

Czech University of Life Sciences Prague

Faculty of Economics and Management

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Diploma Thesis

CHALLENGES OF A VIRTUAL TEAM

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DIPLOMA THESIS ASSIGNMENT

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Systems Engineering and Informatics
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Thesis title

CHALLENGES OF A VIRTUAL TEAM

Objectives of thesis

The aim of this diploma thesis is to identify the concepts of virtual teams compared to physical teams by distinguishing the differences of managing virtual teams and physical teams.

This thesis will also analyze the significant challenges of managing in the virtual workplace and suggest recommendations on how to overcome those challenges.

Additionally, this thesis is aimed at identifying the effectiveness of managing virtual teams and comparing to that of traditional organizations.

Methodology

This thesis is divided into two parts: review of literature and practical part. The literature review includes the essential information related to the managing in the virtual teams and physical teams. Materials for the review of literature were procured from web resources and sources in libraries. The practical part of the thesis consists of questionnaire research from the members of 3 virtual teams primarily in software development industries (for instance, DHL IT services which are located across America, Europe and Asia) and others. The collected data will be analyzed by using different methods including statistical analysis, data management roadmap, data visualization, etc.

The proposed extent of the thesis

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Keywords

Virtual team, Virtual workplace, Managing virtual team, Challenges, Team Effectiveness

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ARMSTRONG, M. *Armstrong's essential human resource management practice : a guide to people management*. London: Kogan Page, 2010. ISBN 978-0-7494-5989-5.

MULLINS, L J. *Management and organisational behaviour*. Harlow: Financial Time Prentice Hall, 2010. ISBN 9780273728610.

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Declaration

I declare that I have worked on my diploma thesis titled "Challenges of a virtual team" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any third person.

In Prague on 27th November 2020

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CHALLENGES OF A VIRTUAL TEAM

VÝZVY PRO VIRTUÁLNÍ TÝM

CHALLENGES OF A VIRTUAL TEAM

Abstract

The purpose of this diploma thesis is to identify the concept of a virtual team, and it is specifically concerned with the significant challenges of a virtual team as well as aimed to suggest the recommendations on how to overcome those challenges by using the findings from the own research. In order to cover the background knowledge about the topic, this thesis reviews the importance of the teams for the organizations, the popularity of the virtual team in these days, the main aspects of a virtual team including its characteristics, scope, types, and challenges, and most importantly, advantages and disadvantages of managing the virtual teams comparing to the traditional teams in the theoretical part of this diploma thesis. In the practical part, own research questionnaire was conducted in order to investigate the challenges of a virtual team in real practice. The questionnaire was distributed online and mostly delivered to the employees of IT industries across Southeast Asia and Czechia. The collected data were analyzed by using data visualization tool, Power BI, and the analysis results provide support for the reviewed challenges of a virtual team to a certain degree. According to the analysis results, recommendations to overcome those challenges were proposed. Finally, in the conclusion, the author recommends further investigation on the potential effects of emotional responses by virtual workers.

Keywords: virtual team, virtual workplace, managing virtual team, challenges, teamwork, team effectiveness

VÝZVY PRO VIRTUÁLNÍ TÝM

Abstrakt

Účelem této diplomové práce je identifikovat koncept virtuálního týmu, nalezení významných výzev pro virtuální tým a navrhnout doporučení, jak tyto výzvy překonat pomocí poznatků z vlastního výzkumu. Za účelem pokrytí základních znalostí o tématu se tato práce zabývá důležitostí týmů pro organizace, popularitou virtuálních týmů v dnešní době, hlavními aspekty virtuálního týmu včetně jeho charakteristik, rozsahu, typů a výzev, a hlavně výhodami a nevýhodami řízení virtuálních týmů ve srovnání s tradičními týmy v teoretické části této diplomové práce. V praktické části byl proveden vlastní výzkumný dotazník za účelem prozkoumání výzev virtuálního týmu v reálné praxi. Dotazník byl distribuován online a doručen zejména zaměstnancům IT průmyslu v jihovýchodní Asii a v Česku. Shromážděná data byla analyzována pomocí nástroje pro vizualizaci dat, Power BI, a výsledky analýzy do určité míry poskytují podporu pro analyzované výzvy virtuálního týmu. Na základě výsledků analýzy byla navržena doporučení k překonání těchto výzev. V závěru práce autor doporučuje další zkoumání potenciálních účinků emocionálních reakcí virtuálních pracovníků.

Klíčová slova: virtuální tým, virtuální pracoviště, řízení virtuálního týmu, výzvy, týmová práce, efektivita týmu

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1. Introduction

Over the past decade, the global moves towards remote and the concept of virtual teams is becoming more and more popular. Due to the advances in technology, working from a distance is easier and more seamless than ever in these modern days. As a result of a more mobile and hyper-connected workforce, the number of remote workers is on the increase. The availability of the internet and increased utilization of information communication technology have increased the use of virtual teams in the organizations.

The popularity of virtual teams keeps growing, together with the rapid development of electronic communication media, in the world of business. From the employer point of view, having the virtual teams in the organization or the company can be a great financial move. The article on the ZipRecruiter blog acknowledge that hiring an employee to work from a virtual office can be huge benefit to [the] company's bottom line. In fact, they benefit from decreased costs to increased productivity.

