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Developing an integrated understanding of performance management in virtual teams

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Abstract

Research problem: The current research into the performance management of virtual teams is scarce and fragmented. Furthermore, studies that have focused on the performance of virtual teams give limited managerial advice. **Research aim**: Thus, the focus of this study was to discover what could be learned about virtual teams when viewed through the lenses of existing performance management theories. This included understanding the challenges of this work environment as well as managerial tactics to overcome these obstacles.

Literature review: In order to answer the question, an understanding of the existing theories on performance management and virtual teams was developed from existing literature. Furthermore, the concepts of trust and culture came to light as relevant topics for this study, so these were reviewed as well. **Methodology**: In order to address the research problem identified, individuals who have worked extensively in virtual teams were interviewed. The questions asked were developed using a deductive approach based on the results of the literature review, especially from performance management theory.

Results and discussion: The results of these interviews were then compiled, coded, and sorted in order to discover common themes addressed by the participants. The main themes identified that are related to the performance management of virtual teams are communication methods, work processes, personal relationships, trust building, engagement and ability, and organizational challenges. These findings were then compared to existing research and integrated into a framework that had been developed from the outcome of the literature review. In addition, since the authors took a pragmatic approach, managerial suggestions were compiled in order to provide practitioners advice on how to improve the performance management of their virtual teams.

Keywords: performance management, virtual teams, trust, culture, managerial solutions

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Table of Contents

List of Tables

List of Figures

1 Introduction

1.1 Background

Today, more than ever before, team members are working together from all over the world (DuFrene & Lehman, 2016). In this digital age, numerous technologies and applications have been created that are shrinking the communication gap caused by the physical distance between these team members. Video calling, advanced messaging platforms, and online file sharing and document editing tools are making the virtual workplace much closer to the traditional environment (i.e., the same office). In some ways, there are even benefits to virtual collaboration tools, such as anonymous brainstorming and feedback (Hertel, Geister & Konradt, 2005; Townsend, DeMarie & Hendrickson, 1998). Many of these communication channels were viewed as something out of science fiction only one or two decades ago. Computing power has been doubling every eighteen months (a phenomenon known as Moore's law), which means a computer produced today is 100 times more powerful than one made only 10 years ago and 10,000 times faster than one from 20 years ago (Brynjolfsson & McAfee, 2016). In addition, since 1990, the number of people with internet access went from a small fraction to over half of the world population (Murphy & Roser, 2019). These trends have enabled the rapid development of information and communication technology (ICT) described above. As a result, the limits of communication that historically kept teams confined to a shared physical location are crumbling down.

As a result, there is a shift in working arrangements and team members are now working together from every populated continent. This has created a new form of organizational groups: virtual teams. Virtual teams are defined as groups of two or more members located in dispersed geographic locations who primarily interact through electronic communication media in order to accomplish common goals (Hertel, Geister & Konradt, 2005; Ford, Piccolo & Ford, 2017). Between 2005 and 2012, there was nearly 80% growth in the number of people who work virtually, at least part of the time, and now virtual teams are used in almost half of US companies (DuFrene & Lehman, 2016).

Virtual teams are now found in a myriad of environments. Over 50% of companies that took part in one survey reported that their top management teams are now virtual (Rendón, 2014). In an estimate of Fortune 100[1] companies, 70% of all managers are not co-located with their entire team (DuFrene & Lehman, 2016). It can be stated that, without a doubt, virtual teams are now an established norm, and any research with meaningful insights can provide real value to many companies.

Now that this new form of teams has developed, management of these teams ought to be adapted accordingly. One cannot assume that the processes and tools used for traditional (non-virtual and physically co-located) teams will work as effectively or in the same manner

[1] Fortune 100 companies are the one hundred highest grossing public and privately-held companies in the US: https://www.bluechiplist.com/indices/fortune-100-companies/

in virtual team settings. In addition, there may be unique challenges to managing a virtual team. However, this is not the first time someone came to this conclusion. Over the last twenty years, there have been many studies on virtual teams in comparison to traditional ones. Powell, Piccoli, and Ives (2004) reviewed the research available at the time and identified studies into many aspects of virtual teams, such as team culture, structure, communication, relationship building, and performance. They also noted that often these studies have been carried out in comparison to traditional teams.

Another area that is important to most organizations and teams is performance management, as attested to by over 500 empirical studies of the subject over the last 30 years (Schleicher, Baumann, Sullivan & Yim, 2019). For the purposes of this paper, performance management is defined as the formal and informal processes used to convey management's goals and to evaluate, adapt, and manage the organization in order to achieve those goals (derived from the definition of performance management systems used by Ferreira and Otley, 2009). Formal processes refer to written procedures and regulations, whereas informal mechanisms are the more natural outcome of the interactions between people within an organization. Both of these types of process are important factors to the performance management at various hierarchical organizational levels, including teams (Ferreira & Otley, 2009).

Beyond just the "typical" aspects of performance management, such as target setting, performance evaluation, and compensation; there are also other factors that influence the performance of team members that are affected by managers' decisions. Ferreira and Otley (2009) identified the company's visions and mission, organizational structure, and long-term strategies as key elements of a performance management system. Furthermore, they see that the culture and context of an organization influence the effectiveness of any performance management system put in place by management. Therefore, a holistic understanding of performance management, including the cultural and contextual setting, is warranted when researching the subject.

Another attribute that is interconnected with successful performance in a virtual team environment is a high level of trust among team members (Panteli, 2005). However, the geographical separation of the virtual team members makes it more difficult to share norms and social activities which affects building trust within a team (Kiely, 2001) It is easier for a high-context, collectivist, and homogeneous culture to become high-trust. As a result, building trust is a crucial, yet challenging, aspect of managing performance in a virtual team.

1.2 Research Gap

After researching these topics, however, the theories were fragmented and a single resource could not be found that grouped all of the components of virtual teams, performance management, culture, and trust into a single, focused, and integrated study. There are some studies that come close to addressing the topic. Groen, van Triest, Coers and Wtenweerde (2018) and Errichiello & Pianese (2016) studied the output control of teleworkers who operate in an alternative work arrangement in which employees perform tasks elsewhere that are normally done in a primary or central workplace, for at least some portion of their work schedule, using electronic media to interact with others inside and outside the organization

(Gajendran & Harrison, 2007, p. 1525). Errichiello & Pianese (2016) found that research has addressed changes to control systems and the effects on workers' behavior, but that existing research is still limited and fragmented. Groen et al. (2018) found that there has been a large research focus on the individuals and the organizations they work within, but that there is a lack in studies on how managers should behave in this arrangement. Furthermore, they recommend that future research investigates how the output controls that managers use affect the performance of virtual employees.

In addition, when Brown, O'Kane, Mazumdar, and McCracken (2019) reviewed the recent literature of performance management, they found that only a small percent of studies included virtual work settings. This lack of data led to their conclusion that more research on performance management is needed in virtual workplaces. In addition to this, new virtual collaboration tools (e.g., Skype, Microsoft Teams, Slack, Google Docs, etc.) are being created and improved continuously. As a result, the ways teams collaborate are changing over time and fresh research could uncover opportunities that were not previously available.

Therefore, the authors of this study determined that it further study the performance management of virtual teams was warranted. This includes not only the determination and evaluation of goals, but also the influencing factors of trust, culture, and context. The remainder of this paper is dedicated to addressing this research gap.

1.3 Aim and Objectives

The aim of this research is to integrate the fragmented theories of performance management in the context of virtual teams. This includes addressing the related aspects of technology, culture, and trust as they relate to performance management in a virtual team. In order to achieve this aim, the following objectives were created:

- To develop a theoretical framework based on the relevant topics
- To collect and analyze empirical data of performance management in virtual teams
- To integrate the data collected into the theoretical framework
- To compile a list of managerial suggestions from all of this information

1.4 Research Questions

In order to fulfill the aim of this thesis, a fundamental research question was asked to guide this work:

> *What can be learned by applying existing performance management theories to virtual teams?*

In order to support this main question, two supporting questions were created, which will be used to guide the analysis and discussion:

1. *What are the effects of managers utilizing performance controls virtually? How does this differ from a traditional (non-virtual) team?*

2. *What are the management performance challenges of working in a virtual team? How have managers solved these challenges and turned them into advantages for team performance?*

1.5 Delimitations

Before going further, it is prudent to mention the delimitations of this study. Firstly, the focus is on teams with a high level of virtuality, which is a term to describe the factors that encourage virtual interaction instead of face-to-face interactions, such as distance, number of locations, and financial constraints (Hertel, Geister & Konradt, 2005). For this study, it meant that the teams studied have members in geographically separated areas (preferably in different countries) and who meet less than once per month in-person, so that the virtual aspects of their collaboration would be a prominent factor.

Furthermore, the interest is on teams, meaning a group of individuals with shared goals who must work interdependently to achieve their objectives (Cohen & Bailey, 1997), rather than other types of groups. Since this is a study on management and one of the objectives is to compile managerial recommendations, it was decided that there should be a clear manager for each team so that the managers' insights could be collected and analyzed. Finally, since English is the common language to both authors, the people interviewed were required to be English-speaking and the interviews were conducted in English.

1.6 Overview of the Thesis

To accomplish the purpose of this research, the authors dedicated the next chapter to developing a theoretical framework based on the best available knowledge (BAK) found. The third chapter focuses on the methodology, which utilized a literature review to acquire the BAK as well as interviews with virtual team members and managers to collect empirical data. The data is then analyzed in the fourth chapter in order to answer the research questions and to incorporate the findings into the theoretical framework from chapter two. In the final chapter, conclusions are drawn on the outcome of the research, including practical managerial recommendations.

2 Theoretical Framework

The purpose of this chapter is to establish a theoretical framework for the integration of concepts relevant to the performance management of virtual teams. The main concepts that the authors have found during a literature review are virtual teams, performance management, technology, trust, and culture. In order to develop this framework, a background of each concept will be provided based on the literature review, including a rationale for why each concept is important to the overall purpose of this study. Important terminology and theoretical concepts for this study will be developed. Once each component has been explored separately, a theoretical framework that integrates all of them into one model is developed in the final section, which will be used as the basis of the later analysis.

2.1 Virtual Teams

Since virtual teams are one of the key topics of this study, a further understanding of the concept, both what it means and what research has already occurred, is warranted. First, a definition of virtual teams and their characteristics are provided, along with a comparison to other forms of virtual work, in order to establish the scope of this term. Then, an overview of the state of research into the topic is provided, since it helps frame in the contribution of this paper to the overall subject of virtual teams. Finally, since technology is such an essential component for virtual teams (as will be highlighted in the definition), this aspect is addressed more in-depth in order to prepare for the later analysis.

2.1.1 Definitions

Cohen and Bailey (1997) describe a team as:

> a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems, and who manage their relationship across organizational boundaries (p. 241).

This definition captures the main features of a team: multiple individuals who are interdependent, share goals and outcomes, and are a part of the same social entity. These features are descriptive of any team and hold true for virtual teams as well.

What sets virtual teams apart from other teams is their primary means of interaction: electronic media - rather than face-to-face. Hertel, Geister, and Konradt (2005) define a virtual team using the features noted in the definition of teams above (two or more people who interact to achieve shared goals), but they also address the virtual aspects - at least one member in a different location, organization, or time so that they must collaborate predominantly through electronic communication media. Gignac (2004) defines a virtual team as a group of skilled individuals who are geographically dispersed but not necessarily distributed across expansive geographic locations. These skilled individuals achieve shared goals and purpose and communicate electronically.

Focusing specifically on the factors that influence teams to work virtually rather than traditionally, Fisher and Fisher (2000) classify 6 types of virtual teams based on the three variables of time, space, and culture, as seen in Table 2.1.

Table 2.1: Six Types of Virtual Teams (Fisher & Fisher, 2000)

Type	Time	Space	Culture
1	Different	Same	Different
2	Different	Different	Different
3	Same	Different	Different
4	Different	Same	Same
5	Different	Different	Same
6	Same	Different	Same

These factors drive teams to interact electronically since there is a higher cost of meeting in-person when these variables are present.

Hertel, Geister, and Konradt (2005), however, recognize the reality that most virtual teams do have some level of face-to-face contact. This observation inspired them to address the concept of virtuality, which is a term to describe the factors that encourage virtual interaction instead of face-to-face, such as distance, number of locations, financial constraints. For example, teams in neighboring cities may work virtually most of the time but have bi-weekly face-to-face meetings, so they would still have a moderately low level of virtuality. Whereas a team with multiple offices in North America, Europe, and Asia and who only meet once annually would have a high level of virtuality.

Therefore, based on the definitions mentioned above, this paper defines a virtual team: *a team where members are located in dispersed geographic locations and interact primarily through electronic media in order to accomplish common goals* (Townsend, DeMarie, & Hendrickson, 1998; Gignac, 2004; Hertel, Geister & Konradt, 2005; Ford, Piccolo & Ford, 2017). A team that meets this definition ought to have a high level of virtuality so that the primary interaction is through electronic media. This definition highlights the main features of virtual teams found in the literature and will be the definition used for the remainder of this paper.

Note that even though geographical dispersion is a major determinate of virtual teams, it will not be discussed in depth further. Since it is usually the reason virtual teams are formed and cannot be easily modified, there is not much more to investigate about this topic. However, the other attributes of virtual teams (technology, collaboration, etc.) will be studied in the later sections as these are features managers are able to control, at least to some extent.

Differentiation from Other Types of Virtual Work

In order to provide a further understanding of the nature of virtual teams, a brief discussion on related, but fundamentally different, forms of virtual work interactions. The focus of this paper is not on these topics, but it is worthwhile to differentiate this study from ones on the performance management of other types of virtual work, such as teleworkers (Groen et al., 2018). In order to do so, both definitions and the differences from virtual teams are given for the concepts of telework, virtual groups, and virtual communities.

One related form of virtual work is *teleworking* (i.e., telecommuting), in which people are able to work, at least part of the time, outside of the main workplace through the aid of modern ICT (Bailey & Kurland, 2002). While the use of ICT is similar for virtual teams, teleworkers often live near and frequently visit the main office and are not necessarily a part of a team. A similar phenomenon is *virtual groups*, which exist when several teleworkers report to the same manager, but they do not need to collaborate to achieve common goals (Hertel, Geister & Konradt, 2005). The distinction between a virtual group and a virtual team is very much the same as for traditional groups and teams, the different level of collaboration required to achieve the objectives.

Another virtual entity that exists is *virtual communities* (i.e., virtual organizations), which consist of members who conform to shared purposes, roles, and norms and connect via the internet (Hertel, Geister & Konradt, 2005). An example of a virtual community is open-source software projects, such as the WordPress website management system and the Mozilla Firefox internet browser. These projects are not often managed by any one organization, and may instead be developed by a network of individual contributors. Even though there may be shared goals, as in a virtual team, there is often limited interaction between members of the community.

