leadership and transparent communication have a significant role in fostering employee trust during changes in an organisation. Furthermore, when more employees have trust in their organisation, they tend to have a positive attitude towards the various changes and support systems being introduced. The study highlighted the important mediating role of trust in the relationship between transformational leadership, transparent communication, and employee openness to change.

Inceoglu *et al.* (2018) conducted a study focusing on the attributes of leadership behavior and its impact on the well-being of employees in an organization. The study takes an integrated review process, and the authors have focused on organizing an agenda for the future. Leadership behavior has a significant impact on worker behavior, performance, and well-being. However, research on leadership behavior has predominantly focused on worker performance, treating worker well-being (usually measured as job satisfaction) as a secondary outcome variable associated with performance, rather than a vital outcome in and of itself. This qualitative review examines how leadership behavior (i.e., change, relational, task, passive) affects worker well-being. The authors establish five negotiator groupings (social-cognitive, cognitive, affective, relational, and identification), extend the criterion house for conceptualizing worker well-being (i.e., psychological: epicurean, eudemonic, negative; and physical), examine the limited evidence for differential processes that underlie the leader behavior-employee well-being relationship, and discuss theoretical and methodological issues inherent to the literature. They conclude by proposing a theoretical framework to guide future research on how, why, and when leadership behavior impacts worker well-being.

Phong, Hui and Son (2018) examined the role of trust in leaders and the potential leadership has on the behavior of employees towards knowledge sharing at work. Knowledge sharing is an important factor in the workplace, as it helps in the growth and development of employees at work and in their personal lives. It is important to see how the role of trust and leadership causes a change in its formulation. The authors took a quantitative approach and included a total of 368 employees from 63 Chinese firms to arrive at their results. The factors considered in the study include transformational leadership and the role of trust in both

knowledge collecting and knowledge sharing. The results showed that trust successfully mediated the relationship between transformational leadership and knowledge sharing. Transformational leadership has a greater impact on knowledge donating than trust, while trust has a greater impact on the process of knowledge collecting than transformational leadership.

Ariyabuddhiphongs and Kahn (2017) conducted a study to investigate the role of transformational leadership and turnover intention among employees, while including the role of trust as a mediating factor in measuring employee performance in cafes in Thailand. As immediate managers are one of the most important aspects determining employee turnover in such an organization, the implementation of transformational leadership on these managers might have a significant impact in reducing employee turnover in cafes. The authors conducted a quantitative study with a total of 187 employees working in cafes in Bangkok. The analysis of the primary data collected showed that the implementation of transformational leadership on immediate managers in cafes has a significant influence on reducing the number of employees resigning or the rate of turnover in cafes. The role of trust in this aspect is also found to be significant, and transformational leadership can be used by organizations as a measure to reduce employee turnover.

Bligh (2017) specifically discussed the two parameters of leadership and trust and the existing relationship between them. Trust can be considered one of the most important factors to be enriched and encouraged in the workplace due to its significant implications on performance improvement. The role of trust comes into play, particularly when the other party in a situation is facing risk or is vulnerable. The relationship between a leader and follower is largely benefitted if it is based on trust. Mistrust among leaders and followers can lead to several unwanted consequences in an organization. The dynamic development of trust between leaders and followers is one of the most critical aspects of the workplace, and the creation and sustenance of such relationships must be practised judiciously.

Fitria, Mukhtar and Akbar (2017) conducted a study to examine the effect of organizational structure and leadership style on the performance of teachers in a private secondary school. The study specifically looked at a private junior high school with 1,773 teachers surveyed for the purpose of this research. The schools selected were located in Palembang city, and the results were analysed to arrive at the desired findings. The study's findings suggested that there is a direct positive effect of organizational structure on teacher performance. Additionally, the study found that leadership has a significant and positive impact on the performance of teachers. The research suggests that to improve teacher performance in these schools, sufficient attention needs to be paid to improving their organizational structure and embedding leadership attributes in the teachers.

Koohang, Paliszkievicz and Goluchowski (2017) attempted to measure the impact of leadership on trust, knowledge management practices, and organizational performance in an organization through their study. The main motive of the research was to construct a model that could accurately examine the relationships among the above constructs. The study was quantitative in nature, and a questionnaire was formulated with items for leadership, trust, leading self, leading organization, leading people, etc. The questionnaire was distributed to

people in the United States of America for primary data collection. The study's findings showed that there is a linear and positive connection between leadership attributes, including leading oneself, the organization, and people, and trust generated among people, knowledge management processes, and organizational performance. Leadership development training sessions for employees should, therefore, be a strategic part of the organization to improve its performance.

## **2.6 Accentuating the existing theories and model of trust**

Similarly to the definition of trust, scholars have studied various theories on how people interact with trust in their daily lives. Mayer and Gavin (2005) argue that analysing how employers monitor and control their employees provides interesting insights into the evolution of trust. The researchers suggest that frequently monitored employees can interpret this control as a lack of trust on the part of the employer, which can result in retaliation and demotivation on the part of the employees.

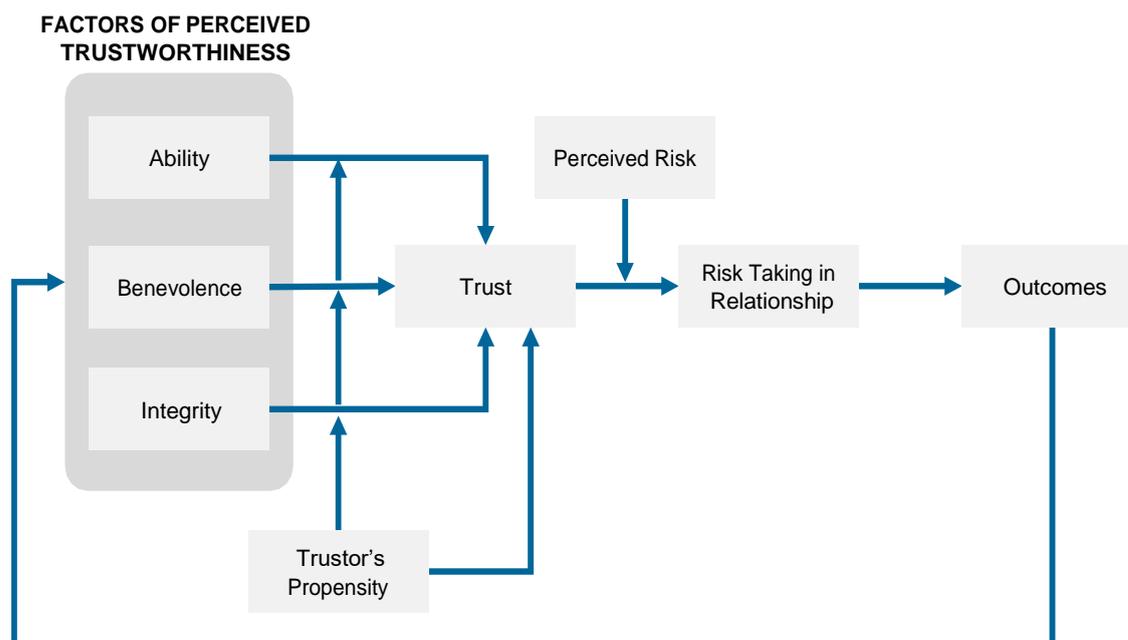
Similarly, Bhattacharya, Devinney and Pillutla (1998), Phua (2013) and Manu *et al.* (2015) propose macro-level and micro-level psychological approaches to trust. The former is related to situational external factors that are based on the relationship between the trustor and trustee. For instance, incentive and punishment strategies make studying the trust related to them more complex. On the other hand, micro-level factors focus on the emergence of trust through the interaction of the parties. These factors include trustworthiness, individual factors such as emotions, attitudes, moods, and identity.

Another theory regarding trust is social capital, which comprises relationships and solid ties of interpersonal engagement (Lee, Park and Lee, 2013). It describes the features of networks, norms, and trust, which allow parties to act more effectively. Consequently, business organizations have the opportunity to build a competitive team by forming trust and supportive relationships (Lee, Park and Lee, 2015).

Additionally, Wong *et al.* (2008) support cognition-based trust, which describes a trusting relationship that builds mutual understanding through information exchange. This foundation is based on shared knowledge and understanding as a basis for creating a faithful and high-performance environment.

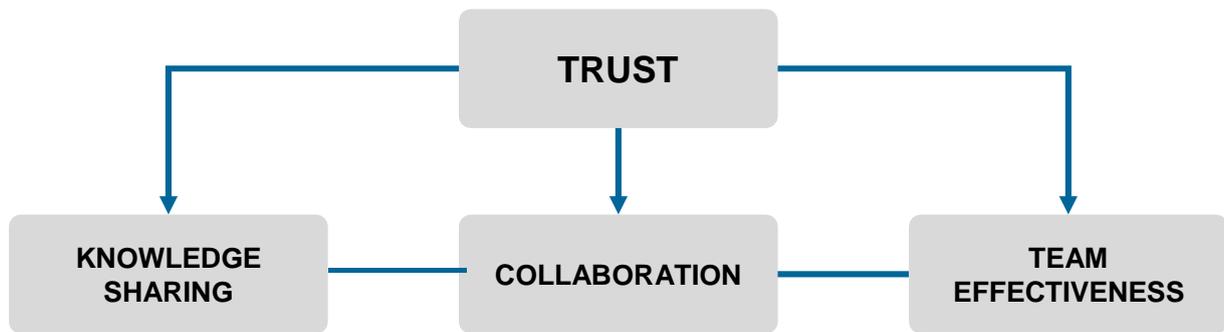
### **2.6.1 Chosen Theory and Model**

This research seems to be more applicable to the theory proposed by Mayer, Davis and Schoorman (1995), who presented the model of trust in figure 5, below:



*Figure 5 - Proposed model of trust (modified from Mayer et al., 1995, p. 715).*

The literature suggests that there are three main factors of trustworthiness: integrity, ability and benevolence (Mayer and Davis, 1999; Mayer, Davis and Schoorman, 1995). Integrity refers to one's perception of moral values, for instance, the importance of being honest or fair, and it depends on maintaining these values consistently. Ability refers to one's possession of certain skills related to the specific activities in question. Finally, benevolence refers to one's concern with the well-being other parties (Krumm et al. 2016; Kong, Dirks and Ferrin, 2014; Mayer and Davis, 1999; Mayer, Davis and Schoorman, 1995). Furthermore, trustworthiness is an inherent characteristic of the trustee (Manu et al., 2015). Therefore the question of "Do you trust him?" would be better phrased as "Do you trust him to do to that?" since trust would not only depend on the assessment of benevolence and integrity but also to the ability to complete the task in question (Mayer and Gavin, 2005; Mayer and Davis, 1999; Mayer, Davis and Schoorman, 1995). In addition, Mayer et al. (2005), Tullberg (2008) and Manu et al. (2015) argue that the development of trust is more complex than only the trustworthiness aspects of a relationship. It can also be linked with the trustfulness of the trustor, in other words, one's willingness to take a risk and accept vulnerability. In this context, Krumm et al. (2016) proposed that mutual support, cooperation and high levels of trust among team members are particularly essential in virtual teams. In the same way, Maurer (2010), Drescher et al. (2014) and Liao (2017) confirm that trust may facilitate the alignment between partners, support the achievement of project goals, enhance group effectiveness and increase performance in specific tasks, as also described by the model below proposed by Asharo et al. (2017):



**Figure 6 - Trust outcomes model** (modified from Alsharo, Gregg and Ramirez, 2017, p. 481).

Hence, the next section will establish how can trust be built in order to achieve this research aim.

The broad set of literature reviewed with respect to the various sub-sections has been discussed in detail. The table below provides a summary of the studies reviewed:

**Table 1 - Summary of the Literature Review**

Author	Findings
(Morrison-Smith and Ruiz, 2020)	The concept of virtual teams was established in order to be able to rely on technological advancements, communicate and cooperate, despite geographical boundaries. Virtual teams form an important part of the social and economic infrastructure and maintain globalisation at an optimum level. Physical factors have been highlighted in the study as significant barriers to the implementation of virtual teams. These include cognitive barriers and social and emotional barriers. The challenges encountered are found to be broadly classified into five broad categories, namely, the geographical and temporal distance, diversity of the workers involved in the team, the relevant configuration of the teams and the perceived distance. The study shows that encouraging the solving of these problems across the various boundaries would help in finding collaborative methods for virtual teams to work more effectively.
(Choi and Cho, 2019)	The study found that coordination and cooperation within virtual teams allow for a high level of knowledge sharing. Moreover, the role of trust in this aspect is found to be quite crucial. The study also found that goal congruence, integrity and ability are important aspects related to the performance of the system design and also in elaborating the role played by trust in this aspect. It has been further highlighted that virtual teams who are engaged in carrying out complex tasks in an organisation have shown higher levels of trust and collaboration when compared to virtual teams engaged in the completion of relatively simpler tasks.
(Hacker <i>et al.</i> , 2019)	This study developed a model in the same respect with the help of an integrated method. The study provides a clear idea on how trust among virtual teams can be utilised differently across the various fields and disciplines. The changing technologies and the ever-emerging trends due to the constant evolution of technologies have

	allowed virtual teams to be more driven and dynamic. The necessity of trust to be considered and measured separately across various disciplines provides an important insight in updating the literature surrounding trust in virtual teams.
(Karatepe, Ozturk and Kim, 2019)	This study focused on using the construct of servant leadership, trust in the organisation and the factors that impact them. These include the intention to be late to work, creative performance and service recovery. The study found that trust plays a significant mediating role between servant leadership and the three performance measures.
(Meng and Berger, 2019)	The study found a significant relationship between organisational culture leadership performance, work engagement, job satisfaction and trust among public relations professionals. Engagement and trust also have a mediating effect on the job satisfaction of public relations professionals. Work engagement is found to be a strong predictor of job satisfaction due to its direct influence on trust. As a whole, leadership and trust both have significant influences on the job satisfaction of professionals in the PR sector.
(Yue, Men and Ferguson, 2019)	This study found that transformational leadership in an organisation and transparent internal communication play a significant role in fostering employee trust in an organisation during times of organisational change. The study also found that greater numbers of employees in an organisation who have trust for their own organisations fosters a welcoming attitude among the employees towards the various changes and support systems being introduced in these organisations. The role of trust as a mediator has a significant impact in mediating the relationship between transformational leadership and transparent communication and employee openness to change.
(Li <i>et al.</i> , 2019)	The results of this study showed that transformational leadership promotes innovative work behaviour. To enhance employees' innovative work behaviour, leaders should gain employee trust in order to motivate them to participate in inventive activities. This can be the key study to analyse the various views of how transformational leadership can stimulate followers' innovative behaviour through trust within the leader and work engagement among the Chinese structure context.
(Flavian, Guinalú and Jordan, 2019)	As the prospect of virtual teamwork depends on various antecedents, it is important to determine the factors that have significant influence on the success of the team with respect to the role played by trust in this matter. This study uses a survey method using structural equation modelling. The results of the study highlighted some important facts in this matter. The relevance of trust in this matter have been successfully established with respect to that of the virtual team leader. The study found that both the physical and behavioural characteristics shown by the leader have a significant impact on measured trust in that particular leader. The study concluded that trust helps achieve greater organisational efficiency.
(Hao, Yang and Shi, 2019)	A number of studies have focused on knowledge-sharing behaviour in virtual teams as it encourages the growth and development of each individual working in an organisation. This study took an interactionist

	<p>approach to determining the relevant factors in this matter. The study found that the factors of conscientiousness, knowledge sharing self-efficacy and job skill variety have effects on knowledge sharing behaviour. The variable of knowledge-sharing self-efficacy successfully moderates the relationship between conscientiousness and knowledge-sharing behaviour. The factors of job skill variety and knowledge-sharing self-efficacy moderate the existing relationship between conscientiousness and knowledge-sharing behaviour.</p>
(Jaakson, Reino and McClenaghan, 2019)	<p>This study recognised the necessity of understanding the role played by trust in virtual teams. The evolution of trust in the process is the main objective of the study. The study found that having a high level of trust in the beginning does not change over the course of the project. On the other hand, receiving negative feedback on one's performance causes a declining effect on both the factors of trust and trustworthiness. Trust was found to play a significant mediating role, but it was quite small. Past performances are seen to have an impact on trust. However, trust was found to have no mediating role on individual and team performance.</p>
(Phong, Hui and Son, 2018)	<p>The exact factors considered in the study include transformational leadership and the impact of trust in leaders on both knowledge collecting and knowledge sharing. The result here showed that the factor of trust successfully mediated the relationship between transformational leadership and knowledge sharing. The transformational leadership approach has a greater impact on knowledge donating than trust while trust is seen to have a greater impact on the process of knowledge collecting as compared to transformational leadership.</p>
(Marlow, Lacerenza and Salas, 2017)	<p>Some important factors analysed in this study include the importance of high quality communication, especially interpersonal communication, in order to engage team members in frequent dialogue, which helps develop trust and mutual understanding.</p>
(Koohang, Paliszkievicz and Goluchowski, 2017)	<p>This study showed that there exists a positive linear connection amongst leadership attributes, including self organisation, and trust, the knowledge management process and organisational performance. Leadership development training sessions for the employees must therefore be a strategic part of the organisation to eventually improve organisational performance.</p>
(Ariyabuddhiphongs and Kahn, 2017)	<p>This study takes a quantitative route with a total of 187 employees working at a café in Bangkok. The analysing conducted with the primary data showed that transformational leadership displayed by the immediate managers at the café played a significant role in reducing the number of employee resignations and the rate of turnover. The role of trust in this aspect is also found to be significant, and transformational leadership can be used by these organisations as a measure of reducing employee turnover.</p>
(Bhat, Pande and Ahuja, 2017)	<p>The advancements made in the communication platforms have created several new opportunities and have allowed organisations to overcome various geographical challenges. The virtual teams are formulated irrespective of gender, geographic location, background and even experiences. These teams include a diverse group of people,</p>

	<p>and technology helps overcome traditional organisational challenges. Here, the study here tries to determine the role played by trust in this aspect along with the role of information sharing, communication etc. when forming a virtual team. The resultant factors highlighted at the end of the research include the factors of dependability, concern for collaboration, information penetration, communication tools, reliability on technology, time, variety of the information received and implementation of the research. The efficacy of working with virtual teams can be quite easily measured and enhanced using these particular factors and provides important insights into the effective usefulness of these factors.</p>
(Liao, 2017)	<p>In the context of this study, virtual teams are collections of individuals that can work on tasks simultaneously in order to accomplish a common goal. The researchers argue that a face-to-face meeting in a newly launched team will help promote trust and generate a high sense of belonging. Social communication also plays an important role in maintaining trust and a sense of belonging. In this case, leaders may create a routine of periodical meeting with media-rich communication tools in the synchronous scheme.</p>
(Manu <i>et al.</i> , 2015)	<p>This study discusses macro-level and micro-level of psychological approaches concerning trust. The first is related to situational external factors, which are based on the relationship between trustor and trustee, for instance, the incentive and punishment strategy, which complicates the notion of trust. On the other hand, the micro-level factors focus on the emergence of trust through the interaction of the parties, for instance, trustworthiness, or individual factors such as emotions, attitudes, moods or identity.</p>
(Drescher <i>et al.</i> , 2014)	<p>This study posits that trust is more likely to increase the overall effort that individuals will apply to fulfilling and achieving collective goals. More individuals may be willing to employ extra effort in helping trusted colleagues. Once trust spreads through the group, cooperative behaviour might lead to higher levels of performance. Furthermore, achievement and reward are strongly connected to trust. Transparent and objective criteria reward systems are an important foundation to building trust, as team members are more likely to trust in an organisation when they can be sure about the benefits and measurable reward criteria. This also motivates employees to achieve common goals and build trust within the team.</p>
(Purvanova, 2014)	<p>Members of virtual teams generally report low levels of trust in their fellow teammates. They also feel that virtual communication is not a substitute for face-to-face communication and are less satisfied with the communication media. Additionally, building trust within new virtual teams is also difficult, as their members may not have a history of working together. Other challenging factors include, for instance, cultural factors, different time zones and language.</p>
(Lee, Park and Lee, 2013)	<p>Another theory behind trust is social capital, which is known to promote solid ties and interpersonal engagement. It describes the features of networks, norms and trust, which allow the parties to act more effectively. Consequently, organizations can build competitive teams based on trust and supportive relationships.</p>

As per the findings of the studies mentioned above, it is seen that in case of a number of aspects there are certain measures that needs to be taken additionally for finding out even more literature in this aspect. The literature review conducted above identified a number of research gaps that will need to be addressed by researchers in the future. The next section the will systematically address these gaps in order to provide a proper understanding of the study.