As the concept of virtual team becomes more and more popular, it is important on the other hand to have the good leadership skills to make it effective. The leadership is the key factor to the success of virtual teams. In addition, to operate the virtual teams successfully in the organization, communication plays an important part of leadership, without communication, there would be no teams. Nowadays, with the help of electronic communication media, the coworkers in the virtual teams can connect and collaborate absolutely through virtual channels such as video conferencing and messaging platforms.

It is essential that the leader of a virtual team have the ability to manage many initiatives and virtual employees while providing a clear vision for the team. Many studies have revealed that effective leaders need to develop high levels of trust, which in turn results in high performance in teams (Jarvenpaa et al., 1998; Kayworth and Leidner, 2001/2002). In the virtual team projects, e-leadership is developed, and it is a leadership implemented by information communication technologies. Zhang, (2005) proposed a contingency approach to e-leadership of virtual team. Contingency approach to leadership effectiveness is especially important in the virtual team environment. It is much more complicated than the traditional face-to-face team environment.

Unfortunately, there are many companies having virtual teams that are ineffective and failing the company. The most common challenges for the leaders of the virtual teams are not only supporting the technological resources to the virtual environment, but also

coaching supervisors to effectively manage and motivate across the dispersed groups of people. Darleen and Lepsinger (2010) studied that over forty-eight virtual teams across industries and found that 27 percent of the virtual teams surveyed were not fully performing.

Increasing use of virtual team set different types of challenges despite the fact that there are many advantages for the organization. Not working in the same physical location can raise communication challenges. Lacking trust in leaders and between team members is also one of the common problems. In addition, recruiting the right team members plays a critical role in the success of the virtual team because one weak team member can adversely affect the virtual team concept. It takes a bit more effort to make remote teams operate successfully. Building relationship and managing teams is enough of a challenge when everyone is in the same location. Collaboration when working on a team that's virtual requires even more commitment.

With a careful study of the impact and effectiveness of managing in the virtual teams compared to the traditional teams, the above-mentioned facts are going to take into consideration in this diploma thesis. More precisely, the topic “Challenges of a virtual team” was designated to investigate the virtual teams with objective to explore the challenges in the virtual workplace and problems occurred in managing of the virtual team as well as how to enhance the best practice for enabling high-performing virtual teams.

2. Objectives and Methodology

2.1. Objectives

The aim of this diploma thesis in general is to identify the concepts of virtual teams compared to physical teams, also known as traditional teams by distinguishing the differences of managing virtual teams and traditional teams. As a main objective, this thesis will analyze the significant challenges of a virtual team as well as the problems that commonly occurred in the virtual team management. Recommendations on how to overcome those challenges will also be studied. Additionally, this thesis is aimed at identifying the effectiveness of managing virtual teams and comparing to that of traditional organizations.

Aside from the main objective, the following specific objectives will be researched during this study.

- To get a deeper understanding of why virtual teams has become popular
- To define what a virtual team and its characteristics
- To study the scope of virtual team and its value
- To review the different types of virtual team
- To detect the common challenges of the virtual team
- To make a careful study of the advantages and disadvantages of managing in the virtual team compare to the traditional teams
- To establish a list of questions for own research
- To examine the survey results and analyze them
- To draw own conclusions from the research

2.2. Methodology

With the purpose of achieving those previously mentioned objectives, this thesis is divided into two parts: review of literature part and practical part.

The literature review part contains the main concepts such as the reasons of why virtual teams have become popular, the definition of a virtual team, its types, scope and characteristics, virtual team management, advantages and disadvantages of virtual team management, challenges of a virtual team and solutions for enhancing those challenges. This part is composed of suitable researches from articles, journals, and web resources.

The practical part of the thesis is formed by questionnaire in which 20 research questions were included and distributed online in order to get participants easily fill out. This study is mainly focused on software development teams which are located across Southeast Asia such as Myanmar, Japan, Singapore as well as a big IT service team in Europe, DHL IT service. To get deeper understanding of the collected data, they will be analyzed and explained by using data visualization tool named Power BI.

3. Literature Overview

3.1. Reasons of Virtual Team becoming popular

The practice of working remotely for a period of time outside the office has been grown steadily in popularity even before the coronavirus pandemic. Since the last two decades, with the benefits of modern technology in digital channel, virtual teams are becoming increasingly more common and popular in accord with the great value they provide to the organization. Many organizations are profiting from incorporating virtual teams in a number of ways such as increase in productivity, less office space and savings on equipment, employee retention, completing work nonstop which is great for business and office parties are not generally commitment.

FlexJobs' yearly study found that 65 percent of respondents are more productive in their home office than at their traditional office. Because virtual employees can save their time without having to physically travel to their office. They can also stay healthier by working out in extra time and eating healthier meals form home. They can also work during their most productive hours by taking advantage of flexible work hours. As a result, these causes can help increase their productivity.

Remote working benefits both the employees and the employers. Employees love flexible and remote work options as they believe it helps them increase their morale. Similarly, from the employer's side of view, allowing employees to work remotely also leads to lower operating costs and better business outcomes. As virtual employees are from different location and time zones across the world, they can also help the organization operates nonstop without overworking anyone.