2.1.2 Background on Existing Research

As stated already, virtual teams have been well-researched in many regards over the previous two decades. There have been several papers published comparing the performance of these virtual teams with traditional ones, leading to inconclusive results (Powell, Piccoli & Ives, 2004). From looking at the research, one could say that virtual teams can perform as well as traditional teams. However, there were several factors that appear to improve virtual team performance when they are well-implemented: training, goal setting, developing a shared language, and communication, and several others identified in Table 2.2 (Powell, Piccoli & Ives, 2004). Many of these factors are shared with traditional teams but may need more focus in virtual teams where spontaneous communication can be less frequent.

Table 2.2: Areas of Existing Research for Virtual Teams (Powell, Piccoli & Ives, 2004)

Areas	**Inputs**	**Socio-emotional Processes**	**Task Processes**	**Outputs**
Sub-topics	Structure Culture Training Technology	Cohesiveness Trust Relationship Building	Communication Coordination Task-Technology-Structure Fit	Performance Satisfaction

Hertel, Geister, and Konradt (2005) also reviewed the empirical research available at the time and assembled many findings on managing virtual teams into one article. They found many themes common to virtual teams across the research: a strong need for clear goals, efficient communication processes, continual support and feedback, developing interdependence between team members, and holding "kick-off" workshops. They also assembled several insights into the performance management of virtual teams, including the importance of social-emotional feedback to increase motivation, better results when people were able to

brainstorm and give feedback anonymously, and which virtual tools to use for different processes.

Furthermore, several advantages of virtual teams have been uncovered. For one, companies can access their best talent worldwide to build optimal teams (Townsend, DeMarie & Hendrickson, 1998). In addition, teams can work around the clock, lower travel expenses, and increased flexibility for team members (Hertel, Geister & Konradt, 2005). For these reasons and more, virtual teams are being adopted in many organizations. However, to take advantage of these benefits and the knowledge of what is common to high-performing virtual teams, these fragmented theories need to be integrated into a performance management framework.

2.2 Technology

The key factor that caused the rise of virtual teams is the introduction of modern communication technology, as described by Townsend, DeMarie, and Hendrickson (1998). They organize these new types of technology into three categories: collaborative software systems, desktop video conferencing systems (DVCS), and the internet and intranets. These categories were found useful and will next provide a background into this technology based on their categories. However, for this article, the concept of DVCS will be referred to as video calling systems since these tools are now available on mobile devices (in addition to desktop) and are not only used for conference calls but for many forms of calls (e.g. one-on-one, group meetings, and webinars).

Video calling systems have grown in number and capability as the computing power and data speeds of electronic devices have continued to increase. There are now numerous applications that allow group audio or video calls, instant messaging, and status notifications of users' online presence. For example, Skype[2], Google Hangouts[3], Zoom[4], Facebook Messenger[5], and WhatsApp[6] are all tools the authors have used to make video calls in the last year - most with both a desktop and mobile interface. The number and availability of these types of systems make it much easier to maintain face-to-face-like contact with people far away geographically.

Collaborative software systems come in many forms, but they are designed to enable real-time collaboration and decision making. Tools like Google Docs[7] and Microsoft OneDrive[8] enable coworkers to edit documents simultaneously (which the authors are using to even write this paper). Email and calendar apps allow users to share important information and keep in touch, even where there is a large difference in location and time zone. Project management tools, such as Jira, make it possible to keep track of numerous tasks and for employees to

[2] https://www.skype.com/en/

[3] https://hangouts.google.com/

[4] https://zoom.us/

[5] https://www.messenger.com/

[6] https://www.whatsapp.com/

[7] https://docs.google.com/document/u/0/

[8] https://onedrive.live.com

instantly update their progress on each item. Furthermore, many of these tools allow the user to utilize a "private" mode that hides their identity, which allows them to brainstorm and interact anonymously. This has been found to increase objectivity and positive criticism while preventing people from being overly agreeable (Hertel, Geister & Konradt, 2005).

If these utilities are seen as the power tools used by construction workers, the internet can be viewed as the electricity that powers them. Without a way to connect quickly and reliably, most video calling and collaborative software systems lose their functionality. Since 1990,

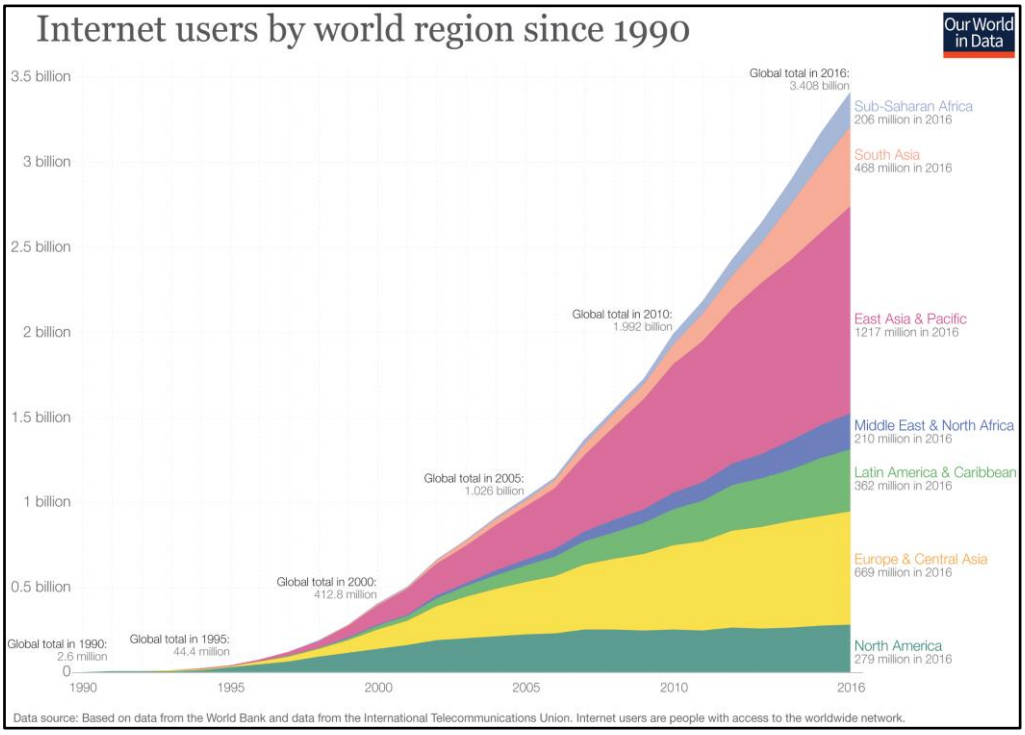

Figure 2.1: Internet Users by World Region. (Murphy & Roser, 2019)

there has been a dramatic growth in the number of people with internet access, as shown in Figure 2.1. As of 2016, almost half of the world uses the internet, which is almost a 70-fold increase in only 20 years. This staggering pace of expansion enables virtual teams in more corners of the world than ever before. Note that there are still areas with limited internet access, especially in Sub-Saharan Africa, and internet speeds may still be slow in other areas, but there is still a large share of people in the world who can now collaborate virtually.

Recently introduced tools, such as Slack[9] and Microsoft Teams[10], now incorporate all of these types of systems into one utility. They have video calling systems, collaborative document editing tools, messaging platforms, as well as intranet-like wiki pages built into one solution.

[9]Slack is described as a collaboration hub: https://slack.com

[10]Teams brings several tools together into a shared workspace for chatting, sharing files, calling, and using other apps: https://products.office.com/en-us/microsoft-teams/group-chat-software

As a result of all of these advances in technology, modern virtual teams are closer than ever to working in a traditional office environment.

However, even with all of this technology available, there are still many challenges virtual teams face to a larger extent than traditional teams. For one, virtual team members must be able to adapt to all of the new collaborative software and video calling systems that are being created and update and learn how to use them effectively (Townsend, DeMarie & Hendrickson, 1998). For some employees, this may be more challenging and not something they are keen to do. However, for younger people who have grown up with constant internet access, they are able to more quickly adapt to new technology and may even prefer to work in a virtual setting rather than a traditional one (Townsend, DeMarie & Hendrickson, 1998).

Additional complexity is added when team members come from a wide variety of national and cultural backgrounds (Townsend, DeMarie & Hendrickson, 1998). Due to the high cost of moving personnel to a new country, many companies are opting to build teams virtually from all over the world. While there is a cost advantage, this complicates communication and additional communication and diversity training and development are required for team members (Townsend, DeMarie & Hendrickson, 1998). On top of this Hertel, Geister, and Konradt (2005) found that there are challenges with members feeling isolated and less connected, having increased misunderstandings and conflicts, more role ambiguity, difficulty in supervision, and costs associated with the technology and training needed - all of which can negatively affect performance if not accounted for and well managed.

2.3 Performance Management

Since the main research question of this thesis is to find out what can be learned when existing performance management theories and frameworks are used to study virtual teams, an overview of performance management is deserved. In order to build a knowledge frame for the data collection and analysis, it is important to understand the definitions of performance management and the current theories that exist. The following sections will give an overview of these topics.

2.3.1 Definition

Schleicher et al. (2019), in their review of the effectiveness of performance management, refer to Aguinis's definition of "a continuous process of identifying, measuring, and developing the performance of individuals and teams and aligning performance with the strategic goals of the organization" (2013, p. 2). This viewpoint is focused mainly on the process most directly associated with the performance of the organization – how to align performance with an organization's goals. Ferreira and Otley (2009), instead, try to build a more holistic approach which they term a "performance management system" or PMS. To them, this term includes all components of organizational control including the entire strategic process, informal control processes, and even organizational culture. As a result, they define a PMS as:

> the evolving formal and informal mechanisms, processes, systems, and networks used by organizations for conveying the key objectives and goals elicited by management, for assisting the strategic process and ongoing management through analysis, planning, measurement, control, rewarding, and broadly managing performance, and for supporting and facilitating organizational learning and change (2009, pg. 264).

Ferreira and Otley (2009) also see PMS as a better term to capture those concepts than what is often deemed as "management control systems" or MCSs, since they find the term more restrictive than originally intended. When looking at how Malmi and Brown define an MCS, they see it as the "systems, rules, practices, values and other activities management put in place in order to direct employee behavior… management controls include all the devices and systems managers use to ensure that the behaviors and decisions of their employees are consistent with the organization's objectives and strategies" (2008, pg. 290). This viewpoint aligns well with Ferreira and Otley's as they both consider a broad view, including multiple systems and activities used by management in order to influence employees' behavior and performance in order to align with the business's strategies.

From these definitions, a definition has been formulated in order to capture the main features of performance management, especially as to how it applies to a team setting. Performance management in this study is defined as *the formal and informal processes and systems used to identify and convey key goals and to continually and periodically measure performance and make adjustments in order to realize the strategy of the organization* (Ferreira & Otley, 2009). This definition includes several aspects, including planning, evaluating performance, rewarding (or penalizing), shaping culture, training and development, and reassessing the overall strategy and goals. However, it should be noted that trying to capture any management concept, including performance management, is a difficult task and by no means is this definition the final or ultimate one.

2.3.2 The Current State of Research

Performance management is an important and heavily explored subject, as demonstrated by the hundreds of empirical studies into the various aspects of performance management that have taken place since 1984 (Schleicher et al, 2019). Based on the results of these studies, several frameworks have been developed to assist in piecing together these diverse aspects. The most relevant frameworks are discussed here in order to give a background to the approach taken by this study.

Simons (1995) developed a framework, termed "levers of control" (LOC), as a means for implementing and controlling strategies. It is based on the four key concepts: core values controlled by a belief system, risks to avoid based on a boundary system, critical performance variables controlled by a diagnostic system, and strategic uncertainties controlled by an interactive control system. While this framework captures many of the important aspects of performance management - performance, strategy, direction, and values - it is strongly focused on formal controls determined by upper management and does not factor in performance management at lower levels in the hierarchy (Ferreira & Otley, 2009). Since this study is focused on teams, at the lower end of the organizational hierarchy, further frameworks were explored.

A more recent framework developed by Malmi and Brown (2008) attempts to capture and synthesize the decades of research in this area as well. Their aim was to synthesize the many decades of research and stimulate further study in this area, by providing a typology with a broad scope and viewing this topic as a system of systems rather than individual components. What they developed was a typology of management control systems (MCSs) that includes five types of controls: planning, cybernetic, reward and compensation, administrative, and cultural, which are illustrated in Figure 2.2.

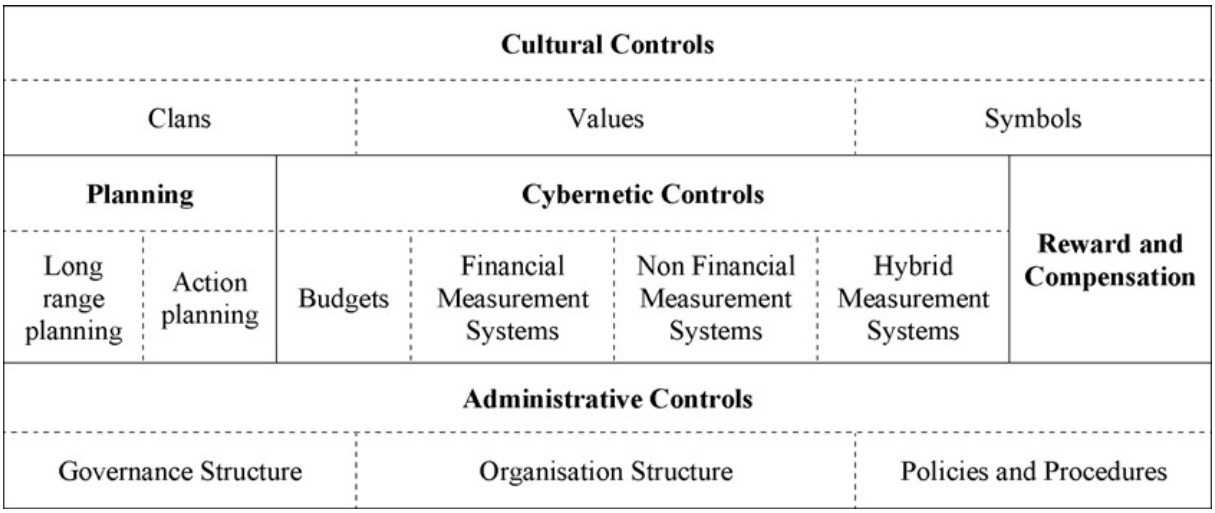

Figure 2.2: Management Control Systems as a Package (Malmi & Brown, 2008)

What stands out about this framework is that it goes beyond the traditional view of performance management, which is focused mainly on the middle section of the model: planning, cybernetics (goals and measurements), and rewards. It also incorporates other forms of control available to managers in order to influence performance, namely cultural and administrative controls. While many researchers have treated these factors as purely contingent variables, Malmi and Brown see that managers have some level of control of these mechanisms. Furthermore, they see this framework as a way to understand the potential links between these key elements in their control package in future research, which is one of the aims of this study. However, they recognize that there is no clear understanding of how these elements relate. Furthermore, other researchers see MCSs included under the umbrella of performance management (Ferreira & Otley, 2009), so there is still more to understand in relation to performance management than presented by this framework.