## **2.7 Research Gaps**

The study of trust in virtual teams is, in fact, a multidisciplinary topic. The majority of existing studies focus on information systems disciplines. The empirical studies of trust as it relates to virtual teams is not found to be highly evolved due to the conceptualizations related to the topic being only described according to broader theoretical understandings about trust. The approach to studying trust taken by researchers has generally been inconsistent with the underlying practice of theorization. Researchers in the field of computer science and communication have shown increasing interest in this topic, and journals in the field have published numerous articles on this topic. The role of trust has been approached differently by various researchers in the past. A review of the literature on trust in VTs is able to highlight that in management, as well as in other disciplines, there are different perspectives of trust that have been largely focused upon. These range from virtual teams being treated as a static factor to being treated as unidimensional. Other researchers argue that the concept of trust in virtual teams must be treated as a dynamic factor. Further, there is a need for trust to be proposed in different forms of trust support, whereby the various virtual team processes are being provided as a part of the broad prospect of communication and knowledge sharing. Moreover, there have also been research that leads to showing their inability to portray a particular constant view point in this matter. The success of a virtual team is highly dependent on various technological advancements, which effect the processes of trust building and virtual team development. Studies related to the role of trust and its combined effect on the virtuality parameter has been found to be somewhat inconsistent across a number of different study disciplines. It is often difficult to compare the findings that have been gathered in this respect. There is a need to promote the related literature and improve our understanding of the findings. It is essential that the concepts of virtual teams and the role played by trust in it is conceptualized from a multidisciplinary aspect and that it lays the foundation towards conceptualizing the factor of trust in modes of virtuality. This thesis will therefore work towards serving as a bridge between the inconsistent literature on virtual teams and the role of trust by establishing a study that is multidisciplinary in nature. Therefore, the main points in the literature review that have been identified as gaps in the current literature are presented below:

1. It has been observed that most of the research with respect to virtual teams has been conducted from the information systems point of view. As it has been widely used in various domains of the research spectrum, it is important that the studies are conducted from a number of other perspectives as well. As it is a multidisciplinary concept, there is requirement for the literature to be addressed equally from every aspect of topic.

2. Not much evidence has been found in the research regarding the conceptualization of the concepts of virtuality and trust. These concepts are not quite empirically driven. Hence, this

study should be analysed empirically in order to provide a more holistic understanding of the concept.

3. As more and more organizations are using virtual teams as a part of their daily workplace activities, it is important that the role of trust is understood from a dynamic point of view rather than using it as a unidimensional concept.

As mentioned above, the growing use of virtual teams has created the requirement of conducting research in the field from a more holistic approach. Thus, to fulfil the research gaps existing in the current body of knowledge, this study aims to understand the situation better in the future. In the following chapters, the research objectives constructed for the study are presented, followed by the complete research design for the study.

### **3 Methodology**

This chapter clarifies the thinking process and methodologies that will be applied by the researcher based on the most suitable methodologies for this specific theme and research approach.

#### **3.1 Research philosophy**

Research is the basic transcription of our thinking process (Antwi and Hamza, 2015). To answer the research questions, the researcher may collect and process data in order to extract the meaning and draw a conclusion (Kumar, 2014). Moreover, the philosophy adopted by the researcher reflects important assumptions about their view of the world (Saunders, Lewis and Thornhill, 2009). In this research, the author views the world from a subjectivist approach, where social phenomena depend on the perceptions of social actors. This approach will lead to an epistemology where the approach will be interpretivist (Saunders, Lewis and Thornhill, 2009). This conveys the definition of the interpretive paradigm, which is based on collecting information about events and interpreting this collected data. Such an interpretivist approach focuses more on meaning instead of measurement methodologies, such as interviews or group observations. In addition, interpretative philosophy does not predefine variables. Rather, it focuses on the full complexity of the human senses (Antwi and Hamza, 2015).

#### **3.2 Research approach**

The definition of a research approach should be determined by how a theory can be applied to answering a specific research question. One available option is the deductive approach, which is usually associated with hypothesis tests and quantitative (statistical) data. Alternatively, the inductive approach requires the collection and analysis of data to establish a hypothesis and possible causes (Mayer, 2015). Moreover, the inductive approach has as a main objective to better understand a problem and its influencing factors, thus contributing to the development of a new theory (Graue, 2015). This is confirmed by Thomas (2006, p. 238), who posited that “the researcher begins with an area of study and allows the theory to emerge from the data”.

For this study, the author decided to use the inductive approach, which is aligned with the research philosophy and is suitable for the specific problem and questions proposed.

#### **3.3 Research strategy**

The research philosophy of interpretivism is typically associated with qualitative research (Mayer, 2015). This philosophy seeks to comprehend the significance of cultural and institutional practices for the individuals involved in the research. As Saunders, Lewis and Thornhill (2009, p. 163) state, "Researchers must make sense of the subjective and socially constructed meanings expressed about the phenomenon being studied." Qualitative research deals with non-countable data, and thus, techniques like coding and content analysis are needed to manage and analyse the data. Additionally, it usually follows an inductive approach (Thomas, 2006).

Qualitative research examines the meanings and relationships between participants. It employs a range of data collection techniques and analytical methods to develop a conceptual framework (Mayer, 2015). This includes the use of interviews, which is one of the tools that can be utilised (Scotland, 2012). Moreover, Diccico-Bloom and Crabtree (2006) argue that interviews can be structured or semi-structured, depending on the results expected by the researcher, although semi-structured interviews are often the data source for qualitative research. These interviews are usually scheduled in advance at a designated time and location, providing the interviewee with the comfort to ask open-ended questions. The interview typically lasts between 30 minutes to several hours. Furthermore, Saunders, Lewis and Thornhill (2009, p. 325) emphasise that "Semi-structured and in-depth interviews provide you with the opportunity to 'probe' answers, where you want your interviewees to explain, or build on, their responses." This is crucial if you are adopting an interpretivist epistemology, where you are interested in understanding the meanings that participants attribute to various phenomena.

For this research, I adopted a qualitative approach by using literature and semi-structured interviews to collect data, aiming to answer the research question and fulfil the proposed objectives. Moreover, to validate the data gathered, I conducted a focus group meeting with various practitioners.

## 4 Method

This chapter discusses the tools and techniques that were used to reach the aim and objectives of this research.

### 4.1 Preparation

The consent form was developed and sent to the interviewees in advance to ensure that the interview was conducted in accordance with ethical standards (Appendix 1). Along with the consent form, an information sheet (Appendix 2) was provided to inform the interviewees about the main ideas, aims, and objectives of the research, as well as the expectations of the interviewer. The interviews were conducted in a semi-structured manner, and an interview guide (Appendix 3) with fundamental questions was sent beforehand to give the interviewees a better idea of the topic and to encourage them to reflect on the subject matter prior to the interview.

The interview guide was developed based on two main pillars: the literature and theories studied by the researcher, and the practical experience of the author as a practitioner. The questions were based on previous empirical studies and aimed to test the theories and findings from the literature. For example, the interview guide began with general questions about the interviewees' experience in project management and the countries where they have worked, which served as an "ice breaker" before delving into their experience specifically with virtual teams. One of the technical questions in the guide asked about the structures of virtual teams that the interviewees were accustomed to working with, specifically high levels of virtuality, mixed teams with low levels of face-to-face interaction, or mixed teams with medium/high levels of face-to-face interaction. This question was based on the theory of the level of virtuality in virtual teams proposed by Laitinen and Valo (2018).

The interviews were conducted in English, although the interviewees' native languages were mainly Portuguese, Spanish, or German. The interviews were conducted using computer-mediated tools with synchronous and rich-media (auxiliary video) tools. The researcher chose MS Teams/Zoom to have simple functionality to record the interviews. The technology-mediated communication tools were used to reaffirm the impartiality of the interviews and to prove their effectiveness, especially given the restrictions due to the COVID-19 pandemic.

Additionally, the researcher conducted two focus group meetings, which were a mix of in-person and virtual presence, with the aim of validating the proposed framework. First, the author sent a formal invitation to each participant, explaining the topic and aim of the meeting. Then, the author prepared a presentation that introduced the research motivation, strategy, question, aim and objectives, main theories, literature, definitions, and findings. Once the audience had a clear understanding of the research, the author presented the proposed framework and explained it in depth. Finally, the author planned to use a dot voting strategy to collect the strong and weak points of the framework and to start a discussion of the most voted points. The expected outcome was to collect enough data to validate the framework through discussion with the practitioners about the applicability of the points covered by the framework. The dot voting strategy would also provide inputs to develop a balanced scorecard approach, where participants would vote for the highest priority points with the most impact on

implementation and added value for the organization. Using this approach, the author intends to deliver a proposed implementation plan that takes into consideration the highest priority points and the most impactful parts of the framework for the organization, in order to increase the speed of results.

## 4.2 Administration

As prior mentioned all the necessary information are provided for the interviewees before the interviews and data collection. Additionally, the consent form guarantees the data protection and confidentiality necessary for the document signed by both participants, interviewer and interviewee. Nevertheless, all the communication from the start of the interview are recorded and transcribed. The researcher will analyze the transcripts and annotations made during the interviews, valuations are made and conclusions of the data gathered, the researcher opted to do the analysis of the data through a conventional spreadsheet software, using the codification of words, but mainly the comparing the answers for each interviewee for the same questions and evaluating the pattern in those answers. These conclusions will be sent to the interviewees in order to get the approval for the assumptions made. After the consent of the interviewee the author proceeded with the official data inclusion in the research.

## 4.3 Sampling

Interviews are used to discover shared understandings of a particular group. The sample of interviewees should be fairly homogenous and share critical similarities related to the research question. In order to select the interview participants an iterative process referred to as purposeful sampling that aim to maximize the depth and richness of the data to address the research question (Dicicco-Bloom and Crabtree, 2006). Thus, the researcher shortlisted at a first moment ten experts in project management, specifically with great experience with virtual team and use of technology mediated communication. The researcher's idea was having a good combination of experiences, generations and hierarchical levels, in order to get a wide range of perspective inside an organization. Another important aspect covered by the researcher was to have a mixture also of organizations from different fields, in order to examine the behavior in different environments. Therefore, the author selected the list below of interviewees for this research:

*Table 2 - Sampling of interviewees*

Code	Role	Field	Professional Experience	Experience with VT
<b>Respondent 1</b>	Vice president	Automation	22 years	18 years
<b>Respondent 2</b>	Head of PMO	Automation	6 years	3 years
<b>Respondent 3</b>	Project Manager	Automation	3 years	3 years
<b>Respondent 4</b>	Senior Manager	Ops. IT	15 years	12 years

<b>Respondent 5</b>	Consultant	Services	35 years	20 years
<b>Respondent 6</b>	CEO	Health care	30 Years	15 years
<b>Respondent 7</b>	COO	Health care	28 years	10 years
<b>Respondent 8</b>	Head of Regulatory Affairs (SME)	Health care	12 years	10 years
<b>Respondent 9</b>	National Commercial Manager	Financial Services	15 years	12 years
<b>Respondent 10</b>	Head of Human Resources	IT	30 years	15 years

Moreover, for the validation of the framework created by the researcher was conducted through a focus group meetings with different experts in order to validate the framework effectiveness and applicability. With this purpose the researcher invited fourteen experienced different practitioners, with high level of virtuality in their environment to validate the framework, below is the list of participants:

*Table 3 - Sampling of focus group meeting 1 - Framework validation*

<b>Code</b>	<b>Role</b>	<b>Field</b>
<b>Participant 1</b>	Program leader	Medical Devices
<b>Participant 2</b>	Program manager	Medical Devices
<b>Participant 3</b>	Project leader	Medical Devices
<b>Participant 4</b>	Project leader	Medical Devices
<b>Participant 5</b>	Project leader	Medical Devices
<b>Participant 6</b>	Project manager	Medical Devices
<b>Participant 7</b>	Project manager	Medical Devices

*Table 4 - Sampling of focus group meeting 2 – Framework Revalidation & Prioritization (BSC approach)*

<b>Code</b>	<b>Role</b>	<b>Field</b>
<b>Participant 1</b>	Board member IT company – PM expert	IT
<b>Participant 2</b>	Program Manager	Medical Devices
<b>Participant 3</b>	Head of Engineering	Pharmaceutical
<b>Participant 4</b>	Senior Manager Project Portfolio	Pharmaceutical
<b>Participant 5</b>	Project leader	Banking

<b>Participant 6</b>	Researcher	Academic
<b>Participant 7</b>	Project manager	Automotive

#### 4.4 Analysis

This chapter provides an in-depth explanation of the planned textual analytical approach known as thematic analysis. Thematic analysis involves thoroughly examining and exploring the material to identify recurrent patterns or common themes. As a flexible method of investigation, it allows the researcher to select a way to present the researched facts and is not associated with any specific philosophical viewpoint. However, thematic analysis may be less appealing to young investigators, as there are few studies evaluating its limitations compared to other qualitative approaches such as grounded theory, ethnography, and phenomenology (Nowell *et al.*, 2017).

Thematic analysis involves several steps. First, the researcher familiarizes themselves with the collected data, followed by searching for themes, reviewing the themes, and ultimately presenting a write-up of the formulated themes. These steps are explained in detail in this chapter.

When analyzing qualitative data or interview transcripts, it is essential to read the data attentively and review it again. By doing so, the researcher can familiarize themselves with the data and comprehend the participants' replies. The researcher can narrow down the replies in accordance with the pertinent study context or themes by carefully examining the data to develop an overall picture of it (Maguire and Delahunt, 2017). To help with the process of capturing the preliminary results, the researcher must have a clear understanding of the data. This stage involves tabulating the broad results that provide insight into the text.

All the data collected by the interviews and focus group meetings were clustered together to answer the research question and fulfil the research aim and objectives. The literature available was sourced for secondary data, where the author collected, analyzed, and compiled the most important theories and methods studied. Similarly, as primary data, interviews are an important source of data, where the researcher, through the interview transcript, created themes, categories, and codes to endorse the findings. Specifically, as previously mentioned, the author used spreadsheet software to build a matrix with all interviewees' answers transcribed to qualify a pattern between the answers and find out what the common topics mentioned were. Additionally, the annotations made during the interviews were also a source of data for the most important points collected during the interviews, as they were instantly collected during the interview as the most important and emphasized collocations.

Finally, after the framework development, the focus group meeting took place as a tool to validate the framework by testing its effectiveness with experts in the field. The data for the validation was collected through a dot voting technique, where each participant received three blue stickers representing strong arguments or positive points in their perspective and three red stickers representing vulnerable points that had some window for improvement. After a short

presentation made by the researcher to equalize the participants' knowledge in regards to the topic being discussed, the participants were asked to evaluate the framework by sticking their stickers in the printed framework. Moreover, to document the reasons and possible actions to improve, the participants were also asked to write down their thoughts concerning each sticker applied, and the results were documented by pictures. As a result of the data gathered, the author would improve and cover some points that were not forecasted or not strongly approached by the data collected by the interviews.

#### **4.5 Validity and Reliability**

In order to describe some general types of trustworthiness in qualitative research, such as credibility, transferability, dependability, and confirmability, procedures such as conducting peer debriefings and stakeholder checks are most applicable to performing data analyses as part of establishing credibility. Conducting a research audit (Thomas, 2006) can also aid in this process. Moreover, the participation of supervisors is crucial in assisting the researcher in the validation process and providing neutral feedback regarding the results found.

#### **4.6 Ethics**

A consent form will be sent before any interview procedure, and the entire interview will be recorded and transcribed. After analysis and conclusions, the data will be sent to the interviewees for confirmation and approval. All confidential data gathered will not be published or shared with third parties. The researcher avoided sensitive topics for the interviewees in order to maintain privacy and willingness to answer questions. In cases of divergence in the conclusion made by the author without the approval of the interviewee, the data will not be considered in this research.

#### **4.7 Reflections**

The researcher is a project management professional (PMP®) certified by the Project Management Institute (PMI®) since 2011, with additional certifications in agile methods and quality tools (Project Management Institute, 2021). They have been working as a project manager for the past 12 years, with extensive experience in various organizations and projects of varying sizes and complexities. This experience with virtual teams facing communication and trust issues contributed to the research analysis. Together with the experience of the interviewees and focus group meeting participants, a framework was developed to pursue continuous improvements in organizations. The main motivation for this research was the pandemic situation, which from the author's perspective accelerated the digitalization and "working from anywhere" process, emphasizing the tools, techniques, and importance of the virtual working mode.

## **5 Findings**

This chapter covers the findings gathered by the researcher after analyzing the available literature, collecting data from the interviewees, and attaining data from the focus group meeting. The sections below are ordered according to the main studied streams.

### **5.1 Preface**

This extensive study aims to comprehend a practical model for building and enhancing trust in virtual teams. The primary data collection method was adopted to gather data for the study, which was collected through qualitative means. Based on the literature review, the researcher created an interview guide, which served as the foundation for the semi-structured interviews conducted with 10 experienced practitioners, allowing respondents to answer subjective questions comprehensively. The responses of all participants were recorded and exposed to thematic analysis techniques to draw insights. In the following sections, the researcher has clustered the main findings in different areas of the research.

### **5.2 Virtual Teams and organizations**

One of the initial questions asked by the researcher was, "What are the (high level) benefits of virtual teams in your perspective in a brief way?" The aim of this question was to focus the attention of the interviewees on the primary benefits that come to mind when asked about virtual teams. Unsurprisingly, the results were clustered into some main points: reduction of travel costs, increase in capabilities, expertise and manpower. This can be confirmed by the following quotes from the participants:

“Cost is one of the most important aspects. For the other parts, you can have overlapping operations between the teams. It basically means that you are going to have an operation 24 hours, seven days a week. This is the other part that is a huge benefit for companies. And then you can have the overlapping between different regions, which is going to increase your manpower with no extra costs.”

“[...] It allows a great interaction of people and collaboration by sharing knowledge in the same project, which allows a better and greater outcome. You can have specialists from different sectors of industry, quality, security, engineering all contributing to the project while not being together in one single place.”

In contrast with the above-mentioned points, the author suggested that the respondents also reflect on the negative aspects of virtual teams. Their answers mainly revolved around the isolation and lack of integration of team members in determined situations, which led to demotivation and inefficiency in certain cases, as confirmed below:

“[...] I believe that the biggest factor is keeping the motivation of the employees in a virtual environment. It is very complicated to keep the sense of belonging of each of the team members. It is a day challenge for the leaders to make it happen—to keep the members motivated, in order to deliver and achieve their targets”

Another question proposed by the researcher was: “Do you think that a complete policy for how to behave, share data, use (choose) means and for training can help to enhance the VT environment?” In asking this, the researcher aimed to open the discussion regarding how policies and trainings were being applied by the interviewees. Three of the interviewees argued that a policy about how to behave in a virtual team was essential for enhancing the virtual team environment:

“I believe so. Although we haven’t had such a policy, I do believe that this can give guidance for the employees about how to behave and use the systems to share data and formalize the results of a conversation, for instance [...]”

“All the techniques and tools in this direction might be used in order to reduce the impact of the lack of personal relationship. Moreover, it would be useful to have the team in the same mindset, and mindset can be taught in order to have the team on the same page. However, there are some thing that neither a policy or technology can do, which is have a beer with one or two of your employees in order to get closer with them. This, in fact, would enhance the VT environment”

Conversely, respondent 3 argues that implementing policies would not be a good practice for virtual teams, as it could be perceived as a restriction by the employees. He also suggests that the organization could present the tools available and allow employees to make the final decision about how to use and apply them, which could lead to a higher feeling of empowerment.