FlexJobs and Global Workplace Analytics discovered that there has been a large uptick in the number of people working remotely in the US. Over the last five years, the number of people working remotely has grown by 44 percent and over the past ten years, it grew 91 percent (Hering, 2020). Wong (2020) also stated that 7 million people or 3.4 percent of the population were already working remotely in the US even before the arrival of COVID-19.

Working from a flexible workspace is experiencing a major boost, particularly in the face of the coronavirus (COVID-19). Many organizations are encouraging staff to work from home with the adaptation of social distancing strategies and travel restrictions and they prepare for a surge in remote working. According to the polls, a large proportion of

employees still would like to work at home even after the restrictions are lifted (Graves et al., 2020).

Therefore, virtual teams are still growing in popularity with the benefits of cost-efficiency, flexible support, round the clock services, and having more productive employees.

3.2. Team Vs Virtual Team

Teams are an important unit of organizations and a good teamwork is a fundamental part of achieving the best performance of work. A good teamwork leads the huge success. Although individual has the outstanding quality to perform the work, if there is no collaboration with colleagues, the organization will achieve less because the consolidate impact of the group is much stronger than the total of individual effort. Therefore, effectively dealing with a group or a team, which is either virtual or traditional, is essential to get the significance of great collaboration in all organization. That is what TEAM stands for (Together Everyone Achieves More).

There are many definitions of the team. Be that as it may, the basic knowledge of the team is a group of people with different skills working together on a common project or service to achieve the same goal. In general, those groups of people work in the same location and have face-to-face interaction. This is called a traditional team in which experts work together stably over time and share a common understanding of their team's goals and procedures. However, today organizations have been adopted the virtual teams with the aid of advanced technology, in order to respond to changes in the environment and stay competitive (Bergiel B. J, Bergiel E. B., and Balsmeier, 2008).

Virtual teams are also a collection of people who are in the separate location, various time zones and have different cultures and languages to accomplish a certain goal. A ResearchGate study found that "Virtual teams are teams that rarely meet in person but interact over an extended period of time on complex tasks with the aid of technology-mediated communication" (Pearce, Yoo & Alavi, 2004). Lopez (2020) consider that virtual teams are teams in which people are working together without being physically together and communicate using digital tools for a common goal.

According to Townsend, DeMarie, and Hendrickson (1998), virtual teams are defined as "groups of geographically and organizationally dispersed co-workers that are

assembled using a combination of telecommunications and information technologies to accomplish an organizational task”. In addition, Krawczyk-Brylka (2017) consider that virtual teams are productive, flexible and complex systems influenced by the technology, task and setting context. They are mobile, multilocational and usually focused on the short period of time. Another definition suggests that virtual team as “a group of individuals collaborating in the execution of a specific project while geographically and often temporally distributed, possibly anywhere within (and beyond) their parent organization” (Leenders et al., 2003). Among the different definitions of the virtual team, the most generally acknowledged one was provided by Powell et al. (2004) who define virtual team as “a groups of geographically, organizationally and/or time dispersed workers brought together by information technologies to accomplish one or more organization tasks”.

To summarize all introduced definitions by several authors, virtual team can be represented as a group of workers across space, time and organizational boundaries in coordination with individual effort in productive work by interacting through electronic communication in order to achieve common goals. Hence, every virtual team has a certain degree of dependency on technology for the communication between coworkers, technology is the essential component of a virtual team despite the fact that the use of technology for communication alone does not make a team virtual (Berry, 2011).

3.3. What characteristics distinguish virtual teams from traditional teams

The characteristics of a high-performing virtual team include additionally requirements (Zofi, 2012) such as global mindset of team members, access and utilization of technology to the advantage of the team, supporting the knowledge flow with different media, virtual conflict management, and dealing with time and geographical distance challenges. The referenced principles recommend that technology and distance are the most highlights of virtual teams distinguishing them from the traditional teams (Krawczyk-Brylka, B. 2017). However, only utilizing the electronic media to stay connected with colleagues in the organization does not make those people a member of virtual team because traditional team also uses electronic and technology supported media to help them work in more productive way. Despite the fact that, the reason for consideration technology as a main characteristic of the virtual team is due to the fact that the members of virtual team

depend entirely on electronic communication to perform the task in order to achieve the common goal and to facilitate collaboration among them.

Given the nature of virtual teams, geographical dispersion is one of the virtual team's common characteristics (Törmänen, M. 2017). Comparing to the traditional team members, the members of the virtual team are located separately and work independently across the world. Also, the cultural boundaries and different time zone add to its complex nature (Juneja, 2015). Except the geographical dispersion, the virtual team is characterized by cultural dispersion, temporal dispersion and organization dispersion (Zigurs, 2003). Virtual teams are generally cross-functional and support flatter organizational structure compare to the traditional teams.

In sum, interaction among individuals of the virtual team, performing the tasks and achieving a common goal are taking place through electronic communication, their nature of dispersion and several organizational structure diversities are the main characteristics of the virtual teams distinguishing from the traditional teams. There could be several more dispersion and diversity, however, these are the most common ones.