In an attempt to address the gaps in these frameworks, Ferreira and Otley (2009) created an extended "Performance Management Systems (PMS) Framework" with the goal of providing a broad perspective of the key aspects of a PMS. In a similar approach to Malmi and Brown, they recognize that there is no single ideal model for PMSs since there are a large number of contingencies to account for. Instead, their focus was to create an investigative tool to build further evidence for PMS analysis, which outlines the main features of such a system.

The core of their framework is 12 questions that have been found to result in significant insights and form a coherent structure for research. There are ten questions that ask 'what' and two questions that ask 'how'. The resulting framework is a heuristic tool that should

facilitate the collection and analysis of the key aspects of any PMS. The topics addressed by the twelve questions are listed in Table 2.3.

Table 2.3: The Topics Addressed by the 12-Question PMS Framework (Ferreira & Otley, 2009)

Question	Topic	Question	Topic
1	Vision and mission	7	Performance evaluation
2	Key success factors	8	Reward system
3	Organizational structure	9	Information flows, systems, and networks
4	Strategies and plans	10	Use of information and control mechanisms
5	Key performance measures	11	Change to the PMS
6	Performance target setting	12	Strength and coherence of the PMS

In line with the purpose of Ferreira and Otley, these 12 questions were utilized to help develop the data collection method, which is described in chapter 3.

2.4 Trust

In a virtual team environment, where face-to-face communication is limited, building trust among the virtual team members become crucial for success and improving team performance (Ford, Piccolo & Ford, 2017). Since trust is such a significant component for improving performance in a virtual team, it was included in this theoretical framework. This section will provide an overview of trust and how the BAK as it applies to virtual teams.

The first step is to develop an understanding of the meaning of trust. Ford, Piccolo, and Ford (2017) find the definition of Mayer, Davis, and Schoorman useful, which is:

> the willingness of one to be vulnerable to another based on the expectation by a trusting party that the party being trusted will perform a particular action important to the trusting party, regardless of the ability to monitor or control the other party. (1995, pg. 712)

This definition highlights the main elements of trust: expectations that others will meet their obligations and the willingness to expect that without being able to monitor the other party. In virtual teams, where it is much more challenging to monitor others' work, yet there are expectations that others will do their part, it becomes clear that trust is a relevant topic to understand.

Two main things are required to establish this high level of trust. First, to establish trust in the virtual working environment, the team members need to communicate more frequently, respond to each other quickly, and understand the different virtual work preferences of each team member (Paul, Drake & Liang, 2016). Vice versa, limited communication and a lack of knowledge sharing between team members are likely to create conflicts, which lead to a lack of trust and decrease in team performance (Ortiz de Guinea, Webster & Staples, 2012). Second, the high dependency on virtual communication requires the leader and his team to

increase the transparency in their communication to build and sustain trust (Ford, Piccolo & Ford, 2017).

In addition to the trust as an individual behavior between the team members, the organization can also create what is called institution-based trust (McKnight, Cummings & Chervany, 1998). It is formed by setting the required policies and procedures, selecting suitable members for a virtual working environment, equipping them with the proper training, acquiring the best available technologies, and structuring the work by defined tasks, roles, and responsibilities (Ford, Piccolo & Ford, 2017). Both individual and institution-based trust are seen as important factors in the performance of virtual teams (Ford, Piccolo & Ford, 2017)

2.5 Culture

Another challenge in virtual teams is building a common culture within the team. Common culture can be seen as a soft form of management control, especially when it used actively to regulate team behavior (Malmi & Brown, 2008). In many virtual teams, people have a variety of cultural backgrounds, which affect the way they work together (Staples & Zhao, 2006). In addition, there is a culture that is unique to the particular organization they work in (Flammia, Cleary & Slattery, 2016). Both of these cultural factors influence the culture within the team.

Flammia, Cleary, and Slattery (2016) describe the cultural background of a group (also known as the national culture) as their "shared values, beliefs and standards of behavior" (pg. 86). Specifically, it can be defined as *the way that people interact with each other, and it can be represented in their language, nationalities, profession, education, religious, political, social, races, and economics factor* (Gignac, 2004). Whereas, organizational culture is the *employee's values, beliefs, and routine patterns of behavior in the organization* (Flammia, Cleary & Slattery, 2016). As can be seen from these definitions, both the locations people come from and the organization they currently work in affect how they interact as a team.

This working environment can make it more difficult to share social norms and values among team members and create a common culture for the team. The team members shared values, social norms and beliefs affect their thoughts and actions as well as shape the organizational culture (Flamholtz, Das & Tsui, 1985). To overcome this situation in a traditional team, Malmi and Brown (2008) recommend increasing socialization, selection and placement processes, and to provide different types of training for the team members.

Having skilled team members with high cultural diversity, if it is managed well and employed to in right direction, can tremendously benefit the organization by solving complicated problems and providing innovative solutions (Hewlett, Marshall, & Sherbin, 2013). Kankanhalli, Tan, and Wei (2007), however, found that 17 out 29 conflicts in global virtual teams were due to cultural diversity (including national and linguistic). If virtual teams are not equipped to understand and deal with their cultural differences, it can ruin team success. Technology advancements, such as online encyclopedias and social media sites, make it easier than ever before for virtual team members to learn about the cultures of their peers. By doing so, they will be able to develop a common understanding and shared norms, which influence the organizational culture (Flamholtz, Das & Tsui, 1985).

2.6 Conceptual Framework

Based on all of the above concepts, theories, and models, several relevant concepts of performance management of virtual teams were found. In order to connect and integrate these main concepts, a new framework was developed. The first concepts that stand out for virtual teams, which make them a singular concept, are *teams* and *technology*. When these concepts overlap, and there are other factors that limit in-person interaction, then a virtual team exists. This is illustrated in the first phase of the framework development as shown in Figure 2.3.

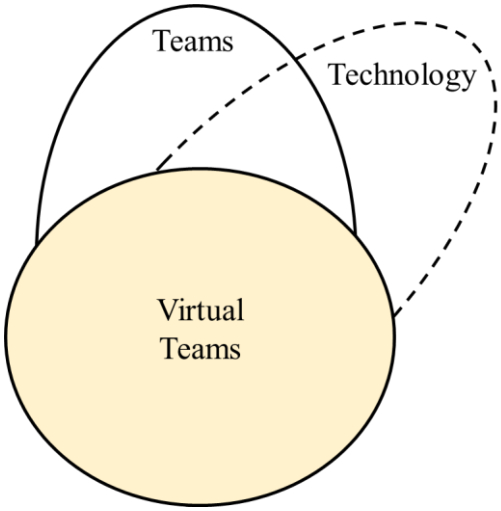

Figure 2.3: Framework Phase 1: Virtual Teams as the Overlap of Teams and Technology

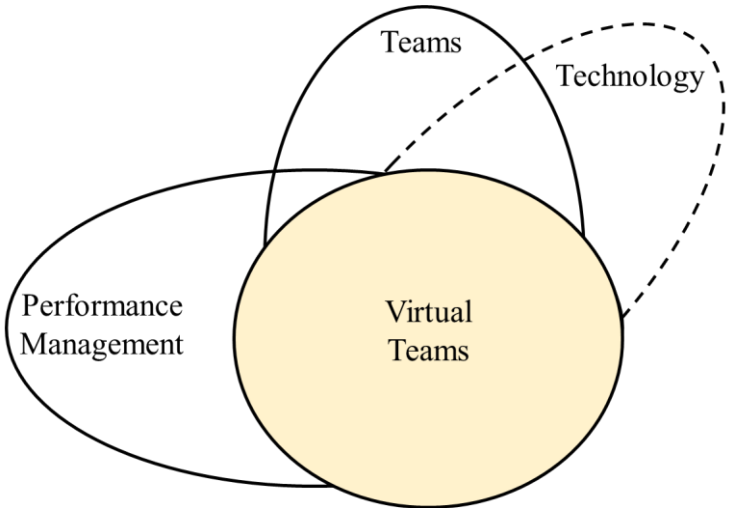

Figure 2.4: Framework Phase 2: The Intersection of Performance Management & Virtual Teams

The next main concept to include in the framework is performance management. The central focus of this study is the intersection of virtual teams and performance management. This overlap is depicted visually in Figure 2.4.

In addition to these concepts that came from the aim of this study, inspiration came from the performance management frameworks of Ferreira and Otley (2009) and Malmi and Brown (2008) to maintain a holistic approach and include concepts beyond traditional "performance management" concepts of goal setting, performance measurement, and rewards. This also took into account the organizational structure (matrix organizations, governance structures, etc.) as well as cultural factors. As a result, this study of the performance management of virtual teams includes all of the elements described so far, namely culture and trust. Figure 2.5 depicts this third phase of the framework that includes the concepts of trust and culture, which will serve as the basis of this study.

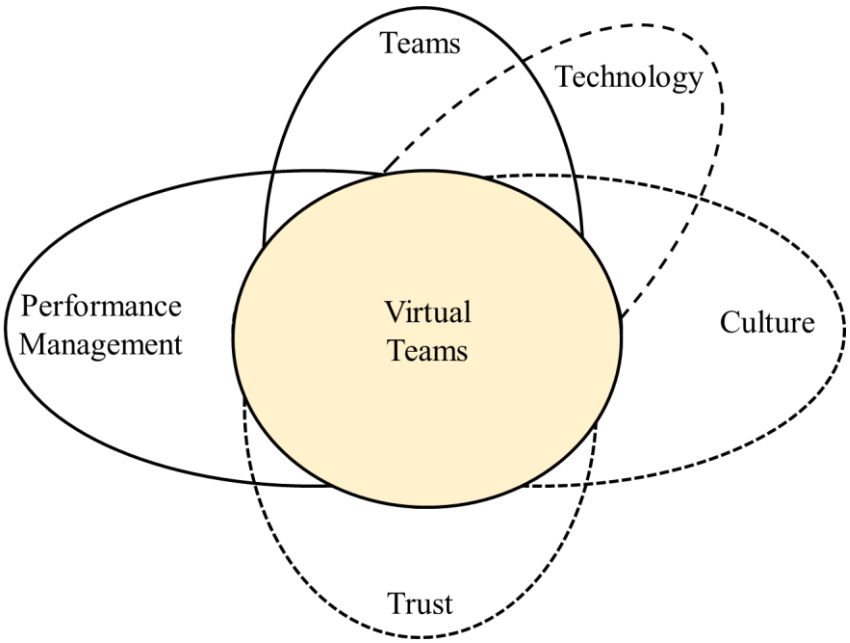

Figure 2.5: Framework Phase 3: The Inclusion of Culture & Trust

While an attempt was made to include all relevant concepts in the development of the framework, the authors do not make any claim that it is conclusive or complete. Rather, the intent was to start the development of a framework that could be built upon until an even more holistic and inclusive framework is developed. That is one reason why the captions state which phase of development the framework is depicting since several more phases are expected to be needed before the framework reaches a mature state.

2.7 Chapter Summary

This theoretical framework chapter explored the central concepts for developing an integrated understanding of performance management in virtual teams. This was done by defining and providing an overview of each key concept: virtual teams and technology, performance management, trust, and culture. The definitions of each of these main concepts are provided in Table 2.4 as a reference for the rest of the paper. Finally, a new theoretical framework was developed by integrating the key concepts into one model, which will be further developed in the analysis in chapter 4.

Table 2.4: Definitions of Key Concepts

Key Concept	**Definition**
Virtual Team	A team where members are located in dispersed geographic locations and interact primarily through electronic media in order to accomplish common goals (Townsend, DeMarie, & Hendrickson, 1998; Gignac, 2004; Hertel, Geister & Konradt, 2005; Ford, Piccolo & Ford, 2017)
Performance Management	The formal and informal processes and systems used to identify and convey key goals and to continually and periodically measure and improve performance in order to realize the strategy of the organization (Ferreira & Otley, 2009).
Trust	"[T]he willingness of one to be vulnerable to another based on the expectation by a trusting party that the party being trusted will perform a particular action important to the trusting party, regardless of the ability to monitor or control the other party" (Mayer, Davis & Schoorman, 1995, pg. 712).
Cultural Background	The way that people are accustomed to interacting with each other, as represented in their language, nationalities, profession, education, religious, political, social, races, and economics factor (Gignac, 2004).
Organizational Culture	The employee's values, beliefs, and routine patterns of behavior in the organization (Flammia, Cleary, Slattery, 2016).

3 Methodology

The purpose of this chapter is to describe and assess the research method used for this study. It starts by explaining the research approach and design and then describes the methods used to collect and analyze the empirical data. Afterward, the validity, reliability, and limitations of the research methods are evaluated. The results and analysis of the data collection are then presented in the subsequent chapters.

3.1 Research Approach

Since the purpose of this research is to develop an integrated understanding of the performance management of virtual teams, the first step was to understand these subjects form a theoretical standpoint. Since many theories and frameworks were found to exist for performance management and virtual teams, the next step was to develop a theoretical framework in order to organize the existing theories. Then, in order to address the research question, a deductive approach was taken in order to understand how existing theories of performance management apply to virtual teams. A deductive approach is one that starts with general theories and then collects specific data that can be analyzed and compared to the original theory (Sekaran & Bougie, 2016). Therefore, data was collected and analyzed based on theoretical concepts and then evaluated to see how it corresponded to the theoretical framework.

The authors of this study also took a pragmatic approach, which is one that is focused on applied research and considers various viewpoints of other research helpful in creating practical solutions to business problems (Sekaran & Bougie, 2016). As a result, several different frameworks and theories are considered in this study since the authors view that they all have valuable and meaningful insights. Furthermore, after the data has been analyzed, interpreted, and applied to the framework of this study, managerial recommendations were developed in order to inform practitioners (e.g., managers) on how to apply what was learned in this study. These recommendations can be found in the Practical Implications – Managerial Recommendations section.

3.2 Research Design

Based on the approaches described above, the research was designed accordingly. First, a literature review was conducted in order to gain a thorough understanding of existing research related to the performance management of virtual teams. From these theories, a framework was developed that integrated the concepts found during the literature review. The results of these two steps can be found in chapter 2, Theoretical Framework.

In order to achieve the overall aim of understanding virtual teams, the authors then determined that virtual team members and managers should be studied in order to collect empirical data. It was determined that the most feasible method for this study was to conduct interviews. Therefore, interview questions were deductively developed based on the performance management, trust, and culture components uncovered during the literature

review. These questions were then utilized to interview participants who have worked on or managed virtual teams in order to collect data. The details of this approach are provided in the Data Collection Method section.

Once the data was collected, it was sampled, organized, and analyzed using the techniques described in the Data Analysis section. From this analysis, the data was then grouped into themes based on commonalities in the data sets. These themes were then placed into the framework from chapter 2 based on the concepts they were most related to. The result is an integrated framework that captures the main findings of this research approach. An overview of this entire process is provided in Figure 3.1 below.