Nevertheless, the researcher considers the argument in favour of policies as stronger. As respondent 2 mentioned, such tools can help guide the mindset and behaviour of team members and enhance the virtual team environment. Additionally, the implementation of policies should include cooperation methods, career development paths, and recognition and reward programs. Regarding the latter, respondent 4 provided good insight into what could be included in recognition and reward programs. For instance, high-performing employees could be rewarded with opportunities to travel to other sites and meet face-to-face with other team members, which would also contribute to socialization and stronger ties between team members.

Another essential point relates to the on-boarding process for newcomers in virtual teams and organizations. All interviewees agreed that integrating new team members is a crucial part of developing trust among team members. Furthermore, this process could be standardized for the entire organization and include important points, such as a brief regarding the organization, local and organizational culture, current policies, processes, procedures, and a matrix outlining roles and responsibilities of team members. Below, the researcher has compiled some of the most important quotes from interviewees regarding this topic.

“[...] you need to set up the game rules beforehand. For instance, how to use the tools, where and how to manage files on shared servers, how to behave in the group and understand its culture, and then the inclusion might be easier [...]”

“You have to take some courses and to answer some questions. One of the training models is about the company, where the person learns about the company, its history, who certain people are, what the factories do, what the products are. So, they learn about the company and its culture. We also have a module where people learn how people shall behave as an employee due to the background of the company and its philosophy. Then, integrating the person into the team is not a welcome party, but we are giving the person a welcome letter the first day saying welcome and congratulations, trying to introduce the person to all the company's sectors and going through the main sectors telling other people who the new person is, having lunch together, where we can talk about different issues and trying to bring new people into these aspects. We do a small introduction, let's say. If you are going to be involved in a project with certain people, we normally do have a video conference in which the person is presented.”

“Indeed, when you get some people that are outside of the market, they are required to perform internal trainings first, because all of them are required. It is going to take about 20 days for the people to complete all of that. Also, a workshop is going to be presented for these people and it is going to instruct about our values, about our business and how they are supposed to work, in order to show them what the tools are and how to use them. This is the process we use. They see all the training, technical training and the internal training. Then, they are going to watch that workshop that we have to instruct them about culture, how they are going to work, what they are going to phase, what are going to be their challenges, who their customer will be, and they will understand everything.”

Equally important for the interviewees was the criteria for selecting members when forming a new virtual team for a project. They pointed out the relevance of not only selecting the members based on their technical skills, knowledge and capabilities, but also considering their personal type in relation to other members, their cultural background to work in harmony with the rest of the team, their propensity to trust others and their values and beliefs. Furthermore, when the interviewees were asked their desired actions to improve the effectiveness and efficiency of their virtual teams, answers were similar across respondents, pointing out that communication is a key factor in the effectiveness and efficiency of virtual teams. Therefore, the richness of the media chosen is really related to the complexity and urgency of the topics. The next section will approach this theme in depth.

### **5.2.1 The structure of the teams in the virtual environment**

This study indicated that during Covid-19, almost all the operations shifted to virtual environments. One of the respondents stated that although the meeting structure remained the same, they were shifted to virtual platforms. The employees visited the workplace to gather essential tools and instruments. Further, it was revealed that leadership was essential for milestone achievement and collaboration. This can be observed from the response:

*“So, we're not in production, we don't do hardware, so we don't have a dependency there. So, actually, what happened at the start of COVID was that we just switched from one day to the other to everybody working from home, virtually. We kept the same meeting structure, we kept everything in place, we just, instead of physically, we just worked. And, actually, the*

*only dependency we had was in the point-of-care area, where we needed point-of-care instruments for some tests. And, actually, the people, you know, they came to the office, they took the instruments, and they took them home. So, they basically set things up at home to work as well, as if they were in the office. So, that's the way we continued. And that worked very well. At the start, I set up—talking about the leadership part—I set up a regular call with the team, just extra, just to say, 'Okay, how's everybody doing? How's everybody coping with being at home all the time? Do you have the infrastructure you need?' Our company reacted very, very quickly there”.*

While the aspects of the importance of leadership in milestone achievement and collaboration were indicated in the statement:

*“So that was the start, you know, how we started in COVID. And how we continued, so the structure stayed the same, and meetings stayed the same. And everybody just engaged like this. And we delivered. At that time, we delivered all our projects, and met all our milestones, as planned, with no delays. Now, this was also true outside of our company. So, we worked with a partner in India, they also moved their people home and supplied infrastructure. And there also, we didn't have any issues from the perspective that too many people were infected at the same time. But, we were able to bridge that. And together, we were able to still meet the milestones and deliver the projects as planned. So that was a huge achievement. And I think it was, you could say, probably not expected because we, in our risk registers, we did raise the risks. The highest risk is that people will get sick people won't be able to work from home, they will have infrastructure problems and so on. And some of that happened. But it wasn't, you know, it was able, it was great for the team because somebody then stepped in and said, well, okay, I can cover that. And then, you know, there was a lot of collaboration. But I think the key part was that the teams had worked for years together. And there was a lot of collaboration and trust already built.”*

Furthermore, to ensure the success of virtual teams, Conference calls, video conferencing, remote teams and hybrid models were used. In this context, respondent 2 stated:

*“But, so, we use that quite a bit, especially between each office in different countries between locations. Because the only way was to have conference calls. And that was, typically, I was doing it myself at least once a day for each office, or whatever it was.”*

In the context of the hybrid model, respondent 8 affirmed:

*“To the extent that we have also rearranged the office in Singapore, we have two offices for revenue. We have an extension somewhere else that is a little bit down the road walking by. Granted, because we didn't have enough space to seat everybody to not to renew that contract for that new office or external office, and then everybody back to the service facilities. And then we tend to have policies and replace means to say that after checking with everybody, we don't have to come every day to Office, maybe we put a rule of we have to come to office at least two days a week, meaning to have face to face interaction and become more visual or in a very arranged manner, by department, by teams and so on so forth. In the end, end up having more like a hybrid situation within each office within each country.”*

Moreover, some of the respondents believed that virtual teams lead to frustration, are time-consuming, follow a specific routine, and require training. This is pertinent to the statement given by respondent 3, who suggested:

*“We had fewer meetings, and then we were doing like, we have a more organised way of gathering all the information and reporting on a weekly basis, maybe, because also, it was very time-consuming at the beginning, because we would then we need to sit the whole day and being holding meetings and cannot. So the important things. So I think they understood this. And then we all got more organised. And in all this process, this workflow of information at the end, after some time.”*

### **5.2.2 The benefits of virtual teams**

This study indicated that during Covid-19, almost all the operations shifted to virtual environments. One of the respondents stated that although the meeting structure remained the same, they were shifted to virtual platforms. The employees visited the workplace to gather essential tools and instruments. Further, concerning the benefits of virtual teams, the first respondent stated that the issues related to commuting have been resolved, there is enhanced efficiency, work-life balance has improved, individual visualisation has improved and there is greater flexibility. This can be ascertained from the response:

*“I would say, one benefit, and it's starting with a very small one, like, you know, the time you lose, for some for commuting. Me personally, I have one hour each way to commute. So this was time, you know, it was bonus time. The second benefit is also, it was, you know, more, I would say, you know, purely from an output perspective, more efficient, because it's like, you know, you have back-to-back calls, so you can switch very quickly. I would also say many, on the positive side, from a work-life balance, I think, and I got it from a lot of people that, especially people with smaller children, where both partners are working, it made it more flexible for them, because now they could, you know, in between, they could take care of the child could get some something to eat, they could take them to the doctor. That situation for me personally, it was also a benefit that I have two teenage kids. I would also say a benefit was individual visualisation. I would say because, in those calls, it was much easier to share, to share information, you know, if you're sharing slides, if you're working on a, I think we actually had in that COVID time. And now as well.”*

Furthermore, while discussing the benefits of virtual teams, respondent 9 further continued that:

*“And maybe the final point, I think the recordings, I think, yeah, are a big help as well, that the recording that you know if you have a meeting where decisions are made or that it's an information meeting that it could be easily be recorded, and then somebody could watch it in their own time being more flexible and say, okay, I can't attend the meeting, but I watch it later. That's definitely an advantage. I think also the chat is an advantage as well. The chats we set up to group chats. We use Google Chat to set up chats to keep people informed and available. There are downsides to that.”*

Additionally, respondent 7 confirmed that the benefits of virtual teams include saving money and proper scheduling. This is depicted in the response:

*“So when you have, I think the most of these two are the same type of people, and then you have the manufacturing guys in our office every day for sure. Supporting staff around the factory must mean engineering and everything. They can work from home to every office, and they can actually reuse the space and save a lot of money on renting easier renting on office space, and energy and everything. So this is a big saving for the company. Of course, they also have the other benefit I did see for sure, although it's not easy to prove is efficient, people are working from home. Okay. For me, for me myself, I did see a big change.”*

Further, respondent 5 also backed up the point of proper scheduling and stated:

*“Honestly, the first thing I would say that kind of made more sense for everyone to work on their schedule is the schedules and being more organised when it comes to scheduling, you can see that, and actually, as we can, we have talked about that in my own my two companies so far.”*

### **5.2.3 The negatives of virtual teams**

The study indicated that during Covid-19, almost all the operations shifted to virtual environments. One of the respondents stated that although the meeting structure remained the same, they were shifted to virtual platforms. Concerning the negatives of virtual teams, respondent 1 suggested that working virtually often leads to burnout, increased workload, lack of innovation and discussions and increased chatting. This is exhibited in the response:

*“I would say, one of the main points is, is the, you know, I said earlier with the benefit that you know, with the back to back calls, you can be more efficient. But the downside of that is, is really the, you know, the danger of getting overwhelmed or actually, you know, getting on goes first or getting burned out, although I'm sure some people do have the issue. But I mean, just the workload, I think, actually, the workload increased. Yeah. And I think the concentration level required to start in the morning and look at a screen and only have that screen all day long. And have back-to-back meetings, I thought myself personally, you know, that I just forget to take breaks. And you know, there are back-to-back calls, and I just switch over, if I'm in the office, then at least maybe I have to go from one building to the other at least one floor or one meeting on to the other grab a coffee in between.”*

While respondent 4 further asserted:

*“And at the end, you have just, you know, five days in the week, and the calendar is filled with calls from Monday morning until Friday evening. And I think that can be very draining. And I think a disadvantage of that it doesn't leave room for free time to think. And I think we miss many, you know, don't give enough time to think about decisions which need to be made to think about, you know, innovating to think about, you know, topics where you would have maybe in the office environment, we wouldn't have time to do that. But if it becomes one of the main communication channels, and it doesn't happen per email, then it's very hard to keep track of,*

*okay, which decisions now were made by whom? Do I need to do something? Not like you have a feeling. Not only do you have your veteran calls, but you need to be on top of the charts every minute of the day. Whereas with an email structure, sort of, it's more, let's say, more formal, but it's also more structure, then you can sort of handle it or deal with it, deal with it better."*

Other challenges associated with virtual teams are no social interactions, no sense of belonging, lack of efficiency and the problematic organisation of meetings. This can be analysed from the statement given by respondent 3, who stated:

*"And if they were at the office, maybe they would just go to their tables and as like a two-minute question, and this would be so yeah. So we have many issues regarding these, the compartmentalisation of the projects because I think this is really hard to have online meetings on all the small issues. And then what I saw was that people were very busy, meetings the whole day, every day. And sometimes they don't have time to work and do their things because the managers also were trying to control them. And they were all the times in meetings that the job was not being done."*

The aspect of no sense of belonging was underlined by respondent 8, who confirmed:

*"In terms of one-to-one coaching. Look, I think a downside is you don't go into the organisation and meet other people and get a sense of the vibe. Every organisation has got a sort of a tangible, you know, climate and atmosphere that's created when you go in. In some organisations, you might see some of the co-workers of the person that you are coaching. And obviously, you can't do that. As part of my coaching, I include conversations with the line managers. So I get some context from the line manager, the boss, about, you know, what's going on in the organisation, what the sort of challenges and opportunities are and talk about the goals for that that that person has for their coaching."*

Adhering to the structure of the teams in virtual environments, it was found that during Covid-19, almost all the operations shifted to virtual environments. The study indicated that, although the meeting structure remained the same, they were shifted to virtual platforms. Further, it was revealed that leadership was essential for milestone achievement and collaboration. To ensure the success of virtual teams, conference calls, video conferencing, remote teams and hybrid models were used. Moreover, some of the respondents believed that virtual teams lead to frustration, are time-consuming, follow a specific routine, and require training. The benefits of virtual teams include the mitigation of issues related to commuting, enhanced efficiency, improved work-life balance, improved individual visualisation and enhanced flexibility. It was also confirmed that the benefits of virtual teams include saving money and proper scheduling. Concerning the negatives of virtual teams, it was found that working virtually often leads to burnout, increased workload, lack of innovation and discussions and increased chatting. Other challenges associated with virtual teams include no social interactions, no sense of belonging, lack of efficiency and the organisation of meetings.

### 5.3 Communication - technology-mediated communication

The interviewees showed a consistent opinion regarding the role of communication in virtual teams. For all of them, communication has an essential and important function in the effectiveness and efficiency of a virtual organisation. Inevitably, in a virtual team with a high level of virtuality, communication will occur through technology-mediated tools, which can vary in terms of media richness and synchronicity, as previously explained. For this specific research, the interviewees were in organisations where they only knew around 40% of their colleagues. As a result, one possible solution is to have a consistent relationship between team members and leaders. The interviewees suggested having a systematic and solid routine of one-on-one meetings with all core team members in order to improve and maintain a great level of satisfaction and motivation for the team members. It can also reduce the feeling of isolation of each team member. Thus, they can share their feelings, constraints, problems and frustrations but also share achievements, personal development ideas and all related topics.

*Respondent 4: “[...] also having a one-to-one brings relationships even closer. Now we have meetings with everyone involved, and everyone knows each other. You will not feel that idea of proximity. It is important also to have a quick word with each person on a one-to-one basis. It becomes more personal when you leave the group and go to a personal area.”*

*Respondent 3: “[...] and for the people who are remotely located, anyway, we also have a catch-up weekly in a group. Individually one-to-one, we have once a quarter. It's an internal policy. It is mandatory.”*

*Respondent 5: “At least 2 or 3 times per month, I talk to one person on these teams. It is very important. Sometimes people are joining the meetings, and they don't have opportunity to share all information that was shared. Sometimes this could change our vision in the project.”*

In addition to the communication in virtual teams, from the researcher's point of view, one of the key questions from the interview guideline was: “Do you think that one introductory meeting at the beginning of the project can help to develop trust between team members? And if you have the budget to do so, on a scale from 0-10 (where 0 is less important and 10 is most important), how important would it be to have an initial face-to-face kickoff meeting with the core team members?”. For this specific question, all the participants rated 10, the highest score possible, for having an introductory face-to-face meeting with the core team members. Moreover, the interviewees stressed that this initial face-to-face contact could improve team success in a project:

*Respondent 1: “10, unquestionable, we implemented it in our organisation, and the results proved that it pays off the investment to bring all core team for one single location for 2 or 3 days and starting the planning phase, clarification of scope, creation of a break down structure and minimising the uncertainties during the initial project phase.”*

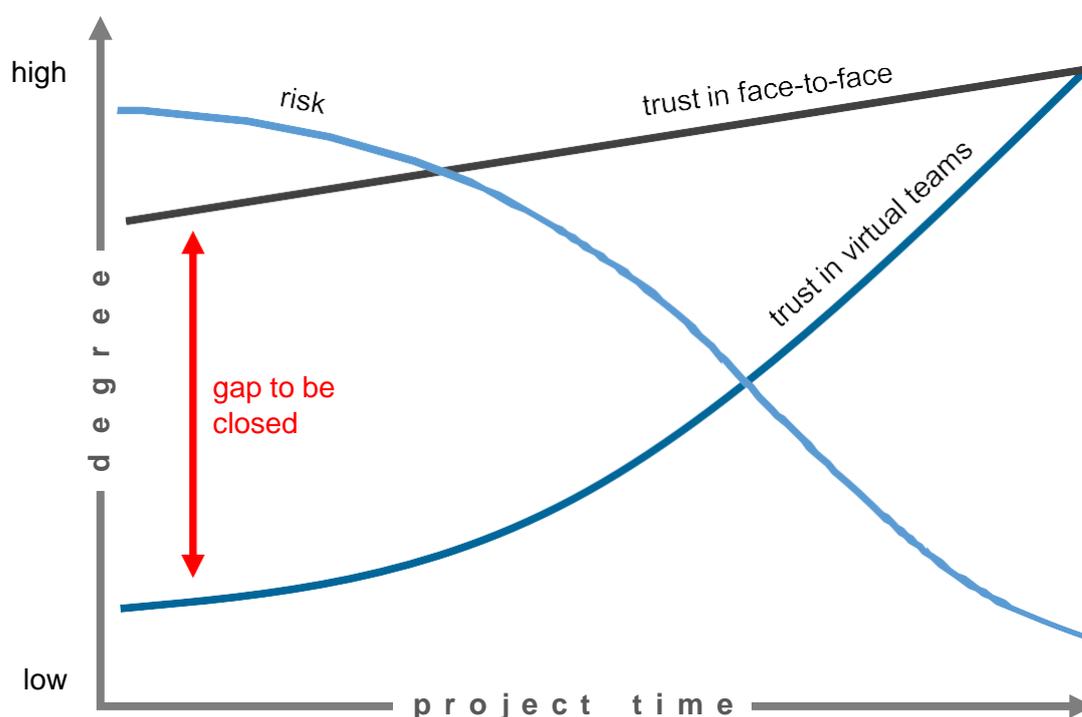
*Respondent 2: “I would consider this a 10 in a level of importance. If there is time and there is budget, then, obviously, they have to be, like you said, a list of core team members the personnel want to have a meeting where everything all the project would be discussed, but also*

to discuss other issues that are not related to the project, nothing related to the company during the dinner or meal. Ten.”

*Respondent 4: “I can say 10. There are a lot of people working on the same project, and we need these people to share information.”*

*Respondent 5: “I think it's fundamental that you create your approach. So, in my opinion, it is 10, the most important in the scale. First of all, when you start, you need to have this team spirit. First meetings are very important for that. What you can do in the same place for the first 3 or 5 days of the project that would be fantastic.”*

As very well described by respondent 1, he has applied an introductory meeting in his organisation and has collected exceptional results from it. Moreover, the researcher sees two main important aspects in this statement. First, from the financial point of view, where the interviewee clearly exposed the payoff of having this initial investment, which can be a strong argument against the hypothesis regarding the invested money. Secondly and equally important is the mentioned reduction of uncertainties. For this specific point, the researcher combined two of the graphs discussed in the literature review, which shows the high degree of risks in the initial phase of a project, combined with a low level of trust in virtual teams at the beginning of the project life cycle, when compared with a face-to-face team:



**Figure 7** - Suggestion of gap to be closed by virtual teams. Compilation made by the author.

In this context, the author suggests that there is a gap to be closed between the degree of trust in face-to-face teams versus the virtual teams in an early project phase. The reduction of this gap means increasing the chances of a project's success since you are reducing a harmful combination between low degree of trust and high level of risk. Based on the interviewee's statements and the analysis of the literature, the researcher believes that through having an

introductory face-to-face meeting, the organisation can bring a hybrid situation within the face-to-face team and virtual teams, hence increasing the possibilities of a successful project. Further, it is important to maintain this closer relationship through annual conference meetings, for instance, where the team members can interact again and maintain a close relationship between them.