3.4. Scope of Virtual Teams and value of remote working During COVID-19

Nowadays, virtual team has become broadly well-known and utilized extensively. Remote work is growing across many sectors. Not only IT industry but almost all industry sectors ranging from construction, manufacturing, engineering, finance, healthcare, automotive, insurance, research and educational services to retail and wholesale trade are profiting by the virtual teams (Juneja, 2015) as it offers a great adjustability as well as quick distribution of results. Powell, Piccoli, and Ives (2004) consider that the remarkable level of flexibility and responsiveness offered through digital media have really spurred the growth of remote work to other industries. In fact, accounting, project management, customer service, marketing, graphic design, human resources, and writing sectors were included in the most applied to remote work industries according to Remote Job Report from the virtual vocations' database (Back, 2020).

Even before the coronavirus pandemic, the percentage of employees working remotely was on the rise. Now, the coronavirus (COVID-19) has boosted the trend in virtual work and numerous organizations in all industries have expanded their availability for virtual

work (Graves et al., 2020) as they have understood the importance of virtual teams. The virtual teams are playing an essential role of every organization especially during the pandemic. They are the present and the future. Every business is going to hire either a virtual worker or an entire virtual team to maintain the business and most of them are already worked with the virtual teams and have been benefitted.

On the other hand, a number of businesses in most industries are severely impacting by the coronavirus and the impact is still continuing (Kumar & Haydon, 2020) such as the airline industries, automotive, oil and gas, entertainment and banking. Moreover, education has been taken a hit. In fact, students from the worldwide have been affected by schools' closures due to the pandemic.

However, education system has changed dramatically, they are able to handle the situation by using remote learning on the digital platforms effectively. Having utilized the digital platform to continue working, there is no doubt that E-Commerce and IT industries have a minimal impact during the crisis with the effective support of virtual working.

3.5. Types of virtual team

Workers can be from the same or different organizations depending upon the objectives and the idea of the assignment. Kimble, Barlow and Li (2005) proposed different possible situations in attempt to classify 8 types of team. Four belong to the situation where team members work for the same organization while the other four belong to the situation where team members are from different organizations. Fisher & Fisher (2001) consider that virtual team can be classified by three variables or three dimensions: time, space and culture although other authors refer to third variable as organization.

Time is represented that virtual team members may be given to perform the task at different hours on different shifts or on different days. They may work simultaneously but be in different time zones. Space is represented that virtual team workers may work close to one another or at a distance. They may share the same office or work in the different places in the same building. They may work in different buildings, in different towns or even in different nations. Culture or organization is represented that who virtual members work for and how they work together on the side of various cultures including language, nationality, race, religion, social, and economic aspects.

Obviously, the team members from the same time, same space and same organization cannot be considered virtual workers. According to Fisher and Fisher (2001), same time, same space and different organization teams are not virtual teams. Therefore, as it can be seen in Figure 1, virtual teams can be classified into six types based on the combinations of same or different space, time and organization measurements.

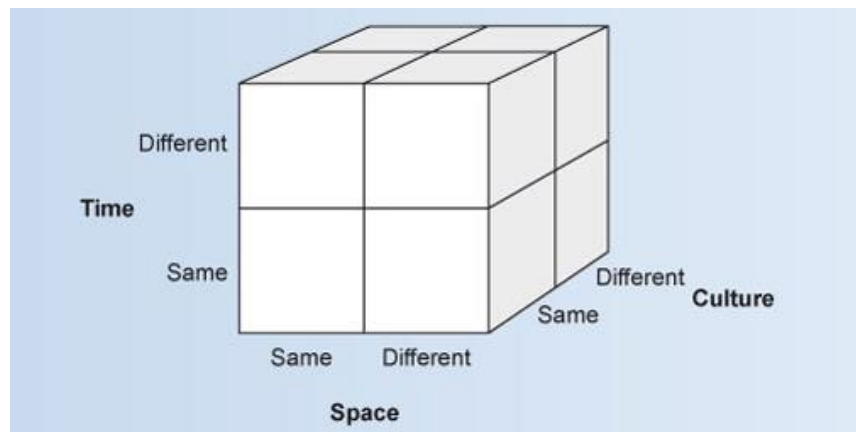


Figure 1. A classification of virtual team

(Source: Kimble et al., 2005)

The following categories are illustrating different types of virtual teams.

- Teams can be virtual in which people work for the different organizations at the different place, but in the same time zone.
- Teams can be virtual in which people work for the same organizations at the different place, but in the same time zone.
- Teams can be virtual in which people work for the different organizations at the same place in a different time zone.
- Teams can be virtual in which people work for the same organizations at the different place in the different time zone.
- Teams can be virtual in which people work for the different organizations at the different place in the different time zone.
- Teams can be virtual in which people work for the same organizations at the same place in the different time zone.

3.6. Challenges in the virtual teamwork

Virtual work provides noticeable advantages for both employers and employees such as flexibility, cost-effective, access to expert around the world, and less office space. However, there are various challenges from many aspects in virtual working such as slow response time, distracting environment, differences in communication style, and lack of office culture. In fact, it may create massive stress for employees (Graves et al., 2020) regarding to the challenges associated with technologies, lack of social cues in communication, absence of trust between coworkers, respect and attention to the cultural differences, e-leadership, and intrusion of work into personal life. These challenges are the most commonly occurred in the virtual workplace. Therefore, this diploma thesis is going to discuss centered on those above-mentioned common challenges.