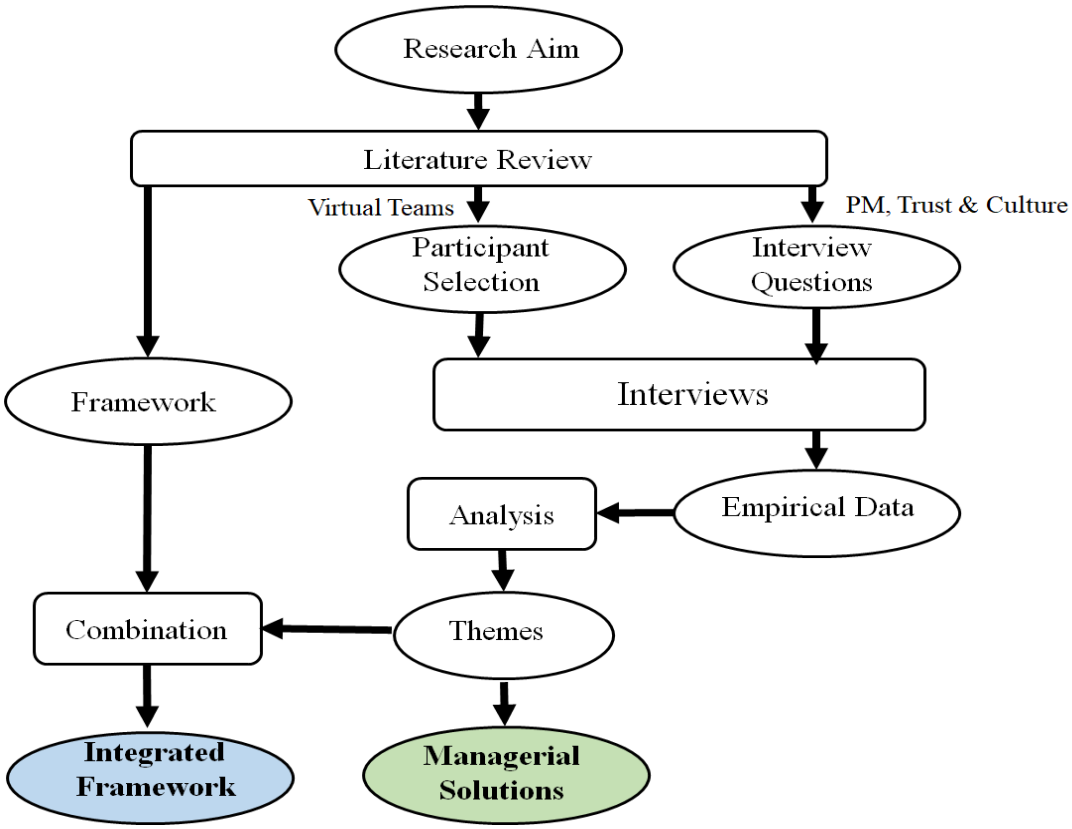

Figure 3.1: Illustration of the Research Design

3.3 Best Available Knowledge Collection

In order to build an understanding of the current research into performance management, virtual teams, trust, and culture; a literature review was performed. This search process was accomplished using the following steps:

1. The literature included in the Master's in Management program was reviewed
2. Literature recommended by the thesis supervisor and academic advisors was studied.
3. The Lund University Library database, LUBsearch, was searched to find recent articles in academic journals using search terms related to the topic of interest, such as: performance management, performance control, virtual team, virtual management

4. Based on the articles that seemed most relevant from the first 3 steps, the site Scopus.com was used to look at recent references and citations. This allowed the researchers to find related articles that may not have had the same keywords as the initial search terms.

Through this process, the authors were able to develop an understanding of the most recent and relevant articles available on the subjects of this paper. The previous chapter, Theoretical Framework, summarizes the results of the theoretical literature review, including the development of a theoretical framework.

3.4 Data Collection Method

As mentioned above, it was determined that empirical data was required in order to address the research gap identified in chapter 1. After considering the different means of data collection available (surveys, interviews, observations, etc.), the authors decided to perform qualitative interviews. This data collection method provides an exploratory means to gather in-depth qualitative information from individuals and learn from their many years of past experience (Mason, 2002). It also allows the researchers the option to adapt questions, clarify the meaning of concepts, ensure answers were understood correctly (Sekeran & Bougie, 2016), and to ask follow-up questions (Mason, 2002)

Surveys were considered, but when the authors attempted to create survey questions, the lack of existing research in this area made it difficult to formulate questions that could reliably apply to a broad audience, yet be simple to answer. Once data had been collected and analyzed, surveys were considered by the researchers, but there was not enough time to develop, send, and analyze a new survey. Additionally, the authors wanted to ensure participants met their criteria for virtual team members or managers, and it would be difficult to effectively limit survey participants according to these criteria. In addition, since the time period of the thesis is short and it would not be feasible to witness a significant amount of performance management in that amount time, the observations were decided against as well.

3.4.1 Participant Selection

Once it was determined that interviews would be used to collect empirical data, participants needed to be located. In order to ensure the correct type of data was gathered for this research, three key criteria for candidate selection were developed. The first criterion was that the candidate needed to have at least one year of experience working in a virtual team so that they would have sufficient experience to be knowledgeable about the topics of interest. Secondly, the virtual team member should be employed by the company where they work, not an external consultant, so that the performance management occurs within one organization and is more clearly observable. Thirdly, in order to ensure the team was indeed virtual, at least one team member had to be located in a geographically separated area and could not meet in-person more than once per month. It was preferable if multiple individuals worked at a distance and if face-to-face meetings were at most once a quarter.

With the guidance of these criteria, a search was conducted to find interview candidates. First, the authors contacted people in their network, some of whom knew people that worked on

virtual teams. In addition, a LinkedIn post was shared with their network and that of a university professor. From the results of this search, a list of potential candidates was developed. Each candidate was contacted and the authors had a short discussion with them to be sure they understood the research purpose and met the candidate criteria. Consent was also received by each qualifying candidate to conduct and record the interviews. This process resulted in a list of twelve participants who best matched the selection criteria.

The twelve participants were distributed in different geographical areas that encompassed several different European countries and Indian cities, as shown in Table A.1 in Appendix A. This table also shows the industries were represented, including agriculture, ICT, chemical, software, security, automotive, and philanthropy; and that they were interviewed either in-person or via video-calling technology. It should also be noted that some of the participants worked together, as shown by the notes for Table A.1, so there was some repetition in their responses.

3.4.2 Interview Questions

For the interviews, the questions in Table 3.1 were developed, which also provides an explanation for each question. The first five questions (A-E) were developed to gain an understanding of the context of each virtual team: duration, roles, locations, size, etc. This background helped us in understanding the unique characteristics of each team. Questions F through J come from the 12-question Performance Management System (PMS) framework developed by Ferreira and Otley (2009). These questions allowed the researchers to gain an understanding of the performance management mechanisms utilized in the virtual teams that are based on well-established theory and designed for this type of exploratory study. The reason only half of 12-question PMS framework (6 through 11) were used is that these applied more clearly to teams, whereas the others applied more to the entire organization, which is outside the scope of this study.

In addition to Ferreira and Otley's questions, the work done by Ford, Piccolo, and Ford (2017) revealed that trust is a key factor when it comes to the performance of a virtual team. As a result, question K was included in order to gain a deeper understanding of how culture and trust play into performance management, especially since Malmi and Brown include culture as a component of their management control system (2008). Furthermore, in order to answer the supporting research question about virtual team challenges and turning them into advantages, question L was added: "What are the challenging aspects of managing a virtual team?"

In order to avoid missing important information, the researchers included the final unstructured question, which was asked in order to gain insights into aspects that came to mind during the interviews, in addition to the structured questions (Sekeran & Bougie, 2016). This technique allowed the researchers to gain further insights based on the outcomes of conversations with the participants.

Table 3.1: Interview Questions and Explanation

Ref.	Question	Explanation for Question(s)
A	How long have you have been working in a virtual team?	To build an understanding of the virtual team environment.
B	Your role(s) in the virtual teams (member, team manager, project manager, etc.)?	
C	Are all of the team members working for the same organization?	
D	What are the geographical locations of your team?	
E	What is the size of the team?	
F	What specific communication methods or tools are used for performance management?	Derived from question 9 of the 12-question PMSs framework (Ferreira & Otley, 2009)
G	How are performance targets for employees determined and communicated to them?	Derived from question 6 of the 12-question PMSs framework (Ferreira & Otley, 2009)
H	What processes are used for evaluating individuals and teams against those performance targets? Are these evaluations objective, subjective, or a mix? Are they based on formal or informal information and controls?	Derived from question 7 of the 12-question PMSs framework (Ferreira & Otley, 2009)
I	What rewards are provided based on meeting (or what penalties are levied for missing) performance targets?	Derived from question 8 of the 12-question PMSs framework (Ferreira & Otley, 2009)
J	How has performance management been altered/adapted for virtual teams? Have the changes been made proactively or reactively?	Derived from question 11 of the 12-question PMSs framework (Ferreira & Otley, 2009)
K	How do you build a good working culture (trust, cooperation, etc.) in your team?	Based on the effective virtual team-building research of Ford, Piccolo & Ford (2017)
L	What are the challenging aspects of managing a virtual team?	In order to capture important aspects of performance management that may not have been uncovered by previous questions
M	Other questions	In case other questions come up during the interview, as part of an unstructured interview technique

3.5 Data Analysis

Since data was collected through qualitative interviews, the analysis is based on the chapter by Sekaran and Bougie (2016) about qualitative data analysis. Based on their advice, the results of the interviews were reduced into analyzable data sets through coding, which (for this study) meant labeling the data based off of the theoretical concepts from chapter 2. In order to generate analyzable text, each interview was recorded and then meticulously transcribed, excluding non-essential elements such as pauses and filler words (e.g., "like" and "you know"). This text was then grouped by the interview question it answered for each participant.

Next, the data from all interviewees was categorized based on the codes developed. Of course, this process was more iterative than linear, since the authors discovered new patterns in the data sets as they reduced them. In order to code the data, results were broken down into specific "thoughts" - phrases or sentences in participant's answers that were closely related (Sekaran & Bougie, 2016). Finally, these "thoughts" were paraphrased and organized based on common themes discovered in the data and by the supporting research question they most closely related to. These tools allowed the authors to see patterns and draw conclusions, which were then used in the analysis since the data is related to theory through the coding method.

3.6 Validity and Reliability

Because the interview questions and the coding system were based on existing theory, the empirical data collected and the resulting analysis gain validity from these established theories. For example, five of the interview questions were derived from the 12-question PMS framework of Ferreira and Otley (2009). Another way the validity was increased was through not only looking for positive evidence, but also for exceptions to the theoretical framework (Sekaran & Bougie, 2016)

Furthermore, candidates were selected who have several years of experience in "real-world" virtual teams, in contrast to students, so that the results would be applicable to others in the workplace. Additionally, these candidates were screened by the researchers in order to ensure that they met the selection criteria. Both of these processes reduce the chance of selection bias effects (Sekaran & Bougie, 2016).

Another factor that impacts the reliability of this research is the extent to which the participants correctly understood their own teams. Their understanding, if incorrect, would negatively impact the reliability of the data collected. Throughout the interviews, clarifying questions were asked to increase the likelihood the researchers correctly understood the participants' responses. Furthermore, each interview was recorded, transcribed, and reread so that the exact words used by the participants were captured. While these steps helped to improve the understanding of the answers, they cannot improve the reliability of the responses if the participants misunderstood their own virtual team situations. This is a risk that comes with this type of qualitative interview (Sekaran & Bougie, 2016).

Since the data was collected from practitioners (in contrast to a lab experiment), there is a relatively high level of generalizability (external validity) to the results (Sekaran & Bougie, 2016). Furthermore, since there were twelve individuals from eight companies in seven industries, generalizability results from the diversity of the participants. However, this is still a relatively small sample set, since time-intensive interviews were used, so the reliability of the data is limited by this factor. In the future, surveys could be used to get responses from more participants in even more companies and industries. This process would help increase the reliability and generalizability of the results.

3.7 Limitations

One drawback of the search process used for this study was that many of the respondents were found through personal connections with the authors' instructors and classmates since it was difficult to locate virtual teams by other means. This resulted in a limited amount of geographical and cultural diversity in the data set, with the majority of the interviewees were located in Sweden. There were no participants from the Americas, Africa, or parts of Asia outside of India - such as Russia or China. The sample set, therefore, was not proportional to the worldwide distribution, as almost half of US companies report having virtual teams (DuFrene & Lehman, 2016). However, many of the participants worked with people from these regions, so there was still some representation of the greater world. In addition, the participants had a variety of professional backgrounds, a range of ages, and a number of women and men - although still more men than women. However, one improvement that could be made in the future is to find participants from a broader range of locations, with better representation of genders and nationalities.

Another limitation is due to the nature of the qualitative interview approach taken in this study. The process of collecting data this way is also believed to be a means of generating data, as the researcher is active in the process of gathering data (Mason, 2002). For example, the way the questions were stated and definitions and examples were provided by the researchers could have influenced the responses of the participants. Thus, there is some amount of bias from the researchers that could be included in the data, even though this was not their intent.

Since the topics of performance management and virtual teams are both quite extensive in terms of possibilities for research, a focused approach to be taken to complete this thesis in the 12-week period available. The limitation of this was that there were many aspects of performance management of virtual teams that could not be addressed. Furthermore, the limited amount of literature available that answered the research questions means that there is still room for more insights from other viewpoints than are captured in this document.

A similar limitation to the ones above is that the answers to the interview questions are limited to the questions asked. A deductive approach was taken for this research, where existing theories act as a basis for the data collection (Sekaran & Bougie, 2016). As a result, there may be additional insights that were not discovered because no questions were asked that probed that topic.

Another shortcoming was the fact that this process was a new experience for both authors. Neither had written a thesis at an academic institution before. Thus, this entire process was a learning experience for us, and one that took a while to understand in practice. However, the support and guidance they received from their supervisor and classmates helped them to mitigate this challenge.

3.8 Chapter Summary

This chapter gave an overview of the methodology of this study, which used a deductive and pragmatic approach in order to collect and analyze empirical data. Through the use of a literature review to collect the best available knowledge, a theoretical framework was created. From that, qualitative interviews were used to collect data from participants who have worked on and managed virtual teams. This data was then analyzed through a process of transcribing, coding, labeling, grouping, and paraphrasing in order to develop main themes, which were then integrated into the theoretical framework. The resulting data from this method and the findings from the analysis are presented in the following chapters.

4 Findings and Discussion

In this chapter, the analysis of the data is summarized and the findings from this process are discussed and related to the literature. The first section, 4.1, presents a summary of the data after it was collected and analyzed in accordance with the methodology described above. Next, in order to relate the results to the questions that motivated this research, the findings are discussed in the context of the two supporting research questions, which comprises sections 4.2 and 4.3. Finally, in section 4.4, these findings are connected to the theoretical framework from chapter 2.