### 5.3.1 Socialisation and Virtual environment

Virtual environments have led to a lack of social interactions and alterations pertaining to the company culture. This can be observed from the response:

*“I would say definitely, people are missing the social interaction. I mean, meeting in a physical room for a workshop for a meeting, going to lunch together, having a coffee together, clearly see tenancies that people are missing, and as I said, our structure kept the same up to about a month ago. But now that we have changed the rules that everybody can come back, more and more people are coming back to the office, and more and more people are arranging physical either meetings, workshops, lunches together or events together. So, I see clearly, a need for that. On the one side, on the other side, I think that it's also a company culture thing that over the two years or two and a half years, whatever it was, there's a risk of losing sight of the company culture, of course, company culture is very hard to define exactly. You know, and figures and both, but I think I think there is a spirit in the company, and there is a culture when you walk across the campus, and, you know, you meet people, you talk about things you name, you talk about more things and are specified in a meeting for, you know, an objective, but you talk about other things. You hear things. So I think that is definitely going missing. I think that's a disadvantage, actually. A big one.”*

Additionally, it has led to an absence of one-to-one connections, as can be affirmed by respondent 2:

*“And during the joining mechanism for that motion like I can, right? So I made sure that I became more available to prioritise that one-to-one discussion to improve the business to one site.”*

Other challenges related to virtual environments and socialisation are lack of coordination, lack of efficiency, compatibility issues, confusion and lack of engagement. In this context, respondent 3 revealed:

*“I know that they have these weekly, all the coordination meetings, that they do one with all the team. And like, mostly it was these weekly coordination meetings, that everybody shows what they're doing in the shop, raise up the issues. But for me, it was not like, from what I saw, was not enough. But like, like I said, because there are some small things that you can solve very fast, and then they need to schedule a meeting. And then people have agenda only for the next week, and then it's too late. So these first decisions that need to be taken, I think they were the most affected in the projects.”* Further, the respondent suggested, *“Yeah, we had a lot of compatibilism issues that we only discovered on the site. For example, there was some equipment that didn't have a base from the civil department. They didn't design the base for this*

*equipment, for example. So there were, or like, the coordinates were not correct because the project went to the department and didn't come back to the order to combat to belie, so we discovered this on site. And it was very stressful and under a lot of pressure from the client because there were a lot of execution mistakes due to the design phase. And what we did, like we did the lessons learned for this project and what people saw that Yeah, even like if we can do like a hybrid, home of a hybrid work environment, but we need to be together at least two times a week to discuss and really take the day to talk all the issues because only an online meeting is not enough it's hard to have a meeting with 20 people online sometimes you want to say something but you don't find the space because you don't know who's talking. So I think this was what they found like that they need the physical connection in this physical environment to solve these issues.”*

Other issues with virtual environments include difficulty in interacting with shy people, problems in dealing with diversity and less productivity and optimisation.

### **5.3.2 Improving the virtual environment**

In order to improve virtual environments, the aspects that must be addressed include adaptability, reluctance and transparency. This is represented in the response provided by respondent 9, who confirmed:

*“Yeah, I've seen mixed, I've seen it pretty mixed. In I've seen people that have, you know, can adapt very quickly. And okay, this workshop or this sprint, you know, uses a certain technology, you know, whether it's trailer or jumbo or whatever, and they can adapt very quickly. Somehow, they, maybe it's because some people put the tool in the background, and therefore when they say, okay, all I need to know is how do I draw this box? Where's the drawing Perfect? Okay, now, I focus on the content. I've experienced other people then who, who is not, who get hung up on it, and, you know, me complain about why are we using another tool? Why can't we use the one before? So it's, it's pretty mixed.”*

Further, respondent 6 asserted:

*“And to ask a question and to comment. And you know, maybe, maybe some people may not feel comfortable speaking up in a big setting physically, but in the chat, they do. So that's, I think, definitely, that was independent of which collaboration tool because all of them have this inline chat function.”*

Apart from this, in order to improve the virtual environments, the aspect of spatial issues, satisfaction, flexibility and ensuring efficiency must be addressed. In this context, the second respondent suggested that:

*“But if everybody comes back to Singapore, to the author is more or less more like that, you know, on a weekly basis, when they are in allow, they can see people actually happier. Yes, that's good. Because they find themselves in a much better sort of control of the working life and other life, not having to get the car or the bath to the office at six in the morning every day. So they can work from home. So more relaxed and still doing the job in a generic button has*

*been good. But, like I said, the challenge remains. From the company perspective, people being happier is a good thing. But you have to make sure that they are doing the job and they are efficient. And they have become one group as in the past. And this is a chart of how you have someplace and make sure that we the hiring model, you still have this group of people working together company culture. And so on top of this, this, this to me the biggest challenge we have, overall, I think people are happier working in a hybrid environment.”*

Other than this, the virtual environment can be improved by working on internet issues, stable infrastructure, training and video conferencing. This is exhibited in the response given by respondent 10, who confirmed:

*“Yeah, yeah, look, we are very lucky here in that we have an excellent internet connection. I know, you know, characteristically, they're in some of my clients, but you know, there's often an issue. But I very rarely have any issues with connection. If it's coaching on one on one, we'll just jump out and jump back into the session. And that usually fixes it. I've had, I was, I've been teaching at one of the universities. And so there were a number of overseas as well as local students working via zoom and bit of a nightmare, really, which I've actually stopped doing it partly because of actually partly because of the technical sort of challenges, but partly for other reasons.”*

Respondent 5 suggested:

*“Oh, it could designate because at the end, it's very complicated, but it's still it's very, very important because I also see that working, my new company would in the first week, during the induction, we did have a couple of hours of training on every single stuff that we use, in order to communicate with other people around the company or with the clients or whatever. So this definitely helped a lot. This coming from a guy who's working in digitalisation, which is technically not for me. It was okay. But the idea of thinking about doing this to every single person from all of the ages, all of the interests, definitely this is.”*

### **5.3.3 Policies for virtual environment**

Concerning the Policies for Virtual Environments, the respondents revealed that there is a certain code of conduct and predefined operating principles. Respondent 1 affirmed that the company does not force their employees to switch their cameras on:

*“But to my knowledge, no, there is, I mean, we do have in the company, we have a code of conduct, which is overarching, we also have a set of operating principles, and these operating principles, you know, with without going into this 10 of them, but without listening, I'll go into the details, they, there is a lot about fairness in there a lot about respect. There is, for example, I can give one example number one there is you know, in your, in your interactions at work, you know, even internally, always behave as if a patient is in the room. So there is a lot about, you know, respect to what we're doing. And at the end, you know, what we're trying to do is help our patients, so we should always act this way. Now from the camera on and off, it is, I saw as this mandated. But always, I would say 90% of the cases, people have their cameras on. So it was sort of taken for granted. If you're in a call and you do have your camera on.”*

Additionally, the majority of the respondents agreed that there only existed certain basic rules, policies and regulations. This is depicted in the statement given by respondent 5, who stated:

*“No, no, it’s up to you. But I gotta say it. So the company policy, but this is something that at least my team, we have been working towards doing that all of us like, like, as soon as we have a new colleague, it was them that yeah, we’d like to at least with the client meetings.”*

Conclusively, it is important to assert that virtual environments have led to a lack of social interactions and alterations pertaining to the company culture. It has also led to an absence of one-on-one connections. Other communication issues have also been associated with virtual environments, including difficulty in engaging shy people, problems in dealing with diversity and less productivity and optimisation. In order to improve virtual environments, several aspects must be addressed, which include adaptability, reluctance and transparency. Virtual environments can also be improved by addressing spatial issues, satisfaction, flexibility and efficiency. By working on stable infrastructure, training and video conferencing, the virtual environments can be improved. Concerning the Policies for Virtual Environment, it was found that there is a certain code of conduct and predefined operating principles. The companies do not force their employees to switch on the cameras, as they have consideration for their personal preferences. Additionally, there existed only certain basic rules, policies and regulations.

#### **5.4 Trust and Leadership**

Regarding the wide range of definitions of trust presented by scholars, the practitioners also have certain difficulties in defining trust. However, intrinsically, the participants showed some factors that were also discussed by the academics, such as the ability to execute determined tasks, specific skills, integrity, values, beliefs and cultural aspects. The researcher asked the interviewees to describe one or more situations where they experienced a high level of trust between the team members and the main reasons why they believe it happened:

*Respondent 1: “[...] You trust people who you believe are honest and are transparent. It takes some time to build trust. So, it is very difficult to do something that you can just feel. So, it is a question of sensing the level of trust the team has. Then if you see that they do not trust you, there is a question of integrity or credibility you have.”*

*Respondent 5: “[...] currently in my team. We have a high level of trust. I think this team is the most capable I have ever worked with. There are many variables. We are in constant contact. Independent of the location where we are, we keep in contact using the IT solutions I mentioned. The other part, we used a technique called CI, continuous improvement. It tremendously improves the people's engagement. Create leadership principles and put that as a culture for the team. To leave your values, that would be the best definition.”*

In this respect, the participants also valued the importance of leadership, specifically the empowerment of trained leaders. One participant in particular went in depth regarding this topic by highlighting the importance of having qualified leaders in such an organisation. Respondent 2 mentioned enhancing collaboration skills by motivating people to share knowledge between

the team, setting clear goals for the team and emphasising the real reason behind the tasks. Furthermore, one of the main leader functions is to assign the right tasks to the right people since abilities may vary among the team members. The leader is responsible for identifying and delegating tasks according to the employees' abilities. Additionally, as previously mentioned in the communication section, the one-to-one contact between the leader and the team members might indicate the weak points of each collaborator. Thus, the leader can work on these weak points by offering trainings, mentoring, coaching or any other tool to improve the points where there are some gaps to be closed.

#### 5.4.1 Trust between team members in a virtual environment

Concerning the aspect of trust among virtual team members, the first respondent stated that trust helps in building collaboration, and the respondent had a positive perception regarding the trust factor. However, it was found that it is difficult to build trust in the case of new joiners. The first revealed that:

*“If you have a project running, then I think our regular physical get-together is in the form of a workshop. And combined with some social activity events, I think it has, in my experience, always been a plus, and it has always contributed to building up more trust and more collaboration. It's, of course, especially true if you have new people joining because, as I said, we all work together, but now that we have, you know, new people joining, I think it's I think those that joined during COVID times I think it was really difficult for them you know, to get traction to really understand the company culture if they're coming from outside really difficult. So I think now that we can do that, bringing people together and integrating the new joiners especially as well that definitely is key was the most”*

Another factor that contributes to trust is videoconferencing can be revealed in the response provided by respondent 2, who stated:

*“So then add to it now. But when you do video conferencing, I think, also because it is easier to have a bigger conference flexible for everybody, for us and for them. And you just have more time and videoconferencing talking about why the discussions on you may have a face to a face phone call, for some reason, also, times I this is my personal view also sometimes, because you don't know the person in front of you, but we talked to this person a couple of times already. So follow up with them. You ask questions that you may not be asking yourself face to face. And, and the other way around? Yeah. You know, because you have the coverage, you have the internet.”*

Apart from this, the third respondent had negative experiences regarding the factor of trust and asserted:

*“Yeah, I could tell like there's at the beginning this there was my direct manager from the site. She was, she had to go home, and she was a very controlling person, and for her, it was really hard. So she had to be in all the meetings and participate in all the things. If you didn't invite her, she was mad at you, and then she needed to be like she needed to be everywhere. But then she also, I think, started to get more demand since she was in Sao Paulo. She started to get*

*some other projects, and then she saw that things were like happening without her. We didn't have issues, and then we could see then at the end, like, she was the one always leading the meetings and inviting typing the main meeting minutes and then at the end, like I could do it by myself. I didn't have like she was like yeah, I won't be there like so you can just do it, and then after you set the meeting minutes, it's okay. So this grove like the trustee, I could see very clear from this attitude also from her that she was not participating anymore and then she was just leaving us taking the lead.”*

Other than this, trust between team members in a virtual environment can be developed through disclosures which in turn leads to the addition of more value, less time wastage, efficiency, and the building of social ties. This can be affirmed by the statement:

*“So as the sessions go on, I think they are becoming shorter. And that’s probably partly an artefact of the of not going to meet with them face to face. So if I was going to meet with them face to face, I wouldn’t. I mean, really, what do I drive to the other side of town for a 30-minute or 45-minute coaching session? It just doesn’t make it worthwhile. Yeah. So you stay there longer. So I think that the opportunity here is for people to get more value. And I find the coaching more satisfying, but we can stop a session and be earlier. And there’s no particular penalty. Either way, they get more sessions, I waste less time.”*

#### **5.4.2 The problems related to training and technology**

Concerning the problems related to training and technology usage, respondent 2 stated that training and technology are time-consuming. The respondent further affirmed:

*“Sort of workload for business, within the same within the company, of course, move into teams and understand the percentage. And everybody adopts technology in a very wasteful way, like using big, big time. And I said also amusing, because, you know, in teams, if you are online, within the group, the ecosystem, you are green, If you are online. Anybody can call you anytime. So you are exactly your computers on Amazon, or let's say I'm watching. You should know that. But anyway, by that, whatever. You forgot to close your teams, and it's your teams is, you know, somebody from your call to pick you up or not, but you know what happened?”*

Moreover, the third respondent confirmed that rules are required and suggested:

*“Yeah, I think it's really unnecessary. And all these rules as well, as you said, I think we need some rules, like, yeah, who turns when they need to turn on the camera? When do you need to leave your microphone off? When to enter the meeting? And all these things? Because then some people just arrive 15 minutes late. And then people do not because if you're in a physical space, yeah, you will know this. And you see, it's embarrassing, but then when you are online, you don't even realise that the person is late. So I think it's really important to set those rules and also train for the people.”*

### 5.4.3 The aspect of individual communication within organisations

Regarding the aspect of individual communication within your organisation, respondent 1 revealed that regular meetings are conducted to improve communication. This can be asserted from the statement:

*“While at the start the first couple of months, then I set up a specific meeting for that with no agenda, just give information, you know, because no need to make sure everybody understands the company policy, the guidelines, what's happening. Ask the people if they need any help from at home, if they're, you know, how they're dealing with the situation. Because, of course, remember, it was an unknown situation at the start.”*

Other than this, respondent 2 affirmed that, for enhancing communication, improved technology support has been incorporated, and zoom is used. The researcher confirmed that:

*“Yeah, I think I have. I've been using Zoom prior to COVID. So I was familiar with that. So there wasn't that kind of learning curve. But I know one of the things that happened with that, and when people were using teams and other technologies that weren't reliable, or they didn't know how to use them, you spend a lot of the time engaging about the tool. And people get frustrated. And you just get to spend less time doing quality work. So I think there has been a big improvement in that technology support, and so there is an improvement in how people can interact together?”*

Other than Zoom, skype and Microsoft office is also used. Respondent 5 further proclaimed that using technology and individual communications has improved interactions, as can be depicted from the response:

*“So this was very helpful. So this thing, I would definitely keep it going. I would sustain it. What I would do more, actually, is especially when it comes to your direct colleagues and your managers. I would spend more time with them online, showing them stuff, talking about talking with them a bit more. They did that to me, honestly. But I think it was sufficient. And I believe they do that normally, honestly. But in my case, the one who was supposed to do that was on a very long holiday for three or four months. So it was my bad luck. But I would do that definitely. I believe that. In the end, there is a limitation to how much can you do. So I don't think I could do more like this. This is all you can do. And try to be as honest as possible to be as open as possible. The people try to even though you like even though, for the people who are very super professional, in the works will know in the work environment. You can also think about being more friendly around you, at least because you need to take the step. This is one more step to getting there. Yeah.”*

Concerning the aspect of trust among the virtual team members, it was found that trust helps in building collaboration, and some individuals have a positive perception regarding the trust factor while others have a negative perception. Moreover, it is difficult to build trust in the case of new joiners. Another factor that contributes to trust is videoconferencing. Trust between team members in a virtual environment can be developed through disclosures, which in turn leads to the addition of more value, less time wastage, efficiency, and the building of social ties.

While training and technology usage can prove to be essential in this context, it was revealed that training and technology usage is time-consuming and specific rules and regulations are required. Regarding the aspect of individual communication within the organisation, it was found that regular meetings are conducted to improve communication. For enhancing communication, improved technology support has been incorporated, and applications like Zoom, Skype and Microsoft office. Additionally, using technology and individual communications has improved interactions.

#### 5.4.4 Virtual Celebrations

All the respondents had differing perceptions regarding the aspect of virtual celebrations, stating that they are fun and professionally moderated, as can be observed from the response:

*“And then everybody dialled in, in the evening, you know, had their drinks, had a Christmas party, and there was a DJ moderating, running that, and then people were dancing in front of the cameras. So sort of activity was some fun and games, some challenges to be solved, and so on. And I think that worked pretty well because it was like professionally moderated. The guy knew what he was doing. He knew how to engage people virtually. So that works quite well.”*

While the third respondent had a negative perception regarding virtual celebrations as it led to planning failures and no acknowledgement. This is observed from the response:

*“No, actually, this was really upsetting. Because also the president he always he's promising since three years, yeah, we do a gathering at the end of the year. And then we go to the beach. And then this never happened. And this was also something that I was I had my yearly review with my boss this week. And then, there was a topic about celebrating success and failures. And then I put Yeah, I think we don't really tell each other words of compliments. And he was like, No, we don't do it at all. And we need to do it more because we finished a huge project and nothing was done. People just went home. And that's it. And I think this changes a lot if we have this recognition, this gathering. So we didn't have any online, like a coffee break or happy hour. We didn't do anything. Yes, for me, at least I really liked things. My sister, for example, works in a startup company, and they send things home all the time, like drinks, and they have happy hours. And they say, and easter eggs and a lot of things and I will never get I never get anything. And I was like, I get frustrated. Like yeah, they could send something at least thanking you for the project. I think that would really motivate the employee for me.”*

Overall, the study found varying perceptions regarding virtual celebrations, with some participants finding them fun and professionally moderated while others experienced planning failures and felt their efforts went unacknowledged. To improve virtual environments, the study suggests regular get-togethers, support and infrastructure, video conferencing, transparency, and setting up milestones to foster engagement.

## **5.5 How to build and enhance trust in virtual teams?**

Regarding the research question of how to build and enhance trust in virtual teams, the author collected and consolidated important empirical studies and proposed models to create a big picture that includes virtual teams, communication, and trust. The trust stream includes a model for how trust is built according to academics and the potential results of enhancing trust in an organization. The author gathered and grouped these models to reflect the thought process used to address the research question, drawing on both literature review and interview analysis.