3.6.1. Communication Challenges

Communication can be identified as a team process as well as team performance. Since the communication process in the virtual team is not face-to-face, the crucial factor of the success of a virtual team is to have a good communication between coworkers. As mentioned above, due to the geographical dispersion nature of the virtual teams and remote work, communication is conducted electronically with the help of technologies. In general, virtual communication takes place over many different electronic channels such as phone calls, email, project management tools, instant messaging apps, video conferencing software, and social media.

Apart from the convenience and accessibility of the electronic communication, many researchers agreed that there are downsides of the electronic communication in terms of information in abundance and social cues (Zhang, 2016). Virtual organizations and employees may overlook the fact that virtual communication comes with many challenges.

In the virtual environment, team interaction can be confusing with the lack of facial expression and tone of voice. It is hard to build mutual relationship and to fully capture the information as well. The main reason is that body languages cannot be interpreted in an instant message or an email. Sometimes it may lead to miscommunication and personal conflict among the virtual team members.

Moreover, Graves and Karabayeva (2020) stated that remote teams feel lonely and isolated due to the shortage of informal conversations with colleagues. As a consequence of physical isolation, virtual workers feel disconnected from the organizational activities and employees are less likely to receive social support such as real-time feedback and relevant information from their supervisors and coworkers (Wiesenfeld et al., 2001). Eventually, it may result in increasing the stress on the job.

Therefore, it is imperative that having a strong social connection among virtual team members in order to bond with each other and feel connected to the organizational community (Graves et al., 2020) because it has a big influence on productivity and performance. And most importantly, clear communication can prevent from costly misunderstanding and getting the wrong impressions among the virtual workers.

3.6.2. Technology Challenges

Similarly, the remote work is built on information communication technology and thus, every single virtual worker needs to know the drill of performing the remote task. Not knowing the procedures of utilized technology can result in spending the employee's work hours looking for a how-to instead of doing the task. As the technology is changing rapidly, virtual workers might have a difficult time researching all the options and determining the best tool for a period of time. Graves and Karabayeva (2020) consider that although virtual organizations provide the training and technical support, some virtual team members may have been kept by a particular time to access it.

In addition, virtual members are generally from different locations, a poor local area network is one of the technological issues in virtual environment. Due to the poor or weak internet connection, virtual workers might need to second-guess at some point, and it may lead to the wrong idea or direction to perform the task. Furthermore, they may also lack the ability to ask the right questions and have less chance to include the social bonding with their coworkers to the virtual workplace.

Since the technology is the core of making the virtual teams possible, virtual workers and organizations need to be aware of the technology issues. Therefore, virtual organizations and respective supervisors of the virtual teams require to support sufficient technology training, choose the best tool for performing the task plus communication, provide an

adequate infrastructure and access to full suites of services, and most importantly, have a plan for keeping up to date technology for all employees.

3.6.3. Obscure Work-Life Balance

With flex-work hours schedule and advantages of technology, people love working remotely. Not only hiring virtual workers has been a great interest of every organizations, also remote job is becoming a substantial demand of the employees. And yet, it likewise requires the employees to adjust work and life balance although the separation is not totally rigid. Because, in any event, it keeps the impacts from one side having effects on the opposite side to a certain degree (Zhang, 2016).

Virtual employees enjoy not requiring traveling to their office and being more active and productive from working at their convenience place. However, some of them seem stressed and exhausted because they cannot manage the right balance between their work and personal life. This work-life conflict becomes a matter of job stress (Raghuram et al, 2004) because virtual work excludes the boundary of work and personal life.

While the traditional office offers a physical boundary that separates the work hours and personal or family time, there is no such limit when virtual work happens at home (Karabayeva et al., 2020). As a consequence of ambiguous boundaries, it can lead to job stress and work overload because the physical boundary and standardized work hours are not defined as clear as they are for the traditional office (Wiesenfeld et al., 2004). Similarly, virtual work makes a blurry boundary between work and home spaces because the natural time and space separation between work and life cannot be noticed visibly when they work in a home office apart from others (Solomon & Shamir ,1985; Zhang, 2016).

As a result, virtual workers may practice the intrusion of work into personal life. Some employees may focus on personal time even during the work hours which can lead to increasing workloads and bad performance at some point in the future. Some may constantly work on the work all the time even though it can help the organization meet their goal, the employee's mental can possibly be affected by lack of personal time and eventually it generates the stress of job. Moreover, the intrusion of work into personal life does not let the employees escape from job demands and does not allow them to be recovered from the job stress and relaxed. In fact, they may experience of negative emotional such as exhausted,

anger, sadness, fatigue and even the absence of enough sleep (Barber et al., 2019; Graves et al., 2020).

Rehabilitation of being stressed out from work is the most important factor because it assists to engage the employees with their work in a more productive way on the next day (Sonntag, 2018). For this reason, separating the obvious boundary between work and personal life is critical for the virtual workers regarding to the job stress, increasing workloads, and poor performance.

3.6.4. Respect and Attentiveness Barrier

It is unarguable that virtual team members have different cultures due to the fact that they are located in different places across the world. They generally hold very diverse views on the subjects as they live in a culturally diverse society. The way of communication is affected by the cultural differences and thus cultural diversity makes the communication difficult. Simply because of this matter, it becomes a barrier in the success of virtual teams when manager or supervisor and coworkers do not give enough respect and attention to their respective cultures and different perspectives.