4.1 Summary of Empirical Data

As described in the data analysis section (3.5), common sets of data were identified and grouped through a process of coding the data with labels, organizing it by thoughts, paraphrasing these thoughts, and then grouping by common themes. As a result of this process, six main themes were identified: communication methods, work processes, personal relationships, trust building, engagement and ability, and organization. The findings for each theme will be explored in detail in the following sections, but Table 4.1 gives an overview of the main points of each theme. In addition, the paraphrases of the data are included in Appendix B as a reference.

Table 4.1: Common Themes Identified Based on Data Analysis

Theme	**Description**
Communication Methods	Since a major difference between the teams studied and traditional teams is electronic communication, so the technology used by these teams was a common theme. This included the types of technology utilized: video calls, collaboration software, and performance management systems. It also included the proactive communication approaches used by the managers to address the challenges of virtual teamwork.
Work Processes	In the teams studied, much of the work process is not visible to others on the team. Managers had to come up with approaches to make the process observable through status meetings, communicating decisions and results, asking follow-up questions, gathering feedback, and other methods. Also, being organized and prepared was viewed as an important trait.

Theme	Description
Personal Relationships	Many managers interviewed found it difficult to build personal relationships with people virtually. In addition, cultural differences were also a factor for multinational teams. Kick-off workshops, face-to-face interactions, personality assessments, video calls, and approaches to bridge cultural differences were used by managers to overcome this challenge.
Building Trust	Another challenge for the managers interviewed was building trust. To address this, managers employed several approaches, including utilizing early interactions effectively, having face-to-face time, trusting the team, and fostering open and honest communication, as well as a few other tactics.
Engagement & Ability	Several managers found it more difficult to keep team members engaged in virtual teams and discovered that some people were not keen to work in this environment. They tried to overcome these challenges by giving ownership of tasks to team members, applying peer pressure, assessing performance based on participation, finding those interested in virtual work, and training those on the team. These methods were viewed to improve engagement and, as a result, performance.
Organization	Of the people interviewed, most were not the direct line manager of their team members. While the challenges of this situation are common to program/project managers in a traditional setting, they were increased by the virtual environment. There were also conflicting organizational needs to overcome. In order to address these factors, participants held regular status meetings, asked for and provided feedback, interacted with the line managers, awarded limited financial incentives, and took extensive notes to share with team members digitally.

In order to help answer the overall research question, the analysis of these themes was divided based on the two supporting research questions. While several themes helped answer both supporting questions, the themes were divided based on which questions the researchers thought they best answered. Sections 4.2 and 4.3 contain a discussion of each theme, where the data is assessed in the context of theory.

Finally, these themes are related to the framework originally introduced in section 2.6, Conceptual Framework. By analyzing the results in the context of the theories as outlined in chapter 3, each theme found a home in this integrated framework that then relates the real challenges and pragmatic solutions of managers to the theoretical framework developed from the literature. The result of this analysis is presented in section 4.4.

4.2 Effects of Monitoring Performance Virtually

This section captures the effects of monitoring performance virtually in order to answer the supporting research question:

1. *What are the effects of managers monitoring performance controls virtually? How does this differ from a traditional (non-virtual) team?*

Answering this question is done by discussing the two related themes of communication methods and work processes, which were established through an analysis of the qualitative data.

4.2.1 Communication Methods

One of the fundamental characteristics of a virtual team is their dependency on technology to perform their work (Hertel, Geister & Konradt, 2005). Furthermore, as Powell, Piccoli, and Ives (2004) found in their research, numerous articles point to the importance of selecting technology that enables the most effective communication – as communication is important to effective teamwork. In their responses to the interview questions, all participants mentioned different methods of communications used to communicate between team members. The main types of systems they used were video calling, instant messaging, electronic file sharing, and work tracking systems, in addition to emails and traditional phone calls. Therefore, developing an understanding of these communication methods used for the performance management of virtual teams does appear to be worthwhile.

Video Calls

Video calling systems (called desktop videoconferencing systems (DVCS) by Townsend, DeMarie, and Hendrickson, 1998) were used by every person interviewed. When asked about the primary communication tool for performance management, participant F stated that "Skype is, I think, the most used tool, along with email, of course" and participant I said, "we have been using Skype extensively." Participant A noted that "Zoom [video calling system] was a big step forward for us" in contrast to audio-only phone and conference calls. In addition to Zoom and Skype, three participants mentioned using the video calling feature of Microsoft Teams. One reason for common reliance on video calling systems comes from a statement by participant G, who said that video calls are the closest replacement to face-to-face interactions. Furthermore, participant H stated how video calling "allows a lot more flexibility" in regards to meeting with people in different locations rather than meeting in person, which is corroborated by Hertel, Geister & Konradt's (2005) review of virtual team research. Thus, it appears that video calling systems are indispensable for virtual teams and are the most effective replacement for face-to-face meetings.

Even though most participants said that video calls were important for working together, there were mentions of some downsides to using this communication method. Participant D said that "if I'm working from home, I'd prefer not to have a video call because I really prefer just to be in my pajamas." In this case, the participant would turn off their camera so that others could not see them. Therefore, being able to have video calls during personal time can be a

drawback of working on a virtual team, and the authors recommend that managers be aware of this when contacting their team members.

On the other hand, the possibility of simply turning off the camera to remain out of view is not an option for tradition, in-person teams. Video calling technology gives the benefit of more control of what others can perceive. In addition to this benefit, participant D stated that when one can "give honest feedback in confidentiality, then it … [is] much better." Likewise, Hertel, Geister & Konradt (2005) found that there are several benefits when users are able to hide their identities, such as increased objectivity and positive criticism when giving feedback. In addition, they found that this anonymity prevents people from being overly agreeable. Participant G also observed that the results of brainstorming sessions were improved when team members could submit ideas anonymously. Based on these findings, it is recommended that managers learn how to take advantage of the privacy features of digital technology in order to increase the quality of their performance management.

Most of the time, the use of video calling systems substituted in-person meetings, but face-to-face meetings still appear to be important for some aspects of performance management such as yearly performance reviews and goal setting meetings. Participant B, who has eight years of experience working in virtual teams, noted that "we save more time in face-to-face [meetings] because performance management is a topic everywhere, in every single company, and it's easier if you are face-to-face." Along the same lines, participant E said "I love that I do face-to-face actually …That's where we take care of the goal setting and feedback because it's much, much more efficient and much more personal." Therefore, it appears important for managers to know when video calls may not be able to substitute face-to-face effectively and when in-person performance management meetings should be arranged, if feasible.

Collaborative Software

In addition to having video calls, interviewees relayed the need to use various collaborative software systems (e.g., file sharing and performance tracking software) to manage the performance of the virtual team. Most of them used commercially-available tools, including OneNote[11], Teamspace[12], SharePoint[13], Microsoft Teams, or Jira[14]. Participant F said that they try to "make sure the most important information is shared … so everyone is informed." Similarly, participant D recommended that keeping files and documents in an easily accessible place for all team members was much more effective than sending them in emails. Other participants said they have their own tracking software where both the project manager and every team member can follow the work progress. Whether using off-the-shelf or internally produced collaborative software systems, the most important factor, again, is to utilize the tools that enable the most effective communication possible (Powell, Piccoli & Ives, 2004). Since these systems are continually improving, managers should frequently

[11] https://www.onenote.com/

[12] https://www.teamspace.com/

[13] https://products.office.com/en-us/sharepoint/collaboration

[14] https://www.atlassian.com/software/jira

reevaluate if there are systems available that would improve their team's collaboration – taking into account the amount of time it will take for team members to learn the new system.

Phone Calls

Even though there have been many advances in communication technology, phone calls and conference calls are still a main method of communication in many virtual teams studied. One reason was due to the poor internet in some regions. Participant D said that sometimes they use "the normal conference call because [the team manager] is always working from home and his network isn't strong enough to support [video calls]." Participant A said, similarly:

> If you connect to really remote places on earth, sometimes you get a problem with video [calls]. So [we used] telephone conferencing. … Imagine that people, we were on those teams, they were sitting and trialing stations in Thailand or in China and the internet connection wasn't great.

At the same time, this participant noted that using audio-only calls due to internet issues was a big challenge for their team. No solutions were found for this challenge, but using video

Performance Management Systems

While several effects of using electronic communication methods have been explored, one thing that did not seem to be adapted for most teams was the formal performance management system. Most stated that their companies had virtual means to capture both goals and a performance evaluation of those goals. "We have our own goal setting tools which are there on Success Factors. It's more like a onetime system, where we set it up at the beginning of the year and then we review it [at the end of the year]," noted participant F. Since most of these systems are already online, no participants noted significant differences in the use of these systems for virtual and traditional teams. Participant B has "never worked in a company that had two models of performance management: one for teams located in the same place or virtual teams. We just have one big system because you can assume that you can work with everyone and that's not a problem." The main difference in the use of these performance management systems for these virtual teams, as already discussed, was the goal discussion usually happened through phone or video calls, even though face-to-face was still preferred for these types of interactions.

4.2.2 Work Processes

Another major theme associated with performance management that was affected by working virtually is the work processes. One effect of this working environment identified by participants was that they had limited visibility to team members' activities, had differing measures for performance evaluation criteria, and did not have enough structure to support the team. Another effect was that some of the processes used for performance management had to be adapted, removed, or added. Malmi and Brown (2008) see these processes as a form of administrative control, which managers can change to affect performance. Thus, in this section, both the effects of managing performance virtually as well as the processes altered by managers will be offered.

Limited Visibility of Work Processes

One of the most common themes that occurred during the interviews was the limited visibility to the work process performed by the team members in other locations. One definition of cybernetic performance management is "a process in which a feedback loop is represented by using standards of performance, measuring system performance, comparing that performance to standards, feeding back information about unwanted variances in the systems, and modifying the system's comportment" (Green & Welsh, 1988, pg. 289). However, in virtual teams, measuring performance appears to become more difficult when the manager cannot see the work process, only the results. In this case, without an adequate performance evaluation, it is then more difficult to make changes in order to improve performance in the future.

Participant E gave the following description of this challenge:

> My biggest problem is that I don't see the process, I just see the outcome; I just see the deliveries. So, when we have the meeting or we discuss a certain topic, then I see what that person knows or has been working on. But, you don't really see what they are doing on a daily basis. And if they don't tell you about what they're doing - what are their plans, what are the risks, what support we need or support they require - then it's impossible to catch it or to see that. While, if you were in a setting where you sit together, you would see that much easier and you could much more easily come and talk to that person, ask for questions, and so on.

Participant F noted this effect as well:

> I think people feel a little left out when, you know, they're not involved in discussions, or decisions, or they're not pre-aligned with everyone in the team. It's difficult in a virtual setup because if you all sit nearby it's so much easier to just meet for 10 or 15 minutes, discuss something, just align on it, and finish it off. But since we are working virtually a lot of times, it's more often someone is accountable for something and the rest are just informed. So I think that is something which sometimes leads to trust issues and, you know, people feeling that they're not relevant enough, etc.

One team member (J), who worked in software development, noted further problems due to the hidden work process. This occurred when highly skilled team members had to spend considerable time to gather information in order to solve the complicated problems they are assigned. At the same time, inexperienced team members can solve many issues in the same amount of time, because they are assigned simple problems.

> How do you measure what someone can produce? … The skilled guys that have 20 years of experience, can solve 3 [complex] things per month and the newly educated person solves 10 things or 20 things, but they are like one line [changes], no investigation work. How do you compare these two? They [(the managers)] never came up with a good [system]…
>
> We did some kind of point estimates for the tasks. The problem was that the teams made the point estimates for their [own] tasks. Then they measured how many points

> does this team do per time, unit per week….so the team that had the highest average point values for something they did was the one that was looking the best in the graphs from management. ... They forgot about the fact that one team might estimate the same work to be like five times as many points, but then they get high value in their graph.

Clarifying Expectations

In order to address a similar type of problem, one of the interviewees said they make Service Level Agreements (SLA) to document the expected performance targets clearly. As a result, the performance targets for employees were agreed, documented, and communicated to the members, which made it much easier for the virtual team managers who evaluated their performance. This approach is one that could be worthwhile for many virtual teams to consider.

Regular Meetings and Frequent Communication

When participant H faced this challenge, this was their response:

> [In a traditional team], you probably know what's going on. Maybe you know what's going on more. If you would see each other every day and you talk about this every day. As where we have weekly meetings where we update on everything.

As seen in this quote, regular update meetings were used to try to bring the hidden work process of team members to the surface. Participant F used a similar approach to address this side effect of virtual work:

> For the people whom I work with, I have a weekly connect with all of them for half an hour every week. We have a discussion on what has been the progress, what has happened over the last week, what are the upcoming things, and also in terms of enable blocks and issues, etc. That gives a good picture in terms of any challenges, or, in case of a negative scenario, that I see escalations and stuff like that. Then you kind of can discuss on how to [address] that. That's kind of one way we do it. … And then we also have these weekly governance meetings, as well, where we have the larger team there and everyone gives their updates, and we can talk about areas in a supportive way. For example, if I am running a project and I need support from, say, another person from another team, then these kinds of discussions kind of come out and he's given these tasks. So all of this put together ensures that we are delivering as required.

As a result of these insights, it is clear that observing and measuring work processes is much more challenging in a virtual work environment. However, using regular update meetings to understand what has been done, what are the challenges, and to come up with solutions can be one way to address this side effect of virtual teamwork. These types of governance meetings can be seen as an effective form of administrative control that can be used to direct behavior and manage performance (Malmi & Brown, 2008).

Hertel, Geister, and Konradt's (2005) found that communication that supports team awareness, shares socio-emotional cues, and includes informal interactions can (along with

performance feedback) help prevent misunderstandings and conflicts within virtual teams. One project manager interviewed mentioned that they have increased the frequency of communications with their team to counteract the lack of physical interconnection. They have done this by having regular weekly video calls and sporadic short video or phone calls. Participant B added that they feel that they "put a lot of effort into communication." Another manager, participant G, said that if you did not communicate frequently with your team, you will get results that diverge from expectations. Furthermore, participant H tries to prevent this challenge by having "weekly meetings to go over the main things so everyone is on the same page". As a result, it can be seen that managers that facilitate frequent communication and ensures the correct information is shared and that team members are progressing adequately can improve performance.

Structures & Processes

In addition, structures and processes can be put in place to help address the challenges of virtual work, according to several participants. Participant B said it this way:

> It's not easy to meet someone in the corridor when you're having lunch in the canteen, for example, say "hey, don't forget that I asked you to do X Y Z". No, those kinds of conversations don't exist in virtual teams. So, I try to be as organized as I can, identifying actions for each one, sending emails, or even instant messaging someone to say "Have you checked my email? Do you need any help? … In virtual meetings, it helps when you have some structure around it. So, I'm very organized. And the agenda, for example, was always sent in advance, three days in advance, so people know exactly what they can expect from the meeting.