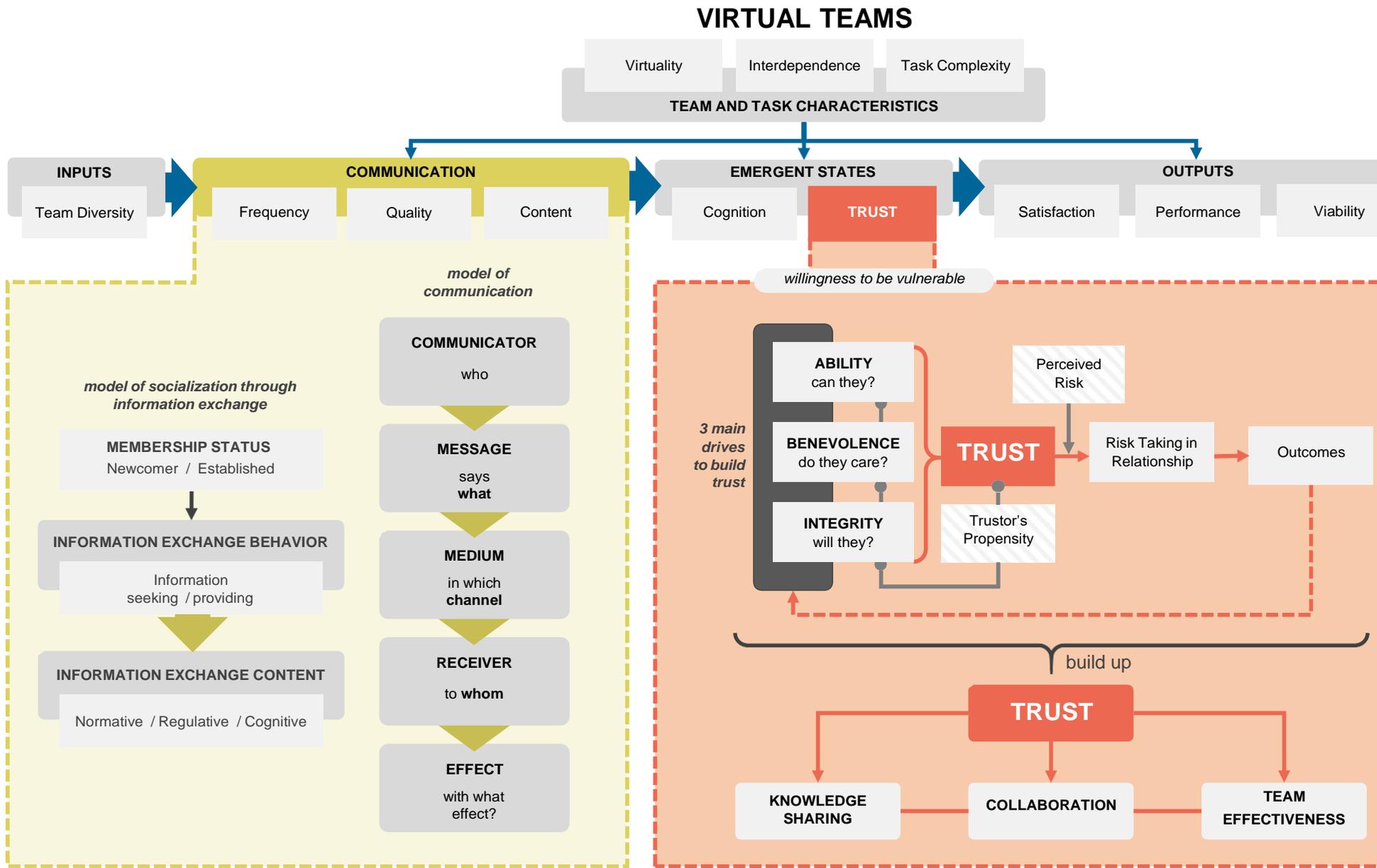


Figure 1 - How to build and enhance trust structure

By clustering the main models from the academics, the author could evaluate the mechanism behind the virtual teams and create a foundation for a consistent structure for building and enhancing trust in virtual teams. Additionally, by understanding the most important points for the practitioners regarding virtual teams, communication and trust, the researcher could connect the literature with the practice and develop a framework that can be used by practitioners in order to build and enhance trust in their virtual teams and organizations.

The developed framework consists of four main steps:



Figure 2 - Framework to build and enhance trust

1 - The first step involves the "Propensity to take risk". At this stage, where there has been no prior interaction between the trustor and trustee, the level of propensity to take risks can vary from person to person. Some individuals may have a low propensity to take risks, while others may have a higher propensity to take risks. This will determine the input for the next step.

2 - The second step is "Risk taking". In this stage, the trustor decides whether or not to accept the risk involved in the relationship. During the first interaction, it is based on the individual's propensity to take risks, as previously mentioned. For subsequent interactions, it will be based on the outcome of the last interaction, which may increase or decrease the trustor's propensity to take risks.

3 - The third step is "Outcomes": After the trustor decides to take the risks and proceed with the interaction, the results can be positive or negative, which will serve as input for the next phase.

4 - The fourth steps is "New input": In this stage, the trustor analyses the results from the last interaction, which will have a direct impact on the first step. When a positive result is obtained from the last interaction, it may increase the trustor's propensity to take higher risks in the next interaction. Conversely, if the results were negative for the trustor, it may generate negative feelings and lower the propensity to take risks in the next interaction.

The framework is based on the three main drivers to build trust: ability, benevolence, and integrity. Based on the data gathered from interviews, the author identified the most significant aspects pointed out by the participants and classified them according to the trustworthiness factors. This creates a connection between how trust is built according to academics and the actions and tools practitioners use in their day-to-day work. Finally, the researcher considers the aim of the research achieved by relating theory and practice together harmoniously with this toolbox.

However, it is also important to highlight that after developing the framework, the researcher presented it to a focus group of seven practitioners to validate and discuss its applicability. As a result of this validation, slight changes were made to the framework to improve its understanding and applicability.

## **5.6 How to prioritize the framework components?**

One of the focus groups meetings asked the experts and practitioners to prioritize the elements of the framework using certain criteria and aiming for the future implementation of the practices in the real world. The following criteria were established based on the discussed topics:

- I. Highest priority – Overall – What to do first?
- II. Lowest efforts needed for implementation – What is easier to do?
- III. Lowest financial impact – What is cheaper to do?

In doing so, the author aims to supply all the elements needed in order for practitioners to evaluate what could be done first and have more effective results by investing less efforts and resources.

The elements of the framework were labeled with letters from “A” to “I” in a sequential logical order, as displayed below:

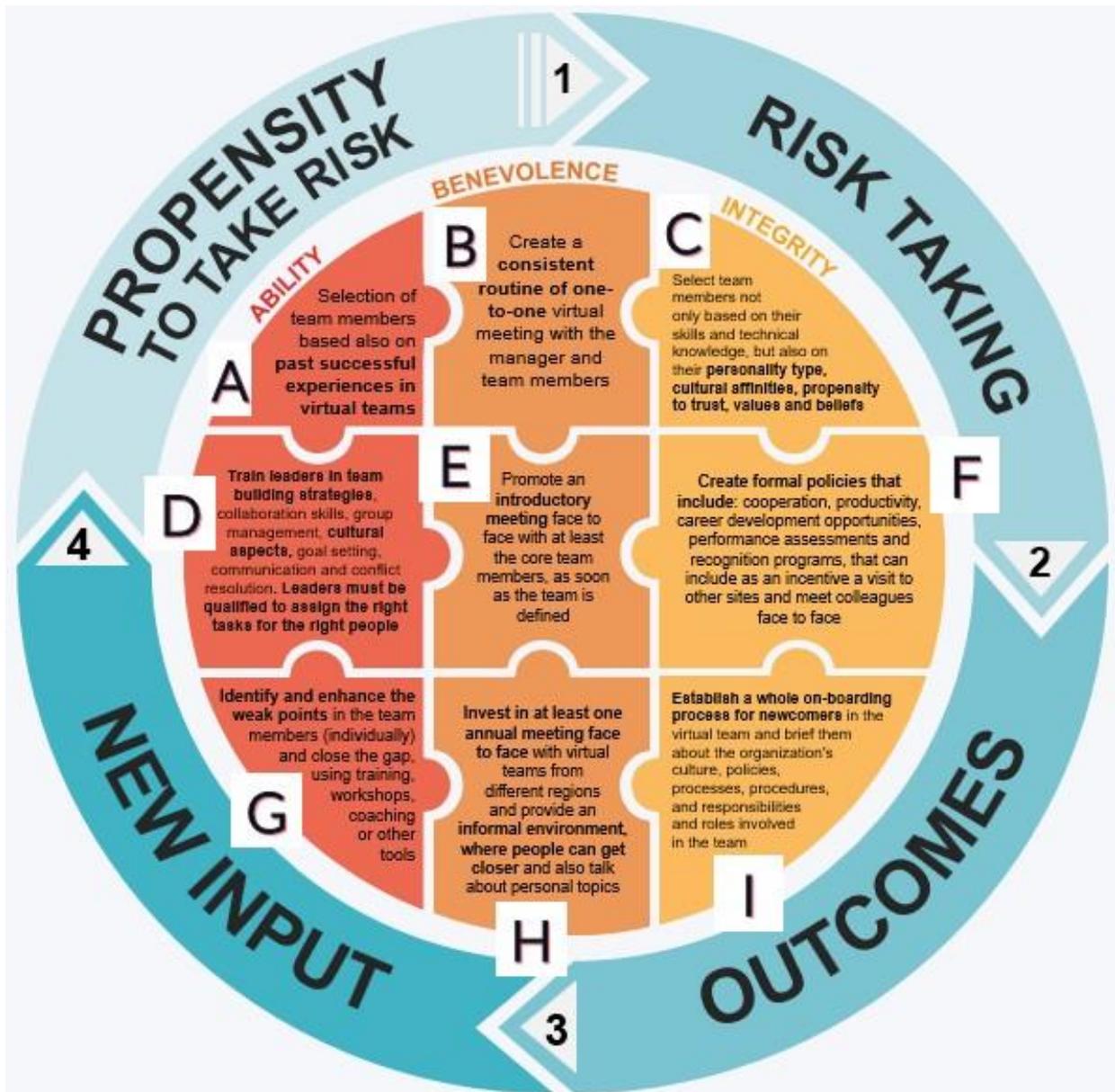


Figure 10 - Framework with the identification for prioritization process

The following ranked results were found:

### Please rank the items according to Highest priority (What to do first?)



*Figure 11 - What to do first? Result of the prioritization from experts.*

### Please rank the items according to Lowest Efforts (What is easier to do?)



*Figure 12 - What is easier to do? Result of the prioritization from experts.*

Please rank the items according to Lowest Financial impact (What is cheaper to do?)



**Figure 13** - What is cheaper to do? Result of the prioritization from experts.

Researchers and practitioners can use this data to implement the framework in the real world or build on the research by measuring the effectiveness of each of these elements individually.

## 6 Discussion

This chapter examines the author's methods, theoretical and empirical background, and practical implications. By discussing the researcher's thought process, chosen methods, arguments derived from literature, and findings collected from interviews and focus group meetings, the author challenges various aspects of the research and analyses unexpected findings.

The chapter is divided into five prominent sub-sections, namely "Used Methods," which focuses on the methodology used in the study; "Discussion of Findings Regarding Theoretical and Empirical Background," which compares and contrasts the findings with those of previous research studies; "Practical Implications," which emphasises the relevance of the results in the pragmatic world; "Research Limitations," which focuses on the issues with the study; and "Recommendations for Further Research."

Research has shown that information technology has rapidly advanced over the past few decades, greatly expanding the opportunities for businesses to use new tools for their own advantage. Individuals in the workforce reported being part of some kind of virtual team, supporting the idea that these teams are essential for maintaining an increasingly globalised world. The development of novel technology-mediated techniques, which can create a variety of opportunities to group individuals from various regions in one identical virtual environment, is helping the process of globalisation to decrease distances and increase the options for businesses and organisations to optimise their assets, particularly when it comes to human resources. The concept of virtual teams, described and extensively addressed in the literature, originates in this setting. A competent group of people who are task-oriented, partially spatially scattered, and primarily operating in a technology-mediated setting make up a virtual team. They collaborate to achieve a common objective. In order to save money and boost mobility, firms have also transitioned from team-based engagement to virtual teams, and it is expected that this trend will continue in the years to come. However, there hasn't been much discussion about how to provide a consistent framework to establish, uphold, and even improve trust in virtual teams. Many experts claim that the literature has not been successful in generating this expertise. Additionally, experts point out the need for more studies on the subject of trust, asserting that this study should investigate and expand the research on trust by taking into account relationships inside organisations and their consequences for business and leadership. The creation of new models and components of interpersonal trust, such as communication and social loafing, may also be the subject of future research.

This has motivated the researcher to conduct a study that aims to identify the main factors and tools to build and enhance trust in virtual teams, as well as provide a model to be applied in these organisations. To fulfil the research aim, the study analyses the definitions, theories, models, and techniques regarding trust and virtual teams and assesses the critical factors and relationship between trust in virtual teams compared with face-to-face teams. Furthermore, the study compares and contrasts practitioners' perspectives and opinions about trust in virtual teams to develop a model and validate it with experienced professionals and researchers. The study prioritises the model's elements to facilitate and maximise the effectiveness and efficiency of the implementation focus, aiming for faster results harvesting.

This section of the thesis aims to provide information pertaining to the analyses conducted, the results of the study, the degree to which the present results align with previous scholars' research studies, and pertinent conclusions. The discussion chapter is an important aspect of the research study because it assesses the validity of the results and the findings obtained by comparing and contrasting them with the findings of other research studies conducted in identical domains. It will provide a platform for the accomplishment of future studies in the domain of building and enhancing trust in virtual teams.

## 6.1 Used Methods

The Research Methodology chapter outlines the methods and procedures used to obtain, compile, analyse, and present data in the subsequent chapters of the study. This assessment aims to establish the research objectives. I have specified the methodologies, study design, and methodology, including the appropriate reason and logic.

I adopted a subjectivist research philosophy, which holds that social phenomena depend on the perception of the social actors (Saunders, Lewis and Thornhill, 2009). In this case, the experienced practitioners with considerable experience in virtual teams were the social actors. This approach leads to an epistemology with an interpretivist approach (Saunders, Lewis and Thornhill, 2009). The aim is to gather information about some events and interpret the collected data. This conveys that I focused more on the meaning of the data than the measurement of methodologies and theories. The philosophy of this study did not predefine any variables, instead, the focus was on the complexity of the human sense for each situation studied (Antwi and Hamza, 2015). Therefore, by choosing this research philosophy, I assumed a posture that gives extreme importance to the research participants. Having wide experience in the field, they could collect and interpret the data. However, by doing this, I also opened a window for other possible interpretations of the same data, since the theme is broad and complex. The goal of the study philosophy, known as interpretivism, is to examine a subject from a different perspective to comprehend it better. Interpretivism calls for the study to assume the role of a social actor to better understand how individuals differ through the combination of philosophical idealism with a variety of various methodologies, such as social constructivism, hermeneutics, and phenomenology (Park, Konge and Artino, 2020).

Moreover, I chose an inductive approach that has the main objective of better understanding a problem and which factors are influencing the issue. This approach contributes to developing a new theory (Graue, 2015; Mayer, 2015). The reason why I proposed a conceptual framework as the main outcome of the research is that to develop it, I needed some data collection techniques as well as analytical work to evaluate the gathered data. Therefore, the conceptual framework consolidates the practical findings with the literature, proposing a new perspective on how to approach the specific problem. Inductive reasoning is more concerned with dealing with the study's objectives and goals than with the research premise. Also, this strategy is related to the study's generalizability. It is appropriate for a study with a qualitative focus (Andrews *et al.*, 2012).

The technique of interviews has been used in this case to acquire data for the research. The main objective of an in-depth actual interview is to learn what respondents value most about the subject at hand and to listen to them express this value in their own thoughts. I created a set of semi-structured questionnaire items to better understand the study subjects' perspectives. There were 11 open-ended questions in all, allowing respondents to provide thorough responses to the participants' subjective queries. During an interview session, I usually make a prepared document that I may refer to or memorise during the interview process. An interview protocol is a list of matters of interest that I plan to discuss throughout the discussion.

With respect to the preparation of the research, the idea of sending the interviewees an information sheet and the interview guide beforehand showed that the participants were well-prepared to answer most of the questions were signals of previous reflection regarding the topic, where they could easily point out facts to the asked questions asked. However, two factors may have influenced the effectiveness of the interviews. The interviews were conducted entirely in English, which is not the mother tongue of either the author or the participants. This could have influenced the answers given by the participants due to the inappropriate use of certain words. Additionally, the interviews were conducted using technology-mediated communication tools. While the author intended to show impartiality by using these tools as part of the research, this also introduced potential problems, such as internet connection issues, lack of proximity, more time needed for ice-breaking, and, in some cases, shallow answers.

Another crucial point is the selection of interview participants, which according to Diccio-Blom and Crabtree (2006), should aim to maximize the depth and richness of the data gathered in order to answer the research question. The author therefore gathered a diverse group of participants, including those with overall experience in the field, experience with virtual teams, different ages, and from different market sectors. This allowed the author to cover important aspects for the research, such as the ability of younger people to work with new technologies, or how different sectors of the market view policies and processes. However, some negative points should also be noted, such as the less experienced and shallow answers given by younger participants, and the difficulty in weighing the importance of certain subjects when compared with different market sectors.

Data analysis was an essential aspect of the research, and the author opted to use a spreadsheet software to create a matrix organized by questions and interviewees' answers in order to classify, codify, and critically analyze the data gathered. In this study, a thematic analysis was used to analyze the qualitative data collected from the interview responses. Thematic analysis is a method of textual analysis that carefully examines and investigates the content in order to find recurring themes or patterns. Thematic analysis is flexible and independent of any particular philosophical perspective, allowing the investigator to choose how to convey the data studied (Nowell *et al.*, 2017).

The process of conducting a thematic analysis involves multiple steps. The study starts with familiarizing oneself with the material that has been gathered, then searching for themes, examining those topics, and finally presenting a summary of the developed themes. While this approach was efficient in providing a visual and organized overview of the answers and

comparing them in parallel, there were also some negative points. A qualitative data analysis (QDA) software, for instance, could have measured the synergies of the answers in a word level. However, the author fully believes that the work with the spreadsheet software was consistent enough to collect the most valuable information given by the participants.

The validation process involved seven different participants, who were able to analyze and criticize all aspects of the developed conceptual framework. New aspects that were not emphasized by the interviewees during the interviews were collected by the author, who then improved the framework by adding valuable information to it. The ethics and reliability of the research were maintained by sending the interviewees the consent forms, information sheet, and summary of findings of the interviews. This gave all interviewees an opportunity to read about their thoughts and conclusions, and the purpose for conducting the research was explained to them. The respondents were also assured that their identity and data would not be shared with any third party without their consent or permission, and that the information collected would only be used for research purposes and not for any commercial purposes.

## **6.2 Discussion of the findings regarding theoretical and empirical background**

This chapter outlines the theoretical and empirical background of each topic covered by this research. The author compares and contrasts the main theoretical and empirical studies analysed by this research against the main findings gathered by the author.

### **6.2.1 Virtual teams and Organizations**

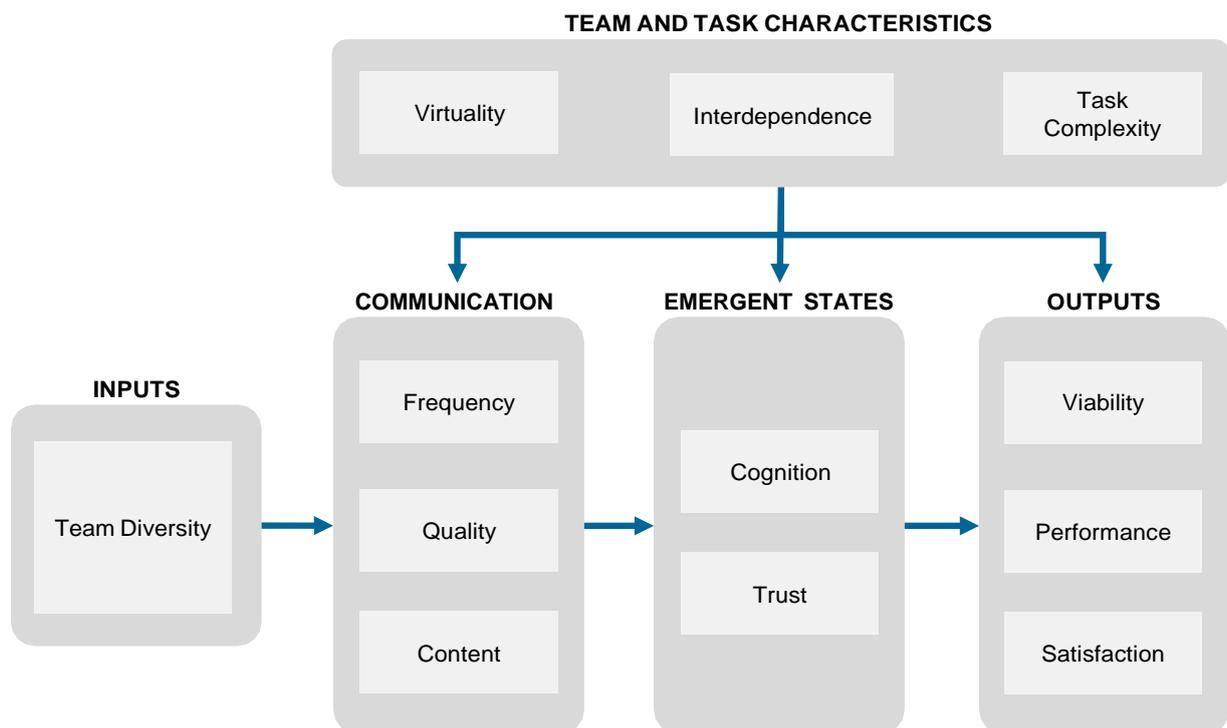
Virtual teams are work environments where coworkers are geographically dispersed, interact infrequently, and depend on each other through electronic means of communication to achieve common goals. As a talented team member, I work together with my colleagues virtually across time and space to achieve common goals. In recent years, businesses have increasingly organised operations using virtual teams, and it is expected that this trend will continue to expand (Dulebohn and Hoch, 2017). Following the COVID-19 pandemic, many companies have been forced to shift to virtual employment, and a large number of them have come to understand that they must work virtually to succeed in the current predicament. As working remotely is now a specific requirement for the team and the organisation, the managers of virtual teams must also adjust to this new way of working (Zeuge *et al.*, 2020).