Virtual team members need to pay a special attention to the cultural awareness and try to understand it because it can cause various misunderstandings and a lot of conflict among them. Conley (2014) state that “appreciating and understanding the cultural characteristics of the virtual team can make or break the success of the team” and the author subsequently considers that showing respect in the communication is more important. As the virtual team rely on the electronic communication, it is difficult to interpret certain words regarding to the cultural diversity. Although one party send a word with a sincere meaning, another party would receive as an alternative meaning and ultimately it can lead to misunderstanding and social conflict between them.

In addition, when the virtual team members did not get the respect and attention as much as it is necessary from their supervisors, they would feel less recognition for their performance. Zhang (2016) consider that it is necessary to pay the supervisor’s recognition to the virtual employees’ achievement because they are likely to feel that they are not valued fairly by their organization. Pitagorsky (2007) consider in the same way that in order to get the high performance of a virtual team, having respect and paying attention to the cultural and personal diversity are required as crucial characteristics. Moreover, virtual employees

find difficult to work together with the irrespective of the coworkers. According to Mayer and colleagues (1995), one party can be vulnerable to the actions of another party especially when they don't receive a proper attention and respect from each other.

Therefore, it is essential to exist the respectful interaction between the virtual team members and to pay particular attention to the influence of cultural difference. Showing the respect and paying the attention to the virtual employee's perspective as well as their contribution to the work is as important as building the effective social relationship among coworkers because it is a required constant for efficient collaborative work.

3.6.5. Challenges in E-Leadership

As leadership is an integral part of the team's development process and success, the better leadership roles and functions are needed in order to achieve a particular result in the virtual team environment (Berry, 2011). The idea of e-leadership is referred to the leadership of implementing the organizational goals electronically on computer-mediated virtual teams and a social influence process where emotions, personal attitudes and behavior are delivered with the help of technology (DasGupta, 2011; Savolainen, 2013). In the process of virtual teams, e-leaders usually face several challenges. Lilian (2014) said that according to many researches, the major challenges in e-leadership are commonly related to distance and time issues, cultural diversity and trust creation, a well-known issue, which is widely examined in the next section.

The geographical diversity makes the virtual team members lack of physical interaction and also hard to express their feelings throughout the media since the communication is entirely depend upon the technology. That leads to preventing from having a stronger relationship between virtual leaders and workers. And that became a special challenge for e-leaders to create trust easily and to become found of virtual workers even sometimes, they may be treated as invisible (Graves et al.,2018). As a result, the performance of the team members and result of the tasks are negatively impacted by this.

Similarly, e-leaders may have difficult time scheduling work, setting deadlines, and preparing activities because of time zones differences and plus, the chance to overlap work hours in the virtual team is very rare. Lacking overlapping work hours can also result in the coordination problems for e-leaders. In fact, it is difficult for e-leaders to conduct team meetings as much as it is necessary, typically when the tasks are complex. It is also a very

challenging issue for e-leaders especially when the issues of the tasks are steadily rising and needed to address rapidly (Lilian, 2014; Zaccaro et al., 2003).

Being e-leader in the virtual environment is not easy because virtual team members are commonly having different cultures and different ways of communicating and it tends to arise interaction problems between them. In addition, e-leaders may practice handling the conflict of team members as well as may find difficulties in establishing personal relationships between and among them. And such problems of diversity not only complicate the cooperation but also affect the team performance and the growth of the tasks.

Moreover, e-leaders are likely to experience challenges in providing the real-time feedback to the team members, keeping track of accountability virtually to keep the team members focus on the tasks, and contributing encouragement through providing recognition for their achievements (Anoye et al.,2018).

3.6.6. Trust issue

It can be said that having a problem in trusting someone starts when people from different environment are working together in a same team with lack of face-to-face communication. Although trust is the fundamental component of achieving the team's success, it is hard to develop the trust between team members from a great distance (Anoye et al.,2018). Trust in virtual team has become a particular subject that needs to be developed among virtual team members because it influences many factors such as relationship building, team cooperation, virtual team's success, and performance. Absence of trust between coworkers in the virtual workplace is commonly occurred and a well-known issue.

The fact of geographical dispersion and lack of physical interaction in the virtual team prevents from developing trust between managers and virtual workers and even it may allow the manager to be a micromanager and control every part of situation (Golden, 2006). When the virtual workers are not granted certain levels of trust, they may find difficult time managing their time effectively and delivering their task on time and eventually they are likely to be under increasing work pressure and feel less of confidence in themselves (Lumseyfai et al., 2019; Graves et al., 2020).

Moreover, as the life of the virtual teams is relatively time limited, virtual team members will need a special effort to enhance trust in their coworkers within a specific period of time. However, it is challenging to obtain coworker's trust without having ever

met in person and also, it is hard to maintain a trustworthy relationship without having many chances to interact with each other face-to-face. Thus, it can result in a lack of team spirit and letting them to think twice to depend on their coworkers for delivering their respective tasks. Ultimately, it will become a huge impact on the quality of teamwork and success of the organization (Powell et al., 2004; Martin, 2020).