Participant F built upon this saying that in larger virtual teams "it becomes very important that we have good structure and all these things, otherwise it's going to be chaos". One project manager, participant D, made sure files and meeting notes were created and stored online in a place everyone had access to. In this way, they were able to utilize a collaborative software system to make the meeting outcomes were visible. In summary, it appears important for managers to create the right processes to ensure the correct information is communicated to team members since one cannot assume that they will share that information verbally.

Other Solutions

Furthermore, interviewees had some other approaches to address this issue. Participant I would ask team members to fill out an evaluation form for each other in order to better understand how team members worked together. Another, participant B, would base part of their performance assessment on the level of participation, which they said occurred when team members "were actually talking, being vocal in meetings, but also asking questions to others about their work; so they were really interested to know what other people were doing." Thus, using feedback from other team members and gauging participation by the level of interaction during meetings are further ways to understand team member performance when the work processes are more hidden.

4.3 Performance Management Challenges

This section addresses specific challenges faced by managers of virtual teams in order to answer the second supporting research question:

2. *What are the management performance challenges of working in virtual teams? How have managers resolve and turn these challenges into advantages for team performance?*

Answering this question is achieved by discussing the related themes of relationships, trust, engagement, and organization; which were found through an analysis of the qualitative data.

4.3.1 Personal Relationships

Several participants said that it has been a challenge to build good personal relationships with other virtual team members, compared to working face-to-face. Participant F said that "there are a couple of guys whom I work with… [whom] I have not seen yet…, but I've been working with them for two or three months. It's a challenge." This finding is echoed by Powell, Piccoli, and Ives (2004), who found that virtual teams report weaker relational links between teammates and tend to be more task-focused (and less socially-focused) than tradition teams. They also saw that relationship building – the set of interactive processes intended to help members feel more included – is more difficult in virtual teams. Participant B stated it this way:

> When it comes to virtual teams, it's very difficult to make a first connection - a really good first connection. … From my experience, if you really need to connect with someone, face-to-face is the best way.

Kick-off Workshops

As hinted at by the last quote, one key process found to establish the relationships between team members was to conduct the face-to-face meetings, particularly at the beginning of the project - often referred to as "kick-off" workshops (Hertel, Geister & Konradt, 2005). One of the interviewees, a virtual team manager for four years, repeatedly stressed that they always started projects by gathering team members together for an introductory kick-off meeting. Participant A, a department manager who lead several team managers, experienced the same situation: "[for] some of those teams, I made the demand that for the kickoff, at least for the kickoff, they need to meet face-to-face."

This early face-to-face communication has been found to foster closer interpersonal relationships between virtual team members (Maznevski & Chudoba, 2000; Robey, Khoo & Powers, 2000). One participant stated that they focused on building relationships, rather than starting directly on the project, during their kick-off meeting, which allowed team members to build first impressions before they worked together virtually. This approach is also supported by research, which recommends that these early meetings should focus on relationship building because these early experiences strengthen the socio-emotional development of the team (Robey, Khoo & Powers, 2000) which then fosters later success by improving

performance and enhancing learning (Kaiser, Tullar & McKowen, 2000). These kick-off meetings also prepare teams to face the specific challenges of collaborating virtually (Hertel, Geister & Konradt, 2005).

Occasional Face-to-Face Meetings

In addition, participants found it was valuable to maintain good relationships through occasional face-to-face meetings, if possible. Participant H said:

> We do meet face-to-face every now and then. We have team activities to build [relationships] because it might take several months before - when someone new starts - before you actually get to meet them for real. But when we do meet, we have team activities and dinners and such.

Participant F found it was difficult to maintain good relationships with team members if they could not meet regularly:

> We try and ensure that - [between] me traveling there and them traveling here, all put together - we meet at least three or four times in a year. That's what we try to do, but then that doesn't always happen… I see this as a challenge, just that you kind of lose that connection with other people who we're working with.

Therefore, if schedules and budgets allow, meeting a few times a year has been seen to improve relationships between virtual team members. However, the limit of these factors – time and money – are often the reasons for virtual teams in the first place, so in-person meetings are not feasible for all virtual teams (Fisher & Fisher, 2000).

Alternatives to Face-to-Face

In organizations where it is difficult to conduct face-to-face meetings – due to budget limitations, changes in team membership, limited time or other reasons – alternative methods have been used to foster relationships. Participant A describes one approach they used:

> I was part of kicking off one of the teams, and we did it in pieces… we met with the people from Asia …and then we connected via phone to the people in the US. It wasn't optimal, but through using things like doing DiSC profiles[15] (some of them did Myers-Briggs[16]), having a dialogue about personalities on the team, and spending time so people get to know each other, that helped. But it's never as effective as if you bring them together and have the face-to-face interaction.

Participant B, who was a team leader, also held one-on-one meetings with the team members:

> My strategy, in the beginning when I started and this group was set up, I had individual meetings with each one…We were 16 in total. I decided to spend some

[15] The DiSC profile, published by Wiley, is a non-judgmental tool used for discussion of people's behavioral differences: https://www.discprofile.com/

[16] The Myers-Briggs Type Indicator personality assessment is designed to help people understand and apply the various psychological types described by C. G. Jung: https://www.myersbriggs.org

> time, we're talking about 15 hours, but I decided to take that time just to build this connection with everyone. … People are much are more open in one-to-one meetings rather than in a group of people.

Studies have also found that virtual teams that communicate more socially achieve higher trust as well as better socio-emotional relationships (Powell, Piccoli & Ives, 2004), so approaches like the ones mentioned above are recommended when face-to-face meetings are not possible.

As mentioned before, some participants found video calling the closest replacement for face-to-face communication. Participant B found that:

> When it comes to virtual teams, it's very difficult to make a first connection - a really good first connection… Of course, we have tools like this one we are using at the moment [Zoom], so it really helps to see the face.

They mentioned that compared to phone calls and instant messaging communication, video calls allowed team members to see each other's faces and maintain eye contact, which facilitated non-verbal communication.

Cultural Differences

Many of the teams consisted of people from all over the world, so, as a result, there were some large differences in cultures and norms. While there is a wide body of research on how to address cultural differences in the workplace, working virtually - especially if people have never met face-to-face - complicates communication and work interactions (Townsend, DeMarie & Hendrickson, 1998). Participant J gave an example of these differences:

> In Sweden, … [it is common] to sit down with a person, talk to that person, get to know the person before, like what do they do when they don't work… [While for] my American colleagues ... it's more about work discussion: what you do, when to do it, what problem you should attack next.

Similar conclusions were drawn after one experiment, where Belgian students were more interested in socializing from the beginning, while American students wanted to wait till after the project completed (van Ryssen & Godar, 2000). Powell, Piccoli & Ives (2004) summarized this challenge as: "The degree to which a virtual team engages in early socialization appears to be affected by members' cultural inclinations."

These cultural differences can create a lot of issues if not properly addressed. Participant J continued by mentioning the two major issues that he experienced:

> There are a lot of problems when you have a big cultural difference…. You'd expect different things from different responses from your colleagues…..That's hard... Two sides of this coin, [First] but you have to be aware that there are differences… [Second] you need to figure out together what the differences are.

Participant I, who has worked in various roles within virtual teams, mentioned part of the manager's responsibility to decrease the culture difference among his team:

> I've also worked in a set up between Sweden and China. I think there are cultural differences … and you also add on the time zone difference… I've tried to address the communication part because I think that is (as a manager) that is key.

Therefore, one of the ways to address the challenge of cultural differences is to focus on the communication aspect. Technology advancements, such as online encyclopedias and social media sites, make it easier than ever for virtual team members to learn about the cultures of their peers. With this information, team members can then discuss what they have learned and share about their own communication preferences. By doing so, they will be able to develop a common understanding and shared norms, which creates an organizational culture - defined as "the set of values, beliefs and social norms which tend to be shared by its members and, in turn, influence their thoughts and actions" (Flamholtz, Das & Tsui, 1985, pg. 158). Based on these findings, when team members can learn about each other's individual cultural background, they can positively influence their team's organizational culture. This can increase their productivity and performance if they learn to use the communication technology available for effective intercultural communication (Dumitraşcu-Băldău & Dumitraşcu, 2019).

Another way to overcome this challenge is to select team members who are more suited to working on a multicultural team. Malmi and Brown (2008) mentioned that selecting and recruiting individuals who match the organization's values will have a positive impact on their behavior. Participant D mentioned that "it is important to find people who want to work in a virtual team," and participant F mentioned that "interest is more important than skill." Therefore, managers should look for team members who are interested in working on a multinational virtual team and learning about other people's personalities and cultures.

4.3.2 Building Trust

Another challenge in virtual teams is building a high level of trust between team members, yet it is crucial to their success (Ford, Piccolo & Ford, 2017). Teams that develop a high degree of trust have a more positive outlook, are more task-focused, are more proactive in initiating interactions, and give more constructive feedback (Clark, Clark & Crossley, 2010), all of which are important for team performance. However, as noted earlier, it is much more difficult to observe the subtle nuances and nonverbal cues of team members during virtual interactions (Kasper-Fuehrer & Ashkanasy, 2001) and to assess teammates' trustworthiness without ever having met them (McDonough, Kahn & Barczak, 2001). As a result, virtual teams need to find creative ways to build trust, even through electronic communication. As participant E said:

> I think that the trust thing is also very difficult because [when] you see a person, you look [them] in the eye and you talk to that person. It's just a completely different thing. And you create trust so much more easier. You know you're trustworthy, you care, you are there, you listen. But, on a Skype [call], its impossible [to know] if

> people are actually participating, or they're just listening, or they are doing something else in a meeting, for example.

Since trust building is an extra challenge to virtual teams, several strategies based on empirical data and research will be provided to address this issue, including early interactions, face-to-face meetings, trusting the team, and open and transparent communication.

Early Interactions

In the virtual environment, building trust during the early phases of the project, especially for ones with a short duration, is crucial for the successful completion of virtual team projects (Sarker, Lau & Sahay, 2001). Participant B mentioned that they held "individual meetings at the beginning of the team using video calls", which allowed the team members to build a personal level of trust with their new manager. Research has identified that the amount of integrity team members perceive in each other is important for early trust development and that the level of benevolence observed maintains that trust over time (Jarvenpaa, Knoll & Leidner, 1998). Therefore, it is important for managers to facilitate activities that allow team members to meet each other and gauge one another's commitment early on.

Face-to-Face Time

One strategy to build trust early on, which has already been mentioned for establishing personal connections, is holding face-to-face gatherings with all team members. Suchan and Hayzak (2001) stressed the importance of an early face-to-face meeting, as they observed that this process aided in developing a strong foundation of trust between members. In addition, annual face-to-face interactions between the team's leader and the team members have been identified as a way to maintain trust (Ford, Piccolo & Ford, 2017). Several of the participants have noted the same phenomenon, as participant F said:

> I think, personally, at least meeting the person once in person is really important... So in order to do that now … I'm planning one set session that, at least people who are based in India, we can convene at one location. And then we, for a week, just spend time with each other so that you know the other person better and you know the person you've been working with. And then you kind of carry that back and say, at least, that you know this person now a bit better - at least more what the person looks like. So that should improve a lot of these things.

Trusting the Team

Another way team leader can facilitate trust within their team is to give their team members trust to meet the goals, rather than by micromanaging them, as participant I said:

> The agile way of building teams, this is something I deeply believe in. It has to do with the purpose. It has to do with self-organizing. It has to do with giving the team trust instead of a commanding and controlling the team ... I think those are kind of the foundation.

Virtual teams that display trusting behaviors have more social and predictable communication, substantial feedback, enthusiasm, and cope better with technical uncertainty

(Jarvenpaa & Leidner, 1999). Therefore, by demonstrating trust to the team, managers can facilitate trust building within the team and improve performance.

Open Communication

Open and honest interaction with others has been found to be another key to building trust (Vukotich, 2010). Interviews mentioned approaches to accomplishing this that included keeping in touch often, holding weekly governance meetings, maintaining communication when problems are faced, and having a common place to save and share documents – which are approaches mentioned in previous sections. Participant E explained the process of open communication to build trust as:

> When it comes to trust, it is very difficult. I mean, in-person it is so much easier than just being a voice or a face on the webcam. But what we are doing is that we are collaborating quite intensively. We, me and the team, we talk quite often. I mean every day I talk to at least a few of them. But then we [hold] regular meetings once a week – the entire team meets for a governance call – to really get the discussion and trust for each other up. So I think structures and governance is one piece to this if I had to summarize.

Participant F connected a lack of communication and information sharing to a lower degree of trust: "Make sure the most important information is shared and [that important] conversations occur in weekly team meetings so everyone is informed. Otherwise, people feel left out and have trust issues." Researchers suggest that one way to overcome this is through frequent and predictable communication and by providing regular feedback, which leads to a higher degree of trust and improves team performance (Powell, Piccoli & Ives, 2004). In addition, managers can help to establish trust in the virtual working environment by encouraging team members to communicate frequently, respond to each other quickly, and understand the different virtual work preferences of each team member (Paul, Drake & Liang, 2016).

Other Methods

A few other approaches were mentioned by the participants. One participant found it easier to build and maintain trust when the team size was small, even if this required splitting an existing team. Another said they felt trust was built when team members kept to their deadlines, showing that they wanted to do their part. These methods can also be considered by managers when working to build a higher level of trust in their teams.

4.3.3 Engagement & Ability

Another challenge that came up repeatedly in the interviews was keeping people engaged in virtual work. This result was a bit surprising since this theme was not seen in the literature reviewed. However, there was a significant amount of data collected on this topic, so it is included in this paper.

One definition of engagement is "Personal engagement is the simultaneous employment and expression of a person's 'preferred self' in task behaviors that promote connections to work and to others, personal presence (physical, cognitive, and emotional), and active full role

performances" (Kahn, 1990, pg. 700). Several participants described a lack of presence, participation, and expression of team members during virtual interactions.

Engagement

According to several participants, since the faces of those who are not speaking are often not visible in video calls, it is easy for people to focus on other work, such as urgent emails, instead of staying engaged in the meeting. It appears that the same technology that enables virtual team collaboration, such as high-speed internet and email, can also be a distraction from what the managers want team members to focus on - the meeting. As participant F put it:

> It so happens that people you working with you've not even seen in person yet. So I've faced that, I think a few times, that people are not really fully involved in things … or they are unclear of what their role is, how they're contributing, and that things are going to way it's supposed to be, etc. So these are challenges.

One manager overcame this challenge by assigning team members to facilitate the meetings. In that way, at least that team member was required to pay attention and hopefully would learn to pay better attention when others were leading.

Another factor that participant H perceived as having an effect on engagement was peer-pressure:

> In the long run, I guess, if you don't perform - just like in any team - if you don't perform then no one is going to pick you next time. … If you're not part of the team anymore, then how are you going to hit your [performance] targets?

It can be seen from this perspective that the nature of peer-pressure and expectations on any team can drive people to perform. However, on a virtual team, the lack of performance may not be visible until the deliverables are provided since the process is more obscure than in traditional teams. Therefore, participant B, a team leader, included participation and engagement as part of their assessment of the team members: "Participation, engagement, and quality of the assignments I would say - the quality of the work delivered."