Although working virtually has several advantages, including improved efficiency and effectiveness, efficiency gains related to infrastructure and logistics, and better accessibility to the world's talent pool, there are also significant difficulties that both managers and employees must overcome (Han *et al.*, 2017). These difficulties include a communication deficit, inability to concentrate and focus, problems with employee accountability and administration, maintenance of team collaborations, handling poor enthusiasm, and frequent exhaustion (Lilian, 2014). By incorporating the right technology, management, and collaborative practices, these difficulties and problems can be reduced. As mentioned in the literature by several academics, information technology is rapidly advancing, and the number of virtual teams is increasing

dramatically (Liao, 2017). Moreover, in order to collaborate with globalization and shorten distances, several companies are investing in virtual teams (Krum et al., 2016).

During the research, the researchers discovered that practically all of the processes were moved to virtual environments during the COVID-19 pandemic in accordance with the organisation of the teams in these settings. The analysis revealed that discussions were moved to virtual platforms even if their format remained the same. It was also discovered that teamwork and reaching milestones depended on leadership. Conference calls, video conferencing, remote teams, and hybrid models were employed to guarantee the success of virtual teams. In addition, several of the interviewees stated that virtual teams were time-consuming, required training and caused dissatisfaction.

Furthermore, the researcher identified the necessity to investigate how academics identify virtual teams as organisations and how they are structured. Although there are several different ways to identify how virtual teams are organised, I opted to base this study on a very up-to-date structure that reflects the main areas to be investigated to fulfil the research questions. Therefore, the researcher used the model proposed by Marlow, Lacerenza and Salas (2017), as shown in the figure below:



**Figure 14** - Process framework for virtual team (Adapted from Marlow, Lacerenza and Salas, 2017, p. 576).

From the author's point of view, the above model covers the important points for the research, such as team diversity, communication, and trust. Furthermore, the model shows the expected outputs in a perfect scenario, such as good performance and satisfaction. All these points were verified during the interviews, which supports the idea that this was the right model to adopt for the study. However, other models could also be successfully analyzed, perhaps with

less accuracy or even giving different interpretations of the findings for this research. Still, it would not be possible for this specific study to cover more than one possible model in depth.

Several initiatives have tried to separate the effects of different regulators. An analysis of research comparing virtual and in-person teams on various outcomes and procedures recently showed that the study design is one of the main causes of conflicting results (Purvanova, 2014). Purvanova (2014) explicitly stated that studies done in controlled experiments usually demonstrated that virtual teams performed worse than face-to-face groups in terms of communication frequency, knowledge sharing, and productivity. In contrast, research using extremely virtual teams in real-world situations demonstrated that achievement rates were comparable to those of face-to-face groups. Purvanova (2014) proposed that this might be due to acquaintance, with commonality reducing the detrimental effects of virtuality. The inconsistent results in this research are likely explained by factors such as the research environment, according to other recent studies. In particular, a recent meta-analysis revealed that the sort of data provided determines how virtuality affects the association between intelligence gathering and efficiency (Mesmer-Magnus *et al.*, 2011). In contrast to these new studies, research into the impact of other moderating factors is still in its early stages. This is partly because field research is just as important as laboratory research for advancing knowledge. The development of virtual teams operating in an organizational context has prompted an evaluation of the influence of virtuality (Leonard, 2011; Lepsinger, 2011). Therefore, research should investigate virtual teams in controlled experiments as well as using laboratory-based investigations.

Additionally, another topic was widely described in the literature: the level of virtuality of the teams. The above model also discussed this topic. However, other academics also mentioned the virtuality issue, such as Serrat (2017) and Gibbs *et al.* (2017), where they argue that there are few cases of virtual teams with low levels of virtuality, when members are in the same location or with certain easiness to connect members face to face. In addition to this, a higher level of virtuality might have a significant negative impact on communication and level of performance (Marlow, Lacerenza and Salas, 2017; Schmidtke and Cummings 2017). In terms of the level of virtuality, the findings of the research are limited to the fact that all the interviewees were working in teams with a high level of virtuality. This leads to the conclusion that the results do not reflect scenarios where the level of virtuality is low, since the environment and ease of reaching people face to face is higher. Therefore, as mentioned in the theoretical background, it seems that the number of virtual teams with low levels of virtuality is less compared with virtual teams with high levels of virtuality. Nevertheless, it is worth mentioning that there is no test of statistical relevance made for this study to prove this argument mentioned by other academics.

Scholars also support the idea that when the level of virtuality is higher, trust is pointed out as one of the main factors to keep consistency and integrity in virtual teams, particularly when the organization has a higher level of trust. This leads to a reduction in uncertainties and risks among team members, since there is more trust within the team and consequently to the project, moreover team members can rely one each other and achieve common goals (Greenberg, Greenberg and Antonucci, 2007; Marlow, Lacerenza and Salas, 2017). Aligned

with the scholars, the outcomes for this study is supporting the previous studies, moreover this is also reflected by the fusion of graphs done by the author it is suggesting that the gap between the low level of trust and high level of risks in the initial phase of a project might be closed to enhance the chances to have a successful project.

The present study highlights the advantages and drawbacks of virtual teams. The advantages include the reduction of commuting-related problems, increased effectiveness, improved work-life balance, improved individual visualization, increased flexibility, cost savings, and efficient scheduling. However, the study also found that virtual teams can lead to burnout, an expansion in burden, a lack of invention and debate, and increased texting. Virtual teams also suffer from a lack of social contacts, no affiliation, ineffectiveness, and issues with conference management. The study confirmed several positive and negative points identified in the literature.

Scholars have pointed out the benefits of virtual teams, such as overcoming time and distance constraints, reducing business travel, recruiting people with location flexibility, bringing experts to work together from different locations, and enhancing capabilities by bringing different experts from several areas. However, some benefits such as the improvement of work-life balance and the generation of unique and more efficient ideas produced by virtual teams when compared to face-to-face teams were not observed in the study.

On the other hand, scholars also highlighted the constraints of virtual teams, such as less efficiency in completing tasks, delays in communications, problems with coordination and goal definition, delays in deliverables, lower productivity, demotivation, isolation, less socialization, and lower levels of trust compared with face-to-face teams. The participants in the study agreed with the same topics discussed in the literature, emphasizing employee demotivation as one of the most important negative aspects of virtual teams, and cultural differences as an important factor to be controlled.

The results of the present study are similar to those of Dulebohn and Hoch (2017), who suggested that virtual teams are workplace settings where team members are physically dispersed, have little in-person interaction, and rely on electronic communication tools to accomplish shared objectives. Knowledgeable workers can collaborate in virtual teams that span distances and time zones to achieve shared goals (Bell and Kozlowski, 2002). Companies have increasingly used virtual teams to organise work at an accelerated rate over the past few decades, and this trend is expected to continue. For example, a new analysis of 1372 business participants from 80 nations revealed that 85% of the respondents worked with remote workers, and 48% of those respondents claimed that more than 50% of their remote workers had different cultural backgrounds (RW3 CultureWizard, 2016).

The demand for rapid product creation and innovation, better networking and collaboration capabilities that facilitate e-collaboration, are all contributing factors to this expansion. The use of virtual team structures has great potential because these teams can collaborate on tasks that physical teams cannot. The ability to organise teams that maximise expert knowledge by including experts who are geographically distributed, ensuring round-the-

clock efficiency by taking advantage of numerous time zones, reducing expenses through decreased travel, resettlement, and operational costs, and exchanging ideas across geographical borders and organisational units and locations are just a few benefits of virtual teams (Dulebohn and Hoch, 2017).

While virtual teams have several advantages over co-located groups, research has shown that they also have some drawbacks. Some of the drawbacks of virtual teams include problems with interaction and cooperation, a lack of media diversity, especially in comparison to co-located workgroups, potential reduced team member interaction, challenges building trust and assuming collective responsibility, separation, the significant social distance between teammates, and difficulties in controlling and overseeing virtual teams (Dulebohn and Hoch, 2017).

The impact of globalization has opened up new opportunities for developing and maintaining a competitive advantage. As businesses operate in fiercely competitive, chaotic environments, innovation and collaboration are crucial for success. Individuals can collaborate with virtual teams regardless of their place of residence or time zone, thanks to technological advancements that make it possible to assemble capable teams that are physically dispersed from one another (McLoughlin *et al.*, 2018). As a result of COVID-19, organisations have significantly increased the adoption of virtual teams. The concept of virtual teams is not new either; several businesses have progressively integrated distributed, virtual teams into their processes over the last thirty years. Research in the area of virtual teams and collaboration is advancing rapidly, particularly when considering remote workers via the lens of dependability, communication, interaction, administration, and partnership (Frost and Duan, 2020).

According to Batarseh, Usher and Daspit (2017), virtual teams are increasingly employed in enterprises because they can aggregate the knowledge and insight of individuals who are not physically accessible. It is well recognised that having a diversity of knowledge inside virtual teams improves innovation capability; yet, taking advantage of the benefits of diversity is anticipated to require proficiency to encourage collaboration. In their 2017 study, Batarseh, Usher and Daspit (2017) assessed a cooperation capacity assessment instrument empirically and looked into how it might enhance the beneficial benefits of diversity on innovation in virtual teams. The latest results showed that the relationship between variability and innovation is moderated by collaboration.

According to Lindeblad *et al.* (2016), virtual meetings - which include audio-visual telepresence and online conferencing - can help reduce the environmental impact of daily operations, lower travel costs, increase business mobility and cooperation, and foster employee productivity and attentiveness. Lindeblad *et al.*'s academic research demonstrated the organizational consequences of virtual meetings. Their findings suggest that the impact of virtual meetings on businesses is influenced by the firm's perception of the virtual toolkit, behavior and rebound effects, and the group's virtual development. The latter pertains to the penetration and diversity of interactive multimedia used by the business and is divided into three phases: substitution, diffusion, and integration. The researchers claimed that as virtual meetings usage increases within the company, several problems will manifest.

Moreover, Gupta and Pathak (2018) documented the viewpoints of teammates in a new analysis to illustrate the kinds of experiential outcomes that teammates expressed when working in virtual teams. The study found that members of virtual teams were highly motivated by internal factors. Respondents cited collaboration, teamwork, and mutual accountability as the group's main motivators. Work-from-home alternatives and flexible timetables were emphasized, as were a range of duties, the opportunity to enhance education and experience, and the possibility of working in a multicultural environment.

According to Alsharo, Gregg, and Ramirez (2017), businesses utilize virtual teams to assemble professionals who collaborate digitally to achieve organizational objectives. The virtual nature of such organizations makes it challenging for participants to collaborate effectively and accomplish team objectives. Alsharo, Gregg and Ramirez examined the social effects of information exchange among distant workers (2017). The researchers identified a theoretical structure for examining potential relationships among information sharing, confidence, collaboration, and team effectiveness in virtual team settings. The study's conclusions showed that sharing information promotes trust and collaboration among members of virtual groups. The results additionally demonstrate that, while it is true that trust promotes interaction within virtual teams, there is no significant direct correlation between trust and team effectiveness.

### **6.2.2 Communication - Technology mediated communication**

Businesses use teams in various fields to remain competitive and manage cognitive tasks that are becoming increasingly difficult to handle. With the proliferation of teamwork in businesses, there has been a corresponding increase in research on the factors that influence team performance. Communication is a team procedure that is commonly recognised as improving team performance, as it enables the creation of critical team procedures and results separately from other significant team factors. Therefore, research regularly evaluates the relationship between team interaction and performance. The rapid expansion of team research has led to the emergence of separate, unconnected areas of study examining these linkages (Marlow, Lacerenza and Salas, 2017).

Although there are various ways to assess communication, team communication is generally understood and characterised in different ways. As a result, there are discrepancies between the results and the understanding of this concept and its connection to the team's success. It is suggested that distinguishing between different types of interaction and a larger, relevant construct that includes information sharing is equally important. Studies have shown that the degree to which the connection between information exchange and performance depends on how information exchange is classified. Specifically, it is crucial to identify the aspects of communication that are vital to team performance and should, therefore, be the main focus of most studies (Marlow, Lacerenza and Salas, 2017).

There is a close relationship between communication and trust, especially in a virtual environment where physical interaction is absent. Many scholars have studied this connection, such as Ahuja and Galvin (2003), who defined communication as the glue that holds the group

together. Hence, communication has a direct and indirect impact on trustworthiness aspects, specifically benevolence, which was previously discussed in the literature review as care about the well-being of the parties involved in the interaction. Therefore, communication is the driver that keeps people connected and motivated, avoiding feelings of isolation and demotivation for employees. These arguments were confirmed by the interviewees, who strongly suggested having a consistent policy of one-to-one meetings with specific periodicity, bringing the idea of proximity and closer relationships between the leader and team members. Participants also recommended that in these private meetings, employees have the opportunity to share their thoughts and feelings about the environment, team collaboration, and knowledge sharing within the team. This fact can be a good way to measure trust within virtual teams.

Regarding individual communication within an organization, the present study discovered that regular meetings increase communication. Improved technology has been included to enhance collaboration, and tools such as Zoom, Skype, and Microsoft Teams are also utilized. Individual communication and technology have enhanced interactions. Virtual celebrations have different opinions on their pleasure and professional management. Some view them negatively due to poor planning and lack of recognition. However, frequent gatherings, assistance, and infrastructure can strengthen virtual settings. Transparency and video conferencing are also crucial. Setting up milestones and participation are significant. As observed in the literature review, Oliveira *et al.* (2015) suggested that businesses are learning to use various collaborative technologies and strategies to promote teamwork. Organizations may now create teams made up of people with different abilities and backgrounds and demonstrate the capacity to retain and share data easily due to accessible online collaboration tools. Yet, there are still challenges with these collaborative instruments and technologies. The researchers showed that collaborative efforts have four characteristics: (i) duration of collaboration (instant or not); (ii) predictability of collaboration; (iii) destination of collaboration; (iv) level of interaction; and (v) partnership can occur between co-located or distributed individuals. To coordinate remote teams, face-to-face interaction (formal and informal discussions), communication (audioconference, voicemail messages, or telephone calls), and connectivity (email, chats) can be employed. Communication technology platforms enable data and understanding exchange (Oliveira *et al.*, 2015).

Moreover, the current study shows that virtualization has resulted in a lack of interpersonal encounters, changes in corporate cultures, and a decline in one-on-one relationships. Other communication barriers linked to virtual settings include the inability to communicate with shy people, difficulty adjusting to variety, and decreased productivity and optimization. Improving virtual environments requires addressing issues such as flexibility, resistance, visibility, spatial concerns, contentment, adaptability, and ensuring effectiveness. Virtual environments can also be enhanced by focusing on network concerns, reliable infrastructure, training, and teleconferencing. The study found that there is a specific code of conduct and specified operating standards with regard to the Policies for Virtual Environment. Employers respect employees' privacy and do not require them to turn on webcams. Only a few fundamental laws, rules, and regulations are in place.

As observed in the literature review, technological advancements have resulted in vast amounts of data, audio-visual perspectives, and knowledge that benefit academic studies. Many academics believe that technical advancements generally improve organizational performance. Information and communication technologies (ICTs), particularly those related to virtual collaboration, can improve an organization's effectiveness (Malhotra and Majchrzak, 2014). ICTs have significantly improved in recent years, with the use of group chat, blogging, forums, and, more recently, videoconferencing, voice recognition, video processing, and computational text analytics, among many others. Nonetheless, a virtual team must operate just like a physical team and may be provided with ICT. Members of virtual teams "operate separately and achieve distinct results" compared to members of traditional teams.

The extent and importance of using ICTs within working groups are referred to as team virtuality, as per Schaubroeck and Yu (2017). The utility of these ICTs is determined by the breadth of the internet services they provide, via their synchronization or asynchronicity. For example, using videography in group discussions results in lower team virtuality due to its behavioural synchronisation and relatively rich data, compared to email, which has greater response asynchronicity and lesser informational worth (Schaubroeck and Yu, 2017). The effects of virtuality on team performance, profitability, education, flexibility, pleasure, trustworthiness, and popularity vary depending on the skills of the partners, the authority structure, and how frequently the colleagues have worked alongside them.

Furthermore, the literature shows that between the several theories presented in this research, media synchronicity theory (MST), suggested that communication transcend the media, since the media is not the message and with basis on the rich media theory, but focus more in the synchronicity of the media (Dennis *et al.*, 2012). However, this study found no evidence to confirm this argument. Conversely, the participants of the research suggested that the media has a significant influence in the communication process. For instance, triggered by a discussion with the first interviewee, the researchers build a matrix asking all the participants to classify the mean of communication for a determined situation, taking into consideration the complexity and urgency of the task that needed to be communicated. From the author's point of view, this matrix is an indirect finding. The option to present this in the discussion section was more conclusive, since it is not connected directly with the research question.

Below is a summary of the participants' average evaluation of the different scenarios:

**Table 5** - Means of communication in different scenarios according to practitioners

	<b>Complexity</b>		
<b>Urgency</b>	<i>low</i>	<i>medium</i>	<i>high</i>
<i>low</i>	e-mail	e-mail + Cloud based Files	Collaborative tools (e.g., google files, moodle, intranet, sharepoint)

<i>medium</i>	Phone call Instant messenger (mobile)	Instant messenger (mobile) VC	Video Conference
<i>high</i>	Phone call Instant messenger (mobile)	Video Conference	Video Conference

This clearly confirms the participants' statements regarding the means of communication in virtual teams. By analyzing the matrix above, we can identify that for the most critical area (indicated by red colour), where we have high complexity and medium/high urgency, practitioners suggested using video conference as the means of communication. According to them, it is vital to show the other party the importance of the subject by using expressions, body language, and to engage all stakeholders. Moreover, they also suggested that video conference tools usually help to share your computer screen and discuss the problem in real-time with better efficiency and effectiveness.

Furthermore, one of the most significant findings of this research was the importance of an introductory meeting for projects managed by virtual teams at the beginning of the project life cycle. As previously discussed in the literature review of this research, several scholars have argued about this specific topic. For instance, in a very recent study, Liao (2017) defended that this introductory face-to-face meeting can develop trust and generate a high sense of belonging for the team members. In this respect, all interviewees strongly supported the implementation of the introductory meeting to enhance and build trust in the initial phase of the project, increase the sense of belonging, and reduce the gap between the high risk in the initial phases of a project and the usual low level of trust in virtual teams in the same period. Essentially, these statements and the practitioners' experience by applying the introductory meeting suggested that this implementation pays off the investment made by the organization to promote the face-to-face meeting with the team members.

On the other hand, the literature also mentions the risk of having a high level of trust. Some academics argue that teams and organizations with a high level of trust can accept and absorb a higher level of risks. Their trust, sense of belonging and collaboration will make them share the risks between the team members, which can bring higher levels of uncertainty for the project and mean more chances of failure as well (Fernández and Morales, 2009; Langfred, 2004). However, this research could not verify this point by the data gathered from the practitioners. Although this argument can be challenged by the fact that several organizations have a high and intense risk management program, which would keep the risks under control by monitoring and mitigating the risks raised by this reason.