Therefore, fostering trust between coworkers are critical in virtual environment. Not only trust can enhance the team spirit to cooperate but also the certain degree of trust among team members can overcome the challenges in communication and building relationship with each other. In addition, trust is a strong motivational factor to accomplish the organization goals with a superb performance (Lilian, 2014).

3.7. Virtual Team Management

Lumseyfai and his colleagues (2019) consider that although virtual teams provide obvious advantages such as flexibility and cost savings, it also comes with many challenges and is needed additional management and technologies to be effectively managed comparing to the traditional teams. Similarly, Barry (2011) assume that “the use of virtual teams adds complexity for management” because it has certain degree of diversity in cultures, countries, organization, professions, and functions as compared with the traditional face-to-face teams.

According to Mawson (2020), working from a distance is not as simple as supporting the virtual workers with equipment and infrastructure network, and the virtual leaders or e-leaders require to examine the new strategies for providing motivation and inspiration to keep the virtual workers focusing on the tasks and for building the relationship among coworkers through computer-mediated communication to achieve a good performance of the team or the success while they cannot be with them all the time. Continuously, the author considers that in the traditional office, these areas are offered with full of information and supportive social community where the leaders can trace the progress of the task, monitor the employee productivity, provide the real-time feedback for their members and coworkers can support each other whenever they need (Mawson, 2020).

Nowadays, the organizations have been tackling managing a virtual team and the world pandemic boosted it. However, there are many benefits as well as drawbacks of managing a virtual team compare to the traditional team.

3.7.1. Advantages of managing a virtual team

One of the major advantages of managing a virtual team is cost-effective. The office space does not need to be set up for the remote workers. So, it can help reduce ongoing cost such as electricity, office equipment, coffee machine, water cooler etc., which need to be provided in the traditional office. Moreover, travel cost can be reduced by working with virtual or remote workers because they can perform the task from different location with the aid of advanced technology and most of the communication can be done via virtual channels without requiring travelling for face-to-face meetings (Törmänen, 2017).

Another significant advantage is that the organization can access the global talent pool in the virtual teams due to the nature of geographical dispersion. Roseke (2019) argues that finding a specialized expertise for a project might be difficult in one place and even if they are found, they might not be available for the project. However, Roseke (2019) continues that with the virtual teams, there is a high possibility to get an expert anywhere across the world and the distance is no longer a problem with the availability of internet and benefits of modern technology. In addition, virtual teams are less limited when it comes to the recruitment opportunities of having specialized workforce, and expertise around the world can be leveraged not only to assist to reach the organizational goal quickly and easily but also to deliver the result rapidly (Barry, 2016; Törmänen, 2017).

The other obvious benefit of managing the virtual team is getting the more productive team members. The availability of flexible work hours can help the virtual employee grow their morale and productivity. The finding of the study by the Aperian Global have confirmed that virtual workers are more likely to work beyond average work hours per week and because of the different time zones, it is more likely to achieve success when they are able to work from home. In addition, Berry (2011) points out that virtual team members are able to communicate, collaborate and deliver the outputs regardless of time and place because they are not limited by temporal constraints or geographic location as are most tradition teams. Continuously, Berry proposes that the upside of having geographically dispersed teams is that different point of view and ideas are represented within the team and thus greater organizational learning and the effective teamwork are possible due to this added diversity.

Moreover, having virtual workers in the organization can be considered a noticeable profit since they offer the business to operate on 24-hour schedule with shifts in different

countries. This profit can be obviously seen in the customer service sector with more comprehensive and timely support as the virtual workers can spend more time serving the customer in comparison to the traditional workers. Since customer service can make or break the business, 24-hour support customer service jobs are always in demand. Therefore, for customer service jobs, hiring remote workers across the globe with different time zones is a great help for the business.

Finally, many studies found that hiring virtual workers is a great cost-effective solution to scaling up the business easily and quickly without requiring worrying about how much square footage will be needed for the increased staff, increased electricity cost, set up and maintenance office equipment costs.

To sum up, apart from reviewing the main benefits mentioned in the above paragraphs, there are many other advantages of managing a virtual team in the real world. With the availability of cost-effectiveness, easy access to a larger talent pool, specialized services of more productive team members, and the opportunity of expanding business without expanding the office space, it cannot be denied that remote working has been an upward trend and virtual workers are in great demand in society today.

3.7.2. Disadvantages of managing a virtual team

As it was mentioned above, a large number of challenges can be found in the area of virtual team management comparing with the traditional team. The different time zones and teams spread across the globe could be the major challenges for the managerial and administrative staff, especially if the organization has no clear principle and well-defined strategies to manage the virtual team. Serrat (2017) considers that virtual team management require further understanding of communication, technology, team collaboration, building trust, and special recognition and recruitment since virtual teams depend entirely upon the technology mediated environment.

Managing virtual teams need different strategies of communicating more than the traditional teams because the traditional team members can share both formal and informal interaction such as off-the-cuff conversations with colleagues in lunchroom or around coffee machine, and other commonly used areas. The problem with virtual team is that these informal conversations do not take place and it is a challenge for the managers of such teams

to get this technology connected teams to interact with each other in an informal manner to create bond for open communication and establish relationship with each other (Newman, 2015).