Furthermore, higher engagement is linked to better performance. Participant A said it this way:

> I made an evaluation and I have a pretty clear distinction between those five teams in terms of team quality, and it's directly correlated with delivery. … It was pretty obvious that the higher your scores in those team engagement surveys, the better the outcome was that the team delivered.

This same strong correlation between engagement and performance was found by Christian, Garza, and Slaughter (2011) through their meta-analysis of existing research. They found that "an engaged workforce will likely perform their tasks more efficiently and effectively" (pg. 123), and that employees who feel engaged behave in ways that encourage better teamwork. Therefore, it is likely that the more a manager can do to improve the engagement of their employees in the virtual work, the more likely it is that the team will perform well. In other

words, one key aspect of performance management on a virtual team is increasing the engagement of the team members.

Ability

In addition, some people can find working primarily through virtual means as a challenge in and of itself (Townsend, DeMarie & Hendrickson, 1998). Several participants mentioned that it can be difficult for some people to adapt to the new technology required to collaborate effectively virtually, especially those of an older generation who are not as used to such systems. Participant D phrased it this way:

> I think you need to be able to expect that everybody is happy to work in a virtual team, first of all, because not everybody is and wants to. … We've interviewed a lot of new team members and it's difficult for some of them even to organize the interview on a Skype or a Zoom

One manager, participant F, said that when considering potential team members, they place more emphasis on the candidate's interest and motivation rather than skill since skill is something that can be trained and developed. Townsend, DeMarie, and Hendrickson (1998) state that younger employees will be more accustomed to interacting virtually, so they may be good candidates for virtual teams. In addition, Powell, Piccoli, and Ives (2004) found that someone with previous technology experience adapts virtual norms more quickly. As a result, it is recommended to consider the technological ability and interest of a potential team member when determining if they should be included, in addition to the other desired skills they would bring.

Another way to improve the ability of people to perform at a high level virtually is through training. Participant E mentioned that they recently took two full days of training specifically focused on leading a virtual team, which provided new insights into how to improve teamwork and manage performance more effectively. Participating in training specifically for virtual teamwork is also a general recommendation found by Hertel, Geister, and Konradt (2005). Powell, Piccoli, and Ives (2004) also found that training can improve performance, whereas teams with diverse technological backgrounds experience more conflict. They discovered that training performed early on and in a uniform manner can also build trust, improve teamwork, and result in higher decision quality – all markers of high performance. On a related note, they also found that a formal mentorship program can increase the assimilation of new team members by fostering relational development. Therefore, it is recommended that any team that works virtually considers what types of training or mentoring may be beneficial in their context and implements it appropriately.

4.3.4 Organization

One theme that was common for the people interviewed was that in their role they were not the direct line manager of the team members. In most cases, they were project, program, or process managers responsible for certain objectives, but without the ability to hire their own team. Instead, they would allocate people from within the company who reported to another manager (who was often in the same location as the employee). Yet, at the same time, these team members are supposed to deliver their work to the manager of the virtual team.

Participant F said it in this way: “these 10-12 resources may not be reporting to us from an organization perspective, but operationally they work with us.” Similar to the engagement theme, this topic also was not expected to be a part of the data set, but since it was a common theme in the data set, it will be discussed further here.

Malmi and Brown (2008) see that organizational design can be an important management device, since the organizational structure influences which relationships are developed. Since this structure is something managers within the companies have the authority to change, it can be seen as a factor of performance control. Thus, companies must balance having line managers who can effectively manage the employees, but at the same time have them work virtual with another manager. Further research into how to best organize virtual teams hierarchically, therefore, seems warranted.

This organizational challenge is common to many managers in traditional teams as well, but they have the benefit of being able to build relationships in-person. In the virtual teams run by these non-line managers, they have to figure out how to build these relationships virtually. Some participants would do this by having regular (weekly or bi-weekly) video calls with the whole team and others would call team members just to keep in touch, as described in the Communication Methods section above.

Feedback

Another approach that was common among the participants was giving feedback, both positive and negative, to the line managers of their team members. This was often via emails or phone calls, often unsolicited. Participant A said:

> When I, as a senior leader, would say, hey, this person is really doing well on this team and I'm seeing this, this and this. It is done well by this person and he's really, or she is really, making a difference. So, a personal dialogue with the manager.

Participant E explained their approach this way:

> What I do is that any time one person does a strong contribution, I make sure to write an email to that person's line manager - who is also the person who would set their salaries and do their yearly evaluation. I always make sure to send [this] for individual contributions and team contributions. Then on a regular basis, I send that email saying that [participant F] … delivered this with exceptional result… I appreciate that and make sure that and his line manager - the one who actually sets that person's bonus salary and does that yearly review - is aware of strong performance, but also weak performance.

Participant B had a similar process:

> At the end of the process, for the best ones and the worst [performers], we also had a conversation with their line managers. So, [giving] recognition that they are actually doing a good job.

This approach allowed the virtual team managers to keep the line managers informed and better equipped to motivate their employees. In addition, it was usually the line managers who

determined rewards, such as annual bonuses and pay raises, so this type of feedback allowed them to better utilize this aspect of performance management.

Financial Rewards

In some organizations, there were ways these non-line managers could give financial rewards. One company had a system, which is described by participant A as:

> If we had an outstanding member of a team, we have another reward system, which we call "Value". This is a system where you can suggest someone. You have to give her an assessment on how impactful that was - what you wanted this present to value for. … You can collect points, and at the end of the year, given your points, you get an additional payout.

This system allowed these non-line managers to still affect the financial reward aspect of performance management, even though they were not the ones who gave raises or determined other types of bonuses.

Time Zones

Another challenge faced by these organizations as they try to manage the work is the various time zones team members work from. While this can be an advantage, where projects can be run around the clock, it also presents unique challenges. One manager explained the challenge of finding a time for a video conference with people from the USA, Europe, and India. For some it was 6:00 and others it was 21:00, which meant an interruption to personal time for these people. On top of this, since the managers might not be available while team members are working, tasks and goals need to be clearer than in traditional teams so that there are fewer questions and confusions (Hertel, Geister & Konradt, 2005).

One approach to overcome this challenge was to write down and share meeting notes and decisions so that those who were not present at the meeting could read them later and understand what happened. Participant J explained their process as:

> You have to write a long summary in email or something and then send it over. ...that person can see what happened in the office... What we did when while you were away sleeping … You had to spend a lot of time communicating before you left the office. And I wouldn't say it was always bad … the good part was that you actually had to review with the work you had done earlier in the day.

This approach seems in line with the advice of Hertel, Geister, and Konradt (2005) to improve performance and make the teams more effective.

4.4 Integrated Framework

In order to combine the theoretical framework from chapter 2 with the findings presented above, an integrated framework was created. The themes were evaluated and related to the theoretical concepts in order to determine their placement within the framework. The result of this process is shown in Figure 4.1.

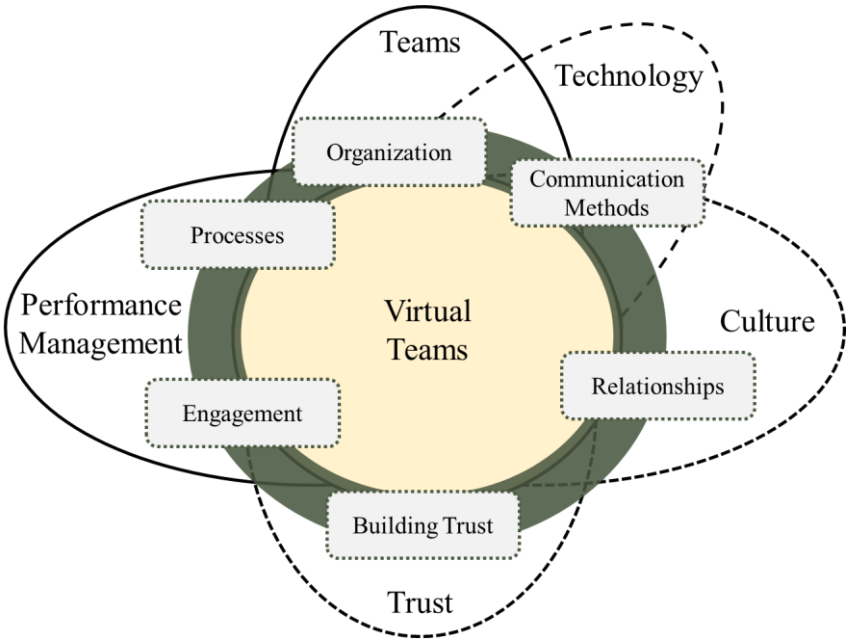

Figure 4.1: Framework Phase 4: Integration of Themes into the Conceptual Framework

Since the theme of communication methods had most to do with teams and technology, but also some to do with the cultural communication style, it was placed in the overlap of these three concepts. Whereas processes had more to do with the direct performance management of these teams, so it was placed in the upper left corner. Relationships are deeply affected by the organizational and personal cultures, so it was placed on the left side where virtual teams and culture converge. Building trust is clearly related to trust, so it sits on the bottom of the circle. Engagement, which is highly correlated with performance, was placed where performance management joins with virtual teams. Finally, since the organizational structure is what defines the team membership, that theme was placed on the top of the circle. The result is an integrated framework that combines the theoretical concepts with the results of empirical research.

It should be noted, however, that while this model appears to make concepts seem well defined and to have clear boundaries, the authors recognize that this is not the case in reality. For example, how effectively a team communicates with influence the trust between team members (Powell, Piccoli, and Ives (2004), and how well a team builds trust will affect the ability to develop personal relationships. Therefore, this framework should be seen as a way to organize these concepts for further research and understanding and a way to relate concepts, but less so as some sort of objective truth. The authors make no claim that this framework is final nor complete, but rather view it as a building block towards a mature understanding of the performance management of virtual teams.

4.5 Chapter Summary

This section shows the answer to the main research question. It does so by first organizing the findings of the study based on the two supporting questions. These findings contain both empirical evidence as well as support from academic literature. By combining the theoretical framework developed in chapter two this these findings, an integrated framework emerges that provides an answer to the main research question of this study:

> *What can be learned by applying existing performance management theories to virtual teams?*

5 Conclusion

This section first evaluates how well the overall aim and objectives of this study were accomplished. Next, the practical solutions discovered are summarized as managerial recommendations. Then, areas of future research are presented. Finally, the entire paper is summarized.

5.1 Research Aims

The aim of this research was to better understand the mechanisms of performance management in virtual teams by integrating the fragmented theories that exist for these topics into one cohesive result. This included addressing the aspects of technology, trust, and culture in relation to how they influence the topic of this study. This paper fulfilled this aim by uncovering at least some of the knowledge gap that previously existed. This was achieved by answering the research questions and by implementing the research objectives. This process resulted in an integrated framework that combines theory with the findings from qualitative research. Furthermore, managerial suggestions were compiled in order to give managers of virtual teams practical means of implementing the lessons learned from this study, which are summarized below.

While there were no significant differences found in what Malmi and Brown (2008) see as the more traditional parts of a performance management system - planning (e.g. goals), "cybernetic controls" (budgets and measurements), and rewards; the authors did find meaningful adaptations to factors that influence the management of performance – communication methods, administrative processes, building relationships, establishing trust, increasing engagement, and overcoming organizational obstacles. While it was seen that the core attributes of performance management are similar for virtual and traditional teams (e.g. goal setting, evaluation, and rewards), electronic communication methods appear to have a great effect on the factors that influence team performance (trust, clear communication, shared understanding, etc.), as illustrated in the integrated model. These findings can help managers recognize where to focus their time and energy in order to more effectively manage the performance of a virtual team.

5.2 Research Objectives

For this study, four objectives were identified in order to achieve the purpose: develop a theoretical framework, collect and analyze empirical data, integrate this data into the framework, and compile a list of managerial solutions. All of these objectives were completed, as discussed in this section. By achieving each of these objectives, the aim and research questions of this study were also fulfilled.

The first objective was to develop a theoretical framework in order to combine the relevant concepts for the topic at hand. This was achieved by a literature review and the development of a model which combined the concepts uncovered in the literature. When creating the framework developed in this study, inspiration came from the work of Ferreira and Otley

(2009) and Malmi and Brown (2008) to maintain a holistic approach and incorporate concepts that are not always associated with performance management. This approach resulted in a unique model developed for this study that includes the concepts of trust and culture. However, the authors do not claim this framework to be complete, as evidenced by the finding of unexpected data. Instead, it is seen as a starting point for developing a more complete theoretical framework for the performance management of virtual teams.

In order to collect empirical data to compare against the theories, qualitative interview questions were built from the framework provided by Ferreira and Otley (2009), which was designed specifically for further research into performance management. It also included questions based on the literature of trust and culture. These questions were then asked to twelve experienced virtual team practitioners in order to see what could be learned from their real-world knowledge. The authors found this deductive approach to work well in collecting insights that helped to answer the research questions. Through the transcription of these interviews, there is now a significant amount of data focused on the performance management of virtual teams that did not exist before, which was then analyzed. This process resulted in six common themes that are influential for the performance management of virtual teams, including some that were not expected. This showed that a new viewpoint had been uncovered as no other literature reviewed had these same themes present.

Then, in order to complete the third objective, these themes were tied into the theoretical model, resulting in an integrated model that combined theory with practice. By building on the framework developed after reviewing relevant literature and applying it virtual teams, this study was able to develop a more integrated understanding of how all of these factors relate to the performance management of virtual teams – which was the original aim. It should be noted, however, that the authors do not claim this to be a rigorous or complete framework. Rather, it is a stepping stone to help others understand how all the relevant factors of performance management of virtual teams fit together. As explained in the further research section below, there are several ways this framework and understanding could be matured, but the authors state that they have completed their aim by helping to integrate these concepts into one holistic framework.

Finally, the last objective of creating suggestions for managers was achieved by finding patterns from the analysis of the data with theory. A number of recommendations were found, which fulfilled this objective as well as helped achieve the aim of this study. These suggestions are captured in the next section.

5.3 Practical Implications – Managerial Recommendations

While many previous studies provide information on what factors resulted in high performance, advice on how managers can help improve these factors was found lacking. One of the objectives of this study was not only to understand the performance factors of virtual teams, but also the *management solutions* used to create a high-performance virtual team. The following points capture the practical solutions managers were found to be used to improve the performance management of virtual teams. This list is essentially a summary of the

findings in the previous chapter, placed here to provide an overview for the virtual team leader.