Despite the many advantages of telecommuting, researchers have shown that virtual working and relying heavily on ICTs can frequently be a frustrating experience (Robert and You, 2018). Virtual teams are geographically dispersed collaborations that use technologies for

interpersonal interaction and collaboration and offer a variety of potentially advantageous aspects that increase production, according to Morrison-Smith and Ruiz (2020). Similar to co-located teams, coordination among remote employees involves both synchronised and asynchronous interactions and actions aimed at accomplishing shared goals. Companies can use virtual teams to acquire crucial talent regardless of their location (Morrison-Smith and Ruiz, 2020). In order to survive and prosper in the global economy, many businesses have adapted to the new changing market ushered in by the digital sphere. It is no longer necessary to have data centres, services, and cellular infrastructure facilities in the workplace premises due to quick technical advancements like cloud technology. However, many processes are being carried out using personal computers, smartphones, and other portable devices that are connected to an increasingly fast internet connection. The automation of work interactions and the virtualization of organisational behaviour are related (Garro-Abarca, Palos-Sanchez and Aguayo-Camacho, 2021).

In summary, since leadership, human engagement and dependency are factors in the emergence of subculture in working groups, communication has been emphasised as a key tenet in the establishment of a team culture for years. It promotes interpersonal relationships and trust, making it one of the most potent variables in creating unit cohesion (Vătămănescu *et al.*, 2022).

Communication is still a focus when discussing virtual teams, since it has a significant beneficial impact on participants' involvement and dedication. To maintain participation and a culture of trust within the team in the virtualized world, leaders are pushed to concentrate on developing interpersonal interactions with their teammates. Virtual teams encounter several difficulties, but the most glaring being individual communication. As a result, supervisors or other leaders must modify their communication style to accommodate the unique characteristics and different expectations of the team (Vătămănescu *et al.*, 2022).

Research on virtual group interaction is extensive, with a focus on examining domains such as action procedures, interaction, synchronization, and information exchange, which are crucial for forecasting team success and productivity (Kock and Lynn, 2012). According to Argaña (2012), it is critical to take into account both the simplicity of use and surveillance of communication, as well as how the information is perceived. Virtual interaction is subject to restrictions in terms of interpretation, and virtual teams often struggle with exchanging, discussing, and comprehending information without the aid of nonverbal communication. Many scholars have emphasized the need for highly explicit project communication and adequate information handling.

In their investigation on virtual teams, Gilson *et al.* (2015) typically take into account the possibility that teammates may face communication issues with technology. Despite the obstacles and challenges revealed in earlier studies, recent research has shown that as the younger generation enters the workforce, many of the earlier challenges become less significant (Gilson *et al.*, 2015). Millennials have the capacity to efficiently employ connected online communication tools to execute a broad range of tasks swiftly and easily, according to Abarca, Palos-Sanchez and Rus-Arias (2020). Similarly, young people today may view collaboration in virtual teams as the norm, and face-to-face collaboration as an anomaly.

### 6.2.3 Trust and Leadership

The efficacy of teams can be improved by various factors, but trust is one that is frequently emphasised. Studies have shown that teams with high levels of trust tend to be more proactive, task-oriented, positive, communicative, and constructive in their feedback (Clark, Clark, and Crossley, 2010). Although trust has been defined in various contexts, it is generally understood as the willingness of one party to be vulnerable to another party's actions with the expectation that the other party will act in a way that is meaningful to the trusting person (Ford, Piccolo and Ford, 2017). For effective collaboration, team members must have confidence in their leaders, each other, and the organisation. This is especially relevant for virtual teams (Gilson *et al.*, 2015). Investigations have linked the ability to observe how others work remotely with increased trust among employees (Aubert and Kelsey, 2003). However, monitoring each other in virtual environments can be challenging due to the lack of nuances in informal discussions and nonverbal communication (Kasper-Fuehrer and Ashkanasy, 2001; Ford, Piccolo and Ford, 2017).

Previous research on virtual teams has indicated that leadership in this setting typically emerges from the existing team members, rather than individuals being promoted to leadership positions. Leadership is defined as "a method of persuasion that involves establishing the goals of the firm or organisation, incentivising work-related tasks to achieve these goals, and fostering collective maintenance and legacy" (Charlier *et al.*, 2016). Effective leadership is crucial in virtual teams because they differ from conventional groups (Maduka *et al.*, 2018). Virtual leaders need to understand the specific leadership qualities necessary for success in this environment and instil these skills in their teams. Effective communication is a critical trait that an ideal virtual team leader should possess, including performance feedback, project transparency, specific instructions and regularity, personal characteristics, and more. A comprehensive understanding of the abilities required for virtual leadership behaviours is necessary to achieve operational efficiencies (Maduka *et al.*, 2018).

The main aspect of this research is to explore how theoretical and empirical data interact. In the theoretical background, scholars have offered a broad range of interpretations of trust. The literature review attempted to cover the most significant theories and definitions offered by the literature, and the author decided to adopt Mayer, Davis and Schoorman's definition (1995, p. 712) for this research, which defines trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." This definition applies to almost all interactions in virtual teams, where team members rely heavily on their colleagues to perform tasks without close supervision. The empirical background also reflects the wide range of definitions and difficulties in describing the meaning of trust, leading the author to connect the trust topic with leadership. This connection could help interviewees link the subjective meaning of trust with the practical work done by practitioners in their day-to-day work. To compare and contrast this topic, the research cross-referenced data from both theoretical and practical perspectives. While scholars describe trustworthiness aspects such as ability, benevolence, and integrity as key drivers of trust, practitioners mentioned more practical aspects of their work, such as honesty, transparency, connection, relationship between

parties, and cultural differences. This suggests that they are aligned in their definition of trust, although they express their thoughts in different words.

In the current study, we discovered that trust among participants in a virtual team fosters collaboration. However, we also found that while some individuals have a favourable opinion of the trust component, others hold a negative impression of the same. In the case of fresh hires, we observed that trust-building is challenging. Videoconferencing is another element that builds trust, and trust between teammates in a virtual world can be created through admissions, which consequently leads to the provision of greater value, reduced time wasting, efficiency, and the establishment of social bonds. Although training and the use of technology can be crucial in this situation, we found that these activities take time and require specific norms and regulations.

In this context, as observed in the literature review, Li *et al.* (2019) sought to understand how transformational leadership affects workers' innovative work behaviours in a sustainable enterprise. The primary aim of this investigation was to determine how transformational leaders encourage their supporters to participate in entrepreneurial orientation by instilling trust in them as a leader and providing guidance. The research found a strong relationship between innovative work behaviour and transformational leadership and workplace involvement. The results also demonstrated how transformational leadership has a significant positive impact on employee engagement in the workplace and on followers' trust in a leader. The findings validated a significant serial interaction between transformative leaders, trust, job involvement, and workers' innovative behaviour. The findings also demonstrated a significant alleviatory effect of guidance on transformational leadership and creative work practices. Therefore, leaders within the organisation should aim to engage workers in their job successfully by earning their trust, which can assist them in participating in creative activities to improve their innovative work behaviour.

Moreover, the literature also suggested that monitoring and controlling employees, for instance, can be interpreted as a distrust for the employer party and can result in retaliation and demotivation for employees (Mayer and Gavin, 2005). This suggests that the interactions between leaders and team members should have a great balance between monitoring and controlling the results of employees. On one side, there is the leader who has accountability for the project results, and on the other side, there is a team member who is responsible for performing a specific task. This implies that the leader will perform some checkpoints directly or indirectly to guarantee the reliability of their plan. Nevertheless, the participants of the research related the importance of trained and well-prepared leaders to monitor and frequently interact with their team members, according to the practitioners. It is also important to support employees to perform tasks effectively and efficiently. Therefore, the closer relationship and monitoring can lead to a better understanding of their constraints, impediments, and difficulties during task performance. This point can be viewed as a contrast between the literature and the findings of this research. As a matter of fact, not only dependent on the level of trust within a team, virtual or not, there will always be a certain level of monitoring, as shown in previous empirical studies. The level of monitoring tends to be higher in teams with low levels of trust and lower in teams with higher levels of trust, although it cannot be absolutely removed or reduced from no monitoring at all (Hill *et al.*, 2009).

Equally important for the research is the discussion of how to build trust. The authors proposed a conceptual framework, and by connecting the theoretical and empirical background, the research proposes that the activity and engagement of building trust is a ceaseless cycle where the interactions between the parties are systematically organised in clear phases, from the propensity to take risks, risk acceptance, outcomes or results, and finally, a new input to restart the cycle again. This was collected from the literature and highly supported by several scholars, as shown in the literature review of this study. Moreover, it was also supported by practitioners who agreed and suggested that there is a process to build trust.

Although there may be several interpretations, the aim of my research is to connect academic perspectives and empirical practices to answer the research question: How can trust be built and enhanced in virtual teams? Furthermore, in alignment with the literature, the conceptual framework also provides information regarding the main drivers to build trust, as specifically described by the literature, which are the trustworthiness factors: ability, benevolence and integrity (Mayer, Davis and Schoorman, 1995; Mayer and Davis, 1999). As shown by the findings of this study, the interviewees were aligned and classified according to the three main drivers described above, which implies a correlation between theoretical and practical backgrounds. Thus, this suggests alignment regarding what scholars have been studying for years and the practical work that practitioners have been applying in real projects. In most cases, practitioners are not using the same wording, coding or classification to express the same meaning or situation. Nevertheless, through this research and suitable interpretation by the researcher, it was possible to correlate these main aspects and extract meaningful, concrete and applicable tools and actions to build trust in virtual teams and enhance the level of trust in these sorts of organizations, especially the ones with a high level of virtuality.

To create and maintain trust, the team, organization and group leader must find new methods to be open with one another. The actions (or absence of behaviours) of the partners in virtual teams serve as the programming that establishes and maintains the necessary trust, whereas technology serves as the hardware for building virtual trust (Ford, Piccolo and Ford, 2017). As previously stated, trust can be quickly formed based on first-time teammate communications and strengthened or modified depending on long-term, continuing interpersonal and social encounters (Robert, Denis and Hung, 2009). Depending on the character traits, stereotypes and early encounters of the teammates, rapid trust is formed during team setup (Clark, Clark and Crossley 2010). Certain people's opinions make them more likely to be trustworthy. Some make early trustworthiness assessments using preconceptions, while others carefully observe their team members' behaviours to make such assessments. The adage that "you only get a single opportunity to give your first impression" has some validity to it. Due to the potential for dataflow limitations in virtual teams, teammates actively search for "tells" during the formation phase (Ford, Piccolo and Ford, 2017). Small signals can have a significant impact. For instance, individuals may be viewed as less dependable or reliable if they take a long time to reply to emails or inquire about details during the team formation phase (Ford, Piccolo and Ford, 2017).

Generally, the conceptions of trust provided in the more theoretically informed publications about trust are more sophisticated than the perspectives on trust found in

experimental research of virtual teams. In other words, the methodology for researching trust has occasionally been at odds with fundamental thinking, irrespective of the profession. Despite the introduction of more complex, adaptive perspectives in the larger field of trust, the majority of the evaluated research concentrates on trust as a generalised, static notion. Teams are seen as continually shifting and developing in a virtual teams framework (Kozlowski *et al.*, 2013). Given the significance of team building, awareness in a multitude of perspectives that incorporate time-based trust ought to be sharply rising rather than declining, as it is now (Hacker *et al.*, 2019).

Based on research, two major causes of apprehension in virtual teams are developing trust and helping team members connect with the group. To form an efficient virtual team, individuals must get to know one another. Without this, they won't know whether they can trust each other. Trust is important because an individual who trusts someone is willing to expose themselves to their acts in the hopes that they would honour their obligations. Research has identified two categories of trust: cognitive trust and emotional trust, according to Abarca, Palos-Sanchez and Rus-Arias (2020). Building trust in virtual teams is frequently related to information exchange, as highlighted by Liu and Li (2012). According to Pinjani and Palvia's (2013) investigation of the impact of operational and deep-level diversification, deep-level diversification is more pertinent to trustworthiness and information exchange. Golden and Raghuram (2010) also found that trust between people and trust in information were both important for information sharing. However, distrust between people and lack of confidence in technologies can be a barrier, according to Pinjani and Palvia's (2013) research. In a longitudinal investigation of international virtual teams, Goh and Wasko (2012) discovered that resource distribution did not heavily depend on trust when teammates' behaviours were obvious. Trust significantly reduced the performance-harming impacts of member diversity in internationally diverse teams, as found by Garrison *et al.* (2010).

El Yousfi and Anand (2021) conducted investigations to back up the efficiency and influence of virtual teams in government-run businesses. The study found that the three key factors influencing the effectiveness of virtual training were task recognition, teammate traits, and virtual leadership attributes. Newman and Ford (2021) stated that managing employees remotely is different from managing staff in a traditional face-to-face office setting due to various reasons. Therefore, today's leaders engage in activities that help them manage their employees effectively. The researcher proposed five recommendations for leaders to follow in order to enhance the benefits of a virtual workforce. By engaging in certain events and ensuring that the company has a location for its virtual workforce, managers can boost the efficiency, productivity and the dedication of their staff. The five phases are as follows: constructing and describing the new reality, cultivating a society of loyalty, enhancing leadership communication with tools and techniques, encouraging teammates' involvement in governance and developing and frequently conducting comparability evaluations. These phases are all necessary to ensure that virtual employees adhere to the firm's societal beliefs—especially its commitment to purpose. According to experts, leaders can enhance communication among the participants of a virtual team by following these five measures.

In the next section, we will discuss the framework's applicability and usability in greater depth.

### 6.3 Practical Implications

In order to understand how digital virtual offices can drive growth and foster innovation in collaboration, Lopes, Oliveira and Costa (2015) conducted a study. They conducted an internet survey to determine how people felt about various collaboration tools, how frequently they used them, and whether they thought technological improvements were sufficient for communication, teamwork, and productivity gains. Although they found that email was the most frequently used method, face-to-face interaction was shown to be more crucial for cooperation than any online platform for collaboration. According to Topaloglu and Anac (2021), as businesses have grown internationally over the last twenty years and IT has evolved, virtual teams have formed, enabling people to operate more productively and efficiently from different places. As a result, virtual team leaders are significantly different from those who oversee teams in traditional enterprises in terms of outlook and leadership approach. Higher efficiency is among the most important duties of virtual team leaders, which is a challenging research subject for specialists in virtual team oversight. Thus, identifying the successful elements is essential for effective leadership, problem-solving, and many other administrative work. They conducted an investigation that involved a thorough literature evaluation approach encompassing more than 100 academic papers in hopes of identifying the critical elements that influence virtual team effectiveness. The study revealed these characteristics as being leadership, connection, collaboration, cohesiveness, commitment, conflict, interpersonal relationships, information sharing, assessment, reliability, diversity, acknowledgment, and adaptability.

The primary aim of this research was to connect the theoretical and practical background, through the available literature and experienced practitioners, in order to gather the main factors and tools to build and enhance trust in virtual teams. An underlying assumption is that virtual teams work with technology-mediated tools and can vary between low and high levels of virtuality. A practical challenge is, of course, applying these factors and tools in real projects and virtual teams. Therefore, an important premise of this research is that by applying the proposed conceptual framework, organizations and virtual teams can work with the support of high-level management. The implementation of policies, procedures, and processes must have the support of the highest management levels of an organization. Indeed, by acquiring management engagement and commitment, the applicability of the framework would become highly feasible, helping the organization achieve the desired outcomes.

Additionally, the researcher chose to list the main practical implications of the study in an apportioned approach to offer a clear understanding of the practical outcomes:

**Implication 1** - Sheds light on high-level management of human relations and values.

With the current exponential growth of technology and, therefore, virtual teams, companies and organizations might be aware of the human values that exist beyond computers or electronic devices. As discussed previously, one indirect outcome of this research is to gain focus not only in new technologies, methodologies and processes, but also to encourage

organizational decision-makers to alter their view of the human aspects, as closer relationships between team members, especially in virtual teams, help build trust among the teams, leading to greater collaboration, team efficiency and knowledge sharing.

**Implication 2** - Connect theory and practice; link important streams.

Connecting the knowledge from the literature with the empirical knowledge from the practitioners for different perspectives such as virtual teams, communication and trust, this research explains why certain actions in the field are being applied successfully. By proving with theoretical and practical background, the practitioners will possibly be more effective in supporting their arguments and applying the actions and tools proposed by this research. As such, they will be more likely to have successful projects.

**Implication 3** - Understanding trust in depth

By providing a guide through the steps to build trust (external ring of the framework, steps 1 to 4), we aim to help practitioners, including portfolio, program and project managers, as well as team members of virtual teams, understand how trust is built. This understanding can enable them to approach people in a more effective manner, taking into account that each individual has a different propensity to take risks, and that a negative outcome from a previous interaction can affect the next interaction and the individual's willingness to take risks. This suggests that leaders can be more effective in constructing trust and understanding the path to building and enhancing trust within a virtual team.

**Implication 4** - Practical actions to build and enhance trust

In addition to outlining the steps to build trust, the framework also identifies the main drivers behind the process of building trust. This enables practitioners to understand how to approach people to extract their abilities, benevolence and integrity and align them with the other team members, organisation and project goals. While other researchers have also highlighted these factors, our study takes it a step further by providing concrete actions beyond each of the trustworthiness factors. These actionable steps can be more easily implemented by practitioners.

**Implication 5** - Validated framework to apply in practice and communication matrix

According to our research participants, the set of actions and tools in the framework can help build trust, and if applied consistently over time, can enhance the level of trust in the team and organisation. Another practical finding from our research is the communication matrix, which provides tools for different scenarios of complexity and urgency. This matrix can be particularly useful for less experienced practitioners.

**Implication 6** - Widely applicability in different fields

Finally, the proposed conceptual framework can be applied to any organisation that uses virtual teams or technology-mediated communication, regardless of size, market sector, core business, nationality or level of virtuality. However, the framework is likely to deliver better

results when applied to organisations with a high level of virtuality, as some of the actions and tools proposed are more suited for teams that operate primarily in a virtual environment.

Therefore, this study presents six practical implications that are closely interconnected, providing insights on how to build and enhance trust in virtual teams by emphasising human relationships and values, connecting theory with practice, deepening understanding of trust and its construction, suggesting practical actions to build trust, supplying a validated framework and communication matrix, and offering flexibility for various fields and markets.

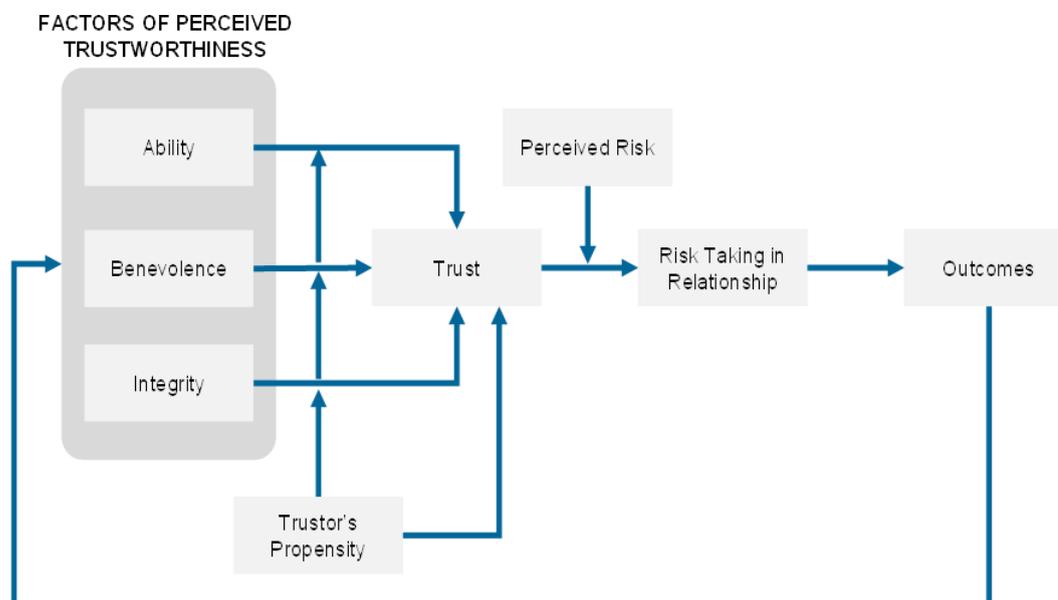
Companies are increasingly using virtual teams to tackle modern organizational challenges. Members of virtual teams from various academic disciplines have produced a vast literature collection to meet these real-world needs. However, the changing workplace, which relies more and more on virtual teams, poses its unique set of leadership challenges that are not adequately addressed by existing virtual team research (Hacker *et al.*, 2019). Therefore, this research will prove helpful in creating and delivering important insights with respect to the elements of virtual teams, virtual interactions, leadership in the context of virtual teams, and technological deployment.

Organizations, managers, management specialists, and human resources professionals can gain crucial information on how using virtual team arrangements has shown to be both advantageous and problematic for workers. By implementing virtual settings, these participants may obtain crucial answers for improving organizational competitiveness, effectiveness, and performance. Businesses struggling with virtual collaboration deployment may find the study helpful and gain original suggestions for boosting participation among virtual team members. Moreover, the investigation will be useful for future academics who want to conduct studies on technological, leadership, and interactive strategies for building virtual collaboration within businesses. The present study will contribute to the body of literature by offering fresh perspectives on the examined topic, providing a strong foundation for future studies aimed at achieving productive programs in the workplace.

### **6.3.1 Link of study findings with the research objectives**

First, the researcher tried to comprehend the main factors and tools for building and enhance trust in virtual teams as well as provide a model to be applied in these organizations. Concerning the aspect of trust among the virtual team members, it was found that trust helps in building collaboration and there existed a positive perception regarding the trust factor among virtual teams. However, it was found that it is difficult to build trust in the case of new joiners. Another factor that contributes to trust is videoconferencing. Apart from this, one negative experience regarding the factor of trust is a lack of engagement. Trust between team members in a virtual environment can be developed through disclosures which, in turn, lead to the addition of more value, less time wastage, greater efficiency and the building of social ties. In a virtual environment, colleagues can build trust via training, which, in turn, leads to the delivery of better value, decreased time wastage, effectiveness, and the formation of social relationships. It has been established that these actions require time and specific standards and laws, despite the fact that training and the use of technologies can be essential in this case.

Secondly the study tried to appraise the definitions, theories, models and techniques regarding trust and virtual teams. In particular, this research seems to be more applicable to the theory proposed by Mayer, Davis and Schoorman (1995), which presented the model of trust in the figure below:



**Figure 15** - Proposed model of trust (modified from Mayer *et al.*, 1995, p. 715).

Integrity, ability, and benevolence are three key characteristics of trustworthiness that are recommended by the literature (Mayer and Davis, 1999; Mayer, Davis and Schoorman, 1995). Integrity refers to a sense of moral principles, such as truth or fairness, and it relies on actions that are consistent with these principles. Ability is the belief that the target person possesses particular talents linked to the relevant tasks. Finally, benevolence is a concern for the welfare of individuals (Krumm *et al.*, 2016; Kong, Dirks and Ferrin, 2014; Mayer and Davis 1999; Mayer, Davis and Schoorman 1995).

The study also analysed the critical factors and the relationship between trust in virtual teams and face-to-face teams. Trust is often seen as a crucial element for successful collaboration in today's enterprises. In fact, research has shown that trust predicts organisational effectiveness. Current studies also demonstrate a positive relationship between team trust and collaborative behaviours, team data processing, and team success (De Jong, Dirks and Gillespie, 2016). These studies suggest that team building is more important in virtual teams than in face-to-face groups, as there are increased ambiguities and dangers associated with electronic interaction (Breuer, Hüffmeier and Hertel, 2016).

This research focuses on the use of virtual teams in organisations, which are expanding in various market sectors due to the advantages they offer, including cost savings from fewer business trips, improvements in skills and competencies from using assets in various places for a single venture, and adaptability in working hours due to the ability of this type of team to operate across time frames. Furthermore, technological advancements are expanding the functionality of these teams and the abundance of technology-mediated information exchange.

For example, the ability to join video conferences from a mobile device, the capacity to share the screen with multiple users, or even the ability to display and modify a file simultaneously with multiple users, all contribute to the growth of virtual teams. However, there are also disadvantages associated with the growth of virtual teams, such as fewer face-to-face interactions between team members, a feeling of seclusion, a lack of information sharing, decreased efficiency, and a reduced level of trust in such organisations, as extensively discussed in this research.

Moreover, this research compares and contrasts practitioners' perspectives and opinions about trust in virtual teams to develop a model and validate it with experienced professionals and researchers. The study found that trust among members of a virtual team fosters cooperation, and while some people have a positive opinion of the trust component, others have a negative perception of the same. In the case of new hires, it was discovered that trust-building is challenging. Videoconferencing is another element that builds trust. In a virtual environment, trust between team members can be built through revelations, which in turn promotes the addition of greater value, decreased time wasted, efficiency, and the formation of social bonds. Although using technology and receiving training can be crucial in this situation, it was discovered that these processes take time, and there are specific rules and regulations that must be followed.

The external ring of the framework's steps 1 to 4 serves as a guide for how to build trust. By recognising how trust is built, professionals such as portfolio, programme and project managers, as well as team members of virtual teams, may be capable of dealing with people more effectively. For example, they may recognise that each person has a different predisposition to taking risks or that a negative outcome from a previous encounter can negatively affect future interactions. This shows that leaders can be more successful in fostering trust and have a better understanding of how to foster trust within a virtual team.

Finally, while prioritizing the model's elements to facilitate and maximize the effectiveness and efficiency of the implementation focus in order to achieve faster results harvesting, it was revealed that, as a consequence of one of the focus group meetings, experts and practitioners were asked to rank the application's components according to a set of criteria with the intention of implementing the practices in the real world in the years to come. Based on the subjects that were covered, the main guidelines under focus were:

- Highest priority – Overall – What to do first?
- Lowest efforts needed for implementation – What is easier to do?
- Lowest financial impact – What is cheaper to do?

In doing so, the author hopes to provide practitioners with all the information they require to assess what needs to be done first and provide more effective results with less time and money spent.

## 6.4 Research Limitations

When considering the practical implications of this research, it is important to keep in mind the inherent limitations of the research design. Firstly, the limited number of participants in the interviews implies a narrow range of age-groupings, market sectors, organizational sizes, levels of virtuality in their teams, and cultural diversity. Perhaps a higher number of samples covering all the factors described above could provide further understanding of some topics. Indeed, this research was not intended to give results that could be projected quantitatively to a larger population. Its purpose was to investigate in depth the motivations, factors, and actions of practitioners regarding their virtual teams, leadership, and trust building. Thus, the results are based on the literature, previous empirical studies, and the content offered by the participants of this research. Therefore, the inputs supplied by the participants of the interviews and focus group meetings were subject to the authors' interpretation and evaluation. Nevertheless, it is worth mentioning that the author maintained impartiality and neutrality regarding any personal opinion.

Another limitation relates to the practical application and further understanding of how to apply the tools and actions suggested by the conceptual framework. Firstly, the practical application was not previewed to be tested by this research. Therefore, future research will be necessary to prove the applicability and results when the framework is applied. Secondly, the further understanding of the actions and tools proposed by the framework also opens a window for new research. Since they are presented at the level of "what to do", meaning that the actions are only a directional guide, without details about which route might be followed. This can be further discussed at a further level of "how to do", where the researcher can describe in detail which steps to take to achieve these actions successfully. Inevitably, there will be some constraints for some of the proposed actions and tools. For instance, the lack of qualified professionals, difficulties in aligning different cultures, financial resources to fund trainings, travels, and human resources. Therefore, all these constraints can be explored in-depth to analyze their impacts on the application of each action or tool and their real feasibility.

Thus, the practical implications that can be derived from the research are partially limited or need to be tested in practice, although there are indications that they can be successfully applied, as validated by seven experienced practitioners during the focus group meeting. The research acknowledges the need for further studies to help better understand these factors. Nevertheless, with these limitations, the study provides an appropriate approach to infer and apply the conceptual framework and deliver strategies to extract the desired outcomes from it.

Finally, the whole COVID-19 crisis has recreated the way businesses are managed globally, and this transition is still ongoing. Therefore, many other studies in this direction will be conducted, especially to understand the long-term impacts of the lack of socialization, self-isolation, productivity, and many other topics covered superficially by this research.

## **6.5 Recommendations for further research**

As previously mentioned, the research has some limitations, which necessitates further studies in the area in order to clarify the main points that were not investigated in-depth. Therefore, the researcher recommends some further investigations in order to enhance the understanding of the applicability and results suggested by the proposed framework. First, in the conceptual and qualitative area, further research could investigate the main actions and factors suggested by the framework, specifically going from the “what to do” level to the “how to” level, investigating how these actions and tools could be implemented, their main constraints and how-to solve them. Second, in the empirical sphere, the researcher encourages further research using a case study approach, where the proposed framework can be applied and tested in practice to evaluate the scenarios before and after the application of the tools and actions proposed. Hence, new findings would demonstrate what factors can be confirmed or even raise the main constraints in the application of the framework in different sorts of organizations.

## 7 Conclusion

Virtual teams, which are globally disparate partnerships that use technology for communication and cooperation, offer theoretically advantageous features that boost productivity. Cooperation in virtual teams relates to both asynchronous and synchronous conversations and activities to accomplish collective objectives, much like cooperation in co-located groups. Despite their physical position, firms can enlist crucial professionals by using virtual teams. Utilising only the talented employees accessible enables firms to maximise their workforce. Theoretically, virtual teams also eliminate the requirement to transit between locations, which should save effort, cost, and anxiety (Dulebohn and Hoch, 2017). This suggests that sustaining the expanding global societal and financial foundation has made virtual teams essential. Comparable to co-located workers, virtual teams engage in a range of cooperative efforts like regular and casual discussions using technologies like textual, data transfer, and collaboration software, as well as teleconferencing (such as Zoom and MS Teams) (Marlow, Lacerenza and Salas, 2017). As a consequence, it is challenging for virtual teams to be as effective as co-located groups since they have trouble cooperating. As a response, virtual teams invest a considerable amount of resources and time in moving teammates for particular projects to prevent the challenges of distance that hamper collaboration. Hence, it is critical to create technologies that can assist virtual teams more effectively, thereby lowering the requirement for expensive migrations and minimising the difficulties that occur when the transfer is not a workable choice (Morrison-Smith and Ruiz, 2020).

This study focuses on the application of virtual teams in organisations that are increasingly growing in different market fields, mainly because of the benefits that they bring, such as cost reductions through fewer business travels, improvement in capabilities and skills by using resources in different locations for the same project, and flexibility in the worked hours since this kind of team can work in different time zones. Moreover, technology development is enabling their capabilities and increasing the richness of technology-mediated communication. For instance, the possibilities to access a video conference by your mobile, or the possibility to share your screen with several participants or even show and edit a file at the same time with different users are helping the growing of virtual teams. Nevertheless, there are some drawbacks in relation to the growth of virtual teams. For instance, fewer face-to-face interactions between team members, a feeling of isolation, less knowledge sharing, less efficiency, and as discussed in this research, the lack or lower level of trust in such organisations. Therefore, the findings of this research, through the conceptual framework, suggest that there are some actions and tools that can be taken to build and enhance trust in virtual teams. The framework was also validated by experienced practitioners in regards to its applicability, which conveys an encouragement for companies and organisations to apply such actions and tools to get better results with virtual teams. Additionally, this research sheds light on an important topic that was already studied before and mentioned by all the interviewees, which is the importance of having an introductory meeting face to face at the beginning of projects. In this way, the team members can rely much more on each other, building and increasing their trust, hence achieving better results during the project life cycle and reducing the gap between the high level of risks in the beginning of the project. Indeed, this topic also touches on communication and the price of poor communication. Therefore, bringing the core team together at the beginning of the project in face-to-face

meetings will increase the efficiency of the team during the project. In addition to this, the literature and practitioners also highlighted the importance of not only creating this environment at the beginning of the project, but also maintaining this closer relationship during the entire project, especially when the projects are in place for an extended time, for instance three or four years. In this case, it would be necessary to maintain this through annual meeting or events where the team members can still feel connected by seeing each other in person.

This study also contributes to a better understanding of the theme of trust, as it seems that there are a lack of studies that try to connect the theoretical background of trust studied by scholars and empirical expertise from the factual works from practitioners. Therefore, by connecting these two worlds, this study brings significant results by combining what scholars and practitioners have in common, thus creating a scenarios where the current actions taken by the practitioners are justified by the theory from the scholars. What may be particularly significant in this context is that practitioners can have a foundation for their actions based on the main drivers of building trust. Therefore they can achieve greater efficiency by focusing their energy on things that will bring the expected results. Secondly, they can have stronger arguments to present their ideas for the company management, where they can have the theoretical background to argue why it is important to have an introductory meeting face-to-face, for instance, and of course, the benefits of doing this.

The results are also broadly consistent regarding the factors influencing the construction of trust within a virtual team. In fact, communication is an important aspect of this topic, as it allows for the opportunity to create stronger relationships between members, to convey the necessary information with the expected content and timing and to share knowledge between the team members. Nevertheless, equally important and highlighted by the scholars and also strongly defended by the participants are the cultural aspects, which have a strong influence on building trust. Both scholars and practitioners strongly argue that organizations and their leaders must be aware of the cultural differences between people. In order to close this gap, this study also suggests that the organizations train their leaders on the cultures of their team members, their abilities to communicate in a common language and to be fully aware of how to deal with each specific individual.

Finally, this study contributes to the creation of a better environment in virtual teams by building and enhancing trust in this sort of organization. The proposed conceptual framework may be implemented in any kind of virtual team, although the design suggests a better applicability for teams with high levels of virtuality. Therefore, again, this study sheds light on the human values related to virtual teams and project management, where not only advances in technologies and methodologies are welcome, but also the importance of building an environment where people can trust each other, share knowledge, increase efficiency and enhance collaboration, therefore improving the organisation through connecting technology to human behaviours.

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## Appendices

### Appendix 1 - Consent form



#### Consent Form

**Title:** A practical model for building and enhancing trust in virtual teams

**Researcher:** Matheus Cavicchioli

Thank you for reading the information sheet about the interview study. If you are happy to participate, then please complete and sign the form below. Please initial the boxes below to confirm that you agree with each statement:

*Please  
Initial box:*

Yes

I confirm that I have read and understood the information sheet and have had the opportunity to ask questions.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline.

I understand that my responses will be kept strictly confidential. I understand that my name will not be linked with the research materials and will not be identified or identifiable in the report or reports that result from the research.

I agree for this interview to be recorded. I understand that the audio recording of this interview will be used only for analysis and that extracts from the interview, from which I would not be personally identified, may be used in any conference presentation, report or journal article developed as a result of the research. I understand that no other use will be made of the recording without my written permission, and that no one outside the research team will be allowed access to the original recording.

I agree that my anonymized data will be kept for future research purposes such as publications related to this study after the completion of the study.

I agree to take part in this interview.

Name of participant

Date

Signature

Researcher

Date

Signature

## Information Sheet

**Title:** A practical model for building and enhancing trust in virtual teams

I would like to invite you to take part in a research study. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Ask questions if anything you read is not clear or if you would like more information.

### **Who I am and what this study is about?**

I am a student of the course “Executive Doctorate in Business Administration (EDBA) at the Swiss School of Business and Management (SSBM)”, and this study intends to answer the following questions:

Research Question 1: “How can we develop a conceptual model to build and enhance trust in virtual teams?”

Research Question 2: “What elements of a model to build and enhance trust in virtual teams should be prioritized during its implementation?”

Through this interview, the researcher’s objective is to understand the practitioners’ perspectives and opinions regarding their experience working with virtual teams using technology-mediated communication and how they have experienced these opportunities.

### **Why have you been invited to take part?**

As a practitioner and/or an expert in your area and industry, you can add valuable information for this research by sharing your experiences and expectations regarding the project communication environment that you have experienced in your profession.

### **Will taking part be confidential?**

All the records will be kept strictly confidential. Names will not be linked with the research materials and will not be identified or identifiable in the report or reports that result from the research. Moreover, the information will be kept in protected in files.

### **What will happen to the results of the study?**

The results may be used in any conference presentation, report or journal article developed from the researcher. The results also will be shared with the interviewees who want to receive a copy of the findings of this research.

### **Who should you contact for further information?**

Please, in case of any questions, comments or remarks regarding this research, you may write to:

matheus.pinheiro11@gmail.com

### Interview Guideline

#### **Professional experience**

- How many years of experience do you have working with virtual teams?
  - In which fields?
  - Which countries?

#### **Experience with Virtual Teams**

- What virtual team structures are you used to working with (high level of virtuality, mixed teams with low levels of face-to-face interactions or even mixed teams with medium/high levels of face-to-face interactions)?

Type	Yes or No
Completely Virtual	
Hybrid - high level of virtuality	
Hybrid - low level of virtuality	
Hybrid - with face-to-face interaction	

- What are the (high level) benefits of virtual teams in your perspective?
  - What are the negatives?
- How do you face these problems during the day-by-day? What techniques do you apply?
- Do you think that a complete policy for how to behave, share data, use (choose) means and training can help to enhance the VT environment?
- Do you usually know the people that are working with in your teams personally?
  - What percentage of your teammates have you met face to face?
- Do you believe that meeting people personally improves the communication process?
  - If yes, why? And how?
- Do you think that one introductory meeting in the beginning of the project can help to develop trust between the team members? If you had the budget do to so, on a scale from 0-10, how interested would you be in an initial kickoff meeting face by face?
- How do you see the socialization and, consequently, trust in virtual teams? For you personally, what are the impacts of a low level of socialization and trust?

#### **Technology-Mediated Communication - Means**

- What are the available means of communication that you usually work with (teleconference, e-mail, instant massager, video-conference)?
  - Why?
  - Is that related with the complexity of the topic? Personality? Team structure?

- How are the relation between topics complexity with the means?
- What motivates you, for example, to call someone instead of writing and e-mailing? Or to do a video conference instead of a call?
- Do you believe that seeing the participants' reactions (body language) can help in how successful a meeting will be? In other words ,can the video help to better facilitate the meeting.
- Regarding teams with low levels of socialization, what do you do in order to increase the relationship between the team members?
- From 0-10, how do you evaluate the importance of trainings for the available tools?

**Leadership**

- Please tell me one or more situations where you experienced a high level of trust between the team members.
  - Why do you think it happened?
  - Which factor is, for you, the most important to reproduce these situations more often? Please rank them from most important to least important
  - How would you apply this in your day-to-day work?
- Tell me about a past experience where you had serious problems regarding trust between team members?
  - What were the main reasons, in your perspective?
- Reviewing the factors below, please rank them from 0-5 (where 0 is less important and 5 is more important) in terms of which you believe are more important for a project's success.

<i>Factors</i>	<i>Imp ortance</i>	<i>Comments (why?)</i>
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Knowledge (Business and technology expertise)

Communication (effectiveness and tools available)

Trust

Social Ties

Shared Vision

Team Size

Project Complexity

- How do you receive new members in the team? What are the best integration tools, from your perspective?
- How often do you have individual contact with the team members? How do you evaluate the importance of this contact?

- Do you believe that general common events can help to increase socialization and trust between team members (e.g., annual project management meetings, workshops, etc.)
- How do you see the importance of team members having more personal contacts? For example, through hobbies, family, etc?
  - Do you do something to stimulate this?
  - How?
- Do you believe that a pre-meeting (informal) during a video conference can improve this relationship?
- Do you believe that games between breaks or before meetings can help in this way also?
  - What about virtual celebrations? For achieving milestones, for example? Have you used this before? What were the results?
- Regarding the organizational level, what should the company do in order to improve the quality of the virtual team's communication?
- Regarding you, personally, what are the actions that you take/took in order to improve the quality (effectiveness and efficiency) of virtual teams?

Appendix 4 – Pictures