5.3.1 Communication Technology

The main factor that differentiates virtual teams from traditional teams is that the main means of communication is electronic rather than in-person. Therefore, managers have to come up with ways to both minimize the side effects of this technology as well as to take advantage of the features it offers. The main recommendations for how to do this are to:

- Learn how to best utilize available technology for the needs of a particular team. This means to first understand the capabilities of these systems, then compare it to the team's needs, and finally to figure out which features to use.
- Consider the cost of adopting new technology. This means to estimate how long it will take for the team to adopt the new tool in comparison the benefits received from it. The cost may outweigh the benefits.
- Take advantage of the privacy offered by virtual collaboration tools, such as for generating feedback, brainstorming, and communicating outside of normal office times. This can result in increased objectivity, prevent over-agreeing (Hertel, Geister & Konradt 2005), and improve brainstorming results, as well as make team members feel more at ease.

5.3.2 Processes

Since teams who work virtually do not "bump into" each other in the hallway like traditional teams, the work processes of team members are much less visible. As a result, several recommendations were found on how to make the processes more visible, which are to:

- Proactively communicate, and create processes to do so, to ensure the correct information is communicated to team members.
- Hold regular (weekly, monthly, etc.) status meetings to discuss what has been accomplished, what challenges are present, and what steps should be taken. This ensures all team members are on the same page and aware of what is happening.
- Make agreements that document the expected performance targets, since the process of creating and discussing these makes it more clear what is expected of team members.
- Avoid using systems that measure only one aspect of performance (such as number issues solved) if they do not take into account other related aspects, such as the difficulty of the issue, how others perceive the work, how much time that person spent helping others solve issues, etc. Both quantitative and qualitative measures are needed to gain a complete view of the work being performed.
- Keep files and documents in an easily accessible place for all team members.

- Have face-to-face meetings, if possible, when video calls may not be a sufficient substitute for in-person conversations, such as for yearly performance reviews and goal setting meetings.

5.3.3 Relationships

As it was found that relationships are more difficult to establish virtually, the following recommendations were found to help build relationships in virtual teams.

- Hold a kick-off meeting where all of the team is together in one location, with the focus on getting to know one another and set common goals. This can foster later success by strengthening relationships (Robey, Khoo & Powers, 2000) and preparing teams for future challenges (Hertel, Geister & Konradt, 2005)
- When face-to-face kick-off meetings are not possible due to financial or scheduling reasons, a few steps can be taken. Have the team take a personality assessment, which can then be used to guide video calls where people explain their personal preferences, especially their working and communication styles. In addition, one-on-one calls between the manager and team members are helpful.
- When possible, hold occasional (quarterly, yearly, etc.) face-to-face meetings to help maintain and strengthen personal relationships. Include non-work focused activities such as team-building exercises and sharing meals together.
- For multi-cultural teams, have team members learn about each other's culture through tools like websites and travel guides. Then hold group discussions about what was learned to help develop a common understanding and shared norms.

5.3.4 Trust

Trust was found to be crucial to the successful performance of virtual teams (Ford, Piccolo & Ford, 2017), and several methods were recommended for improving the level of trust:

- Communicate more frequently, which includes providing feedback, as this leads to a higher degree of trust and improves team performance (Powell, Piccoli & Ives, 2004). In addition, managers can help to establish trust by encouraging team members to communicate frequently, respond to each other quickly, and understand the different virtual work preferences of each team member (Paul, Drake & Liang, 2016).
- When team members cannot be present, especially due to differing time zones, write down and share electronically what happened in meetings so that those who were missing can learn what has happened, what decisions were made, and feel more included than they would otherwise.
- Trust team members to deliver and try not to micromanage. Virtual teams that display trusting behaviors have more social and predictable communication, substantial feedback, enthusiasm, and cope better with technical uncertainty (Jarvenpaa & Leidner, 1999).

- Complete tasks on time so that team member can see that the manager does what they say they will.

5.3.5 Engagement

One theme that was repeatedly brought up during this research was the challenge of keeping team members engaged. A strong correlation between engagement and performance has been seen, both by interviewees and by Christian, Garza, and Slaughter (2011). The solutions used by managers to improve engagement were to:

- Give team members ownership of tasks, such as meetings, so that they stay more alert and involved in these situations.
- Look at the technological experience of an individual when considering who to add to a virtual team, since people with a high level adapts to a virtual team quicker (Powell, Piccoli & Ives, 2004).
- Hold training specifically for virtual teamwork (Hertel, Geister & Konradt, 2005)

5.3.6 Organization

Since it was found that most virtual team leaders are not the line managers of the team members, they had limited authority in regards to determining the rewards employees received. However, giving regular feedback, both positive and negative, to the line managers is recommended as it then empowers the line managers to set the rewards (raises, bonuses, etc.) more appropriately. This approach is a less direct, but still meaningful, way for virtual team managers to manage performance in this setting.

5.4 Future Research

One way to address some of the challenges faced in this study would be to conduct a survey of virtual team managers and team members from all over the world, using an online questionnaire. As mentioned in the method section, there did not appear to be enough information available to create a meaningful and reliable survey. However, one could now be built based off of the data and conclusions from this research. Furthermore, collecting survey data electronically would allow for a more diverse range of participants, since it would not be as limited by personal connections as interviews. The results would, therefore, be more generalizable and provide more robust insights than the ones generated by this study. However, making sure participants understand the meaning of key concepts, such as performance management and culture, could be a challenge. In addition, it would be important for all participants to be able to characterize their team so the researchers could evaluate if it has high enough virtuality for that to have a significant impact on the work environment.

Another approach that could yield strong results would be to do a more direct comparison of virtual and traditional teams that have similar work conditions other than their degree of virtuality. For example, finding a company that has both virtual and traditional teams

performing similar functions would allow researchers to answer the research questions with more resolution in regards to differences in the working environment. Another approach would be to study base teams in a master's program, where they work on the same assignments, but one group in-person and another virtually.

One area of research that was found lacking during this research was the hierarchical design of many of the teams studied. Most of the time, the manager of the virtual team was not the direct line manager of the team members. However, this limited the ways these managers could manage performance since they could not set raises, award bonuses, or fire low-performing employees. It seems that research into how to best organize virtual teams hierarchically could yield insights for improving this situation.

In this study, it was assumed that the manager of the team was already decided and had held that role for some time. However, there are probably factors in selecting and training the team leader before they become the manager that could improve their ability to manage performance in a virtual team environment. Thus, future research into the development of leaders for virtual teams would be another area of future research.

Another way this study could be built upon is to use the data collection method to perform empirical and deductive data collection of performance management in other forms of teams since the questions themselves are not based on the "virtual" characteristic of this teams. For instance, "interdisciplinary" or "multicultural" teams, each of which has their own characteristics and challenges, could be studied with a similar approach to the one used here as a way to understand performance management in those settings. This would be a valuable way to build upon the work done in the development of these questions, and similarities and differences from virtual teams would be more apparent.

5.5 Summary

To conclude, this study was conducted to develop an integrated understanding of the performance management of virtual teams. This was accomplished by meeting the research objectives, which started with the development of a theoretical framework, which includes the related concepts of trust and culture. Then, qualitative data was collected from interviews with practicing virtual team members and managers. Then, by analyzing the results through the lens of theory, the findings were integrated into the theoretical framework. Finally, recommendations were compiled to provide guidance to virtual team managers. All of this was done to discover what could be learned by applying existing performance management theories to virtual teams – the overall research question.

Even though some of the results of this study were unexpected, it highlights that the most important factor in managing a team is the people who comprise it. Communicating with, understanding, connecting to, trusting, engaging and organizing these people effectively were the keys found to enable virtual team managers to unlock higher performance. The authors hope that these insights, and the other findings captured in this paper, will provide valuable insights to both researchers and practitioners and can be used as a stepping stone for both future research as well as in the "practice" of management, as Mintzberg (2009) would describe it.

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Appendix A: Description of Participants

This appendix gives an overview of the people who took part in the interviews. Participants' names and employers were not included in order to maintain anonymity. However, their position in the company, number of years working on a virtual team (VT), geographical location, and industry are included in order to provide some background on each participant.

Table A.1: Description of Participants in the Interviews

Participant	Position	Years on VT	Location	Industry	Interview Format
A[1]	Head of Process Management	4	Sweden	Agriculture	Zoom[3]
B[1]	Process Management Lead	9	Switzerland	Agriculture	Zoom[3]
C[1]	Process Management Lead	2	Switzerland	Agriculture	Skype[3]
D[1]	Project Manager	5	Switzerland	Agriculture	Zoom[3]
E[2]	Program Manager	1	Sweden	ICT	Skype[3]
F[2]	Project Manager	2	India	ICT	Skype[3]
G	Project Manager	3	Sweden	Chemicals & Plastics	In-Person
H	Customer Account Manager	2	Ireland	Enterprise Software	Microsoft Teams[3]
I	Team Manager	8	Sweden	Security	In-Person
J	Technical Expert	6	Sweden	Automotive	In-Person
K	Team Member	3	Finland	ICT	Google Hangouts[3]
L	Project Manager	1	India	Philanthropy	Skype[3]

Notes:
[1] These individuals work for the same organization
[2] These individuals work for the same organization
[3] A video calling system

Appendix B : Summary of Data Collection

This appendix contains paraphrases of responses by participants of the interviews. It is included here to illustrate the type of responses that were received. Note that participants that mentioned this topic are referenced in square brackets by their identifier from Table A.1.

Table B.1: Paraphrases of Interview Responses

Interview Question	**Response Paraphrases**
What specific communication methods or tools are used for performance management?	Video calling tools: Skype, Microsoft Teams, Zoom, Google Hangouts [all participants] Phone or conference calls (audio-only): [almost all respondents use one of these tools regularly] Emails for communication of major issues, so that there was a written record and for communication with those in other time zones. File sharing systems (e.g. SharePoint) Digital project management systems: Jira [I] An online tool to set and track yearly goals. This tool is the same one used by traditional and virtual teams [almost all respondents reported using one of these tools]
How are performance targets for employees determined and communicated to them?	Have an in-person meeting at the beginning of the project or soon after people join the team, or online if in-person is not possible. At this meeting, set performance targets but also spend time to build a personal relationship [most participants] • Most companies use their company's online tool to set yearly goals: [F, H, A, D] • Some goals are determined through a one-on-one discussion [E, A, D, I] • Goals are set as a group: [F, G] Team members would estimate how much work something would take [J]

Interview Question	Response Paraphrases
What processes are used for evaluating individuals and teams against those performance targets? Are these evaluations objective, subjective, or a mix? Are they based on formal or informal information and controls?	Formal process: rating people against written performance targets at the middle or end of the year [most participants, especially for ones in larger companies]. ● Some targets are clear, quantitative (objective), while others are softer, more qualitative (subjective) focused on the process [F, E] ○ The challenge is how to see the process when working virtually [E] ○ **Objective**: Completing tasks [K], Deliverables [E], Sales [H] ○ **Subjective**: Client satisfaction [K], Participation, engagement, & quality of the work [B], the process [E], level of skills & teamwork [I], intermediate goals [H] ● Make clear, well-defined objectives [G] ● Evaluate both the "what" and the "how". [A, D, B; I] ● One company compared the productivity of individuals to each other [J] ● Get feedback from each team member for each other [I] Informal controls ● If deliveries were met, that was often satisfactory performance [Most participants] ● Incremental (weekly, bi-weekly, monthly, or ad-hoc) discussions between managers and team members [A, F, E, G] ○ Often, the managers were a program/project manager, so they don't have much formal authority. What they do in these meetings is to talk about issues, remove roadblocks, and try to improve motivation.

Interview Question	Response Paraphrases
What rewards are provided based on meeting (or what penalties are levied for missing) performance targets?	Since most of the people interviewed were program, project, or process managers (not direct/line managers), they had a limited amount of rewards or penalties. Sending feedback (both for good/excellent work and for concerns) to the line manager of the individual, usually through emails or phone calls [E, A, B, C] Writing a thank you [A] Programs where you can send "points" to others that can be redeemed for a gift card to a store ● Value reward system at one company [A, B, D] An end-of-year bonus based on company performance [B, Chiara (C), Anne (D, J, F, I] • However, the metrics used to evaluate company performance was usually outside of the manager's control - done by upper management People stop working with those who don't seem to do their part [H] Personal satisfaction [B] Bad review [F] Sales commission [H, L] - to targets set by upper management
How has performance management been altered/adapted for virtual teams? Have the changes been made proactively or reactively?	Some participants could not think of specific adaptations More open communication [K] Actively trying to improve communication [A], since it is often difficult to do well, especially virtually. Weekly video calls with the whole team ● Governance meetings [E & F] ● Allows for more flexibility [H] Leading a virtual team training [E] Using new technology ● using video calls (Zoom) instead of phone calls improved collaboration [A, B, C] ● "a good infrastructure for collaborating and using these different tools and technologies" [E] ● Store files in a place everyone has access to (not emails) [D]

Interview Question	Response Paraphrases
How do you build a good working culture (trust, cooperation, etc.) in your team?	Meet in-person, if possible. [F, E]. Especially at the beginning of the project [C] • In-person kick-off [A]. Sometimes, this had to be done in pieces because of budget restrictions Understanding personality differences [C] • Take personality tests (DISC) and talk about the results together [A] Do team-building exercises together [Oskar (H)], especially when together face-to-face Try to improve engagement • Higher engagement resulted in higher performance [A, B] • Understanding cultural differences [C, J, I]. This is also a challenge for managers [I] Find people who are happy to work virtually [D, F] • Not everybody wants to work in this type of environment. • Interest is more important than skill [F] Good processes & keep record of discussions • Setting clear agendas, sending meeting notes, etc. [D] • Sending the agenda is critical, being organized, sending the meetings after that, identifying clear actions [B] • Clear structure, especially as the team grows [F] • Need to write a lot down so others could read later [J] Check up with how work is coming [B, G] Build trust • Had individual meetings at the beginning of the team using video calls [B] • Give people time to do the work on their own, so not seen as mean or pushy [B] • Trust people to get the work done instead of commanding/controlling [I] • Make sure the most important information is shared and conversations occur in weekly team meetings so everyone is informed [F]. Otherwise, people feel left out and have trust issues • Weekly meetings [H] to go over main things so everyone is on the same page Help define a clear purpose for the team [E]

Interview Question	Response Paraphrases
What are the challenging aspects of managing a virtual team?	Working at different times [K, I, J] People not engaged/doing other work during meetings [A, C] ● Working on email instead of paying attention ● Then, when it's their turn, they don't know what's going on ● This is worse in a virtual team meeting than for in-person Lack of good internet connection in some parts of the world [A] ● Video calls and some other collaboration tools do not work well in these regions. Making a good [personal] connection with people [B, F, H] ● Much easier in person [B, many other participants] ● Even more difficult if you can't meet [F] ● Might be more difficult depending on culture/generation [H] - probably easier with young Swedes in his opinion Need a clearer on-boarding process [F] Distance from stakeholders ● It is hard to build a relationship from India to Sweden [F] Lack of seeing the process - just see the outcome ● "If they don't tell you about what they're doing, what are their plans, what are the risks, what support we need or support they require, then it's impossible to catch it up or to see that" [E] ○ It would be much easier if you sat close Building trust ● This is difficult because you cannot look the other person in the eye to see if they care or are actually listening [E]