Likewise, Liliana (2014) notice that the utilization of ICT mediated communication is seen to affect the ability of the managers of virtual teams to convey the information to other colleagues perfectly because in the virtual world, virtual workers rely more on the tones of emails and voices on video calls. As a result, misinterpretations and opportunities for misunderstanding can be grown in a virtual setting specifically when these elements are not managed well.

Newman (2015) consider that managing virtual teams is probably more challenging than handling traditional teams since keeping everyone cooperate and energize can only be done through technology. For example, virtual team managers need to think about conveying enthusiasm and inspiration to their virtual members electronically. Additionally, the difficulties of scheduling the meetings according to the various time zones and slower response time due to the inadequate infrastructure can also be found in the technology mediated virtual working arrangements environment. Moreover, as one of the obvious challenges of managing virtual teams, even if virtual workers have enough technical understanding of ICT, they might have a hard time using it effectively in the virtual setting and eventually it leads to poor team's performance and not completing the task on target.

Compared with the technological challenge, organizational and cultural challenges are perhaps a more serious drawback to the effectiveness of managing virtual teams. Many managers still depend heavily on frequent visual contacts with employees to be reassured that their staff are working (Kimble et al., 2005). However, the successful management of virtual teams demands trust, and it became another major challenge of building trust with someone who may never see the leader. In fact, it is much more difficult to implement trust in virtual teamwork than the traditional teamwork. Trust is more critical in virtual team management than in traditional one as trust and collaboration are not only linked to successful leadership and decision-making process (Liliana, 2014; Krawczyk-Brylka, 2017) but also related to all critical element of virtual team's success such as coherence, communication and shared understanding. In addition, Kimble, Barlow and Li (2005) agree that trust is crucial for the formation and functioning of virtual teams and without trust, the management of virtual organization cannot be conceived.

Krawczyk-Brylka (2017) states that team coordination is also a big challenge for the leaders of the virtual teams because they must ensure that they interact with each member of the virtual teams to keep their moral high and not to get the feeling of being ignored. Furthermore, due to the dispersion nature of virtual teams, it's considered a herculean task for the managers of the virtual team to track remote employee's performance and provide the sense of accountability to get them know that their manager is approachable and will support them when they require it. And, in general, providing a clear goal and vision for the virtual team is accepted as a necessary component of virtual leaders in the virtual setting. Plus, as a significant disadvantage that one can see in a virtual team is that different cultures and languages backgrounds can also complicate work of virtual team.

Another noticeable challenge in virtual team management is that recruiting the right virtual team members plays an important role in the success of the virtual team management because one weak team member can adversely affect the whole virtual team's performance. According to the general public, hiring a good fit employee in virtual environment differ from in traditional environment since some special skills are needed to work in virtual setting such as ability to communicate in virtual environment across cultures, ability to form team relationships quickly and effectively, proficiency with technical tools, and self-management skill.

All things considered, the leadership role in virtual team management needs a lot of extraordinary skills to manage well their virtual employees comparing to the traditional team's leader skills opportunities. Berry (2011) believes that the skill sets required for success in managing effective virtual work teams are more complex than the skill sets required for success in managing traditional teams. Management of virtual resources incorporates leadership practices focused on motivation, engagement of team members, fostering relationships via virtual communication, and collaboration, as well as the need to create a safe environment wherein team members feel comfortable speaking openly, sharing feedback, raising concerns/issues, and sharing progress.

3.8. Solution for enhancing practices in virtual workplace

As virtual teams are an upward trend these days and especially, teams are more and more virtual during the world crisis. However, they are still confronting a certain degree of complexity and challenges in accord with distance, time and cultural differences and hence increasing communication, relationship building difficulties as well as trust issues. In fact, it is difficult to create an effective virtual teamwork because both leaders and members of virtual teams need upgrade competences to be effective, even if they have extensive experiences with traditional teams (Berry, 2011). To enhance such barriers in the virtual workplace, virtual team leaders should focus on active planning and goal achievement, pay particular attention to technology problems, encourage social information exchange between members, enhance member participation and commitment to the team (Jawadi et al., 2009), develop new ways of sharing knowledge and understanding, and most importantly, create opportunities for building trust among all the members.

Generally, leaders in virtual teams should improve their team effectiveness and need to ensure that their team can access all the necessary recourses to achieve the organizational goal successfully because virtual leaders typically rely on electronic communication. In fact, Zaccaro and Bader (2003) propose three main responsibilities for all leaders in the virtual environment:

- (1) To examine thoroughly the performance of the teams
- (2) To define clear goals and visions
- (3) To provide essential resources of the specific tasks for the teams.

In addition, it is a necessary task for the virtual leaders to establish routines and understandable operational procedures in order to achieve a good performance in virtual teams (Liliana, 2014). Moreover, Berry (2011) also points out that leaders should facilitate the team development's process by setting certain schedules, presenting well-defined organizational structures, explaining how the team's work aids to keep the team focused on the task and accomplish the goals.

Gibson and Cohen (2003) believe that understanding the technology to be used and technology training are more important in virtual workplace than the traditional workplace. Virtual leaders need to modify the ways in which they provide the feedback and gather data as well as the interacting styles with team members since only computer mediated communication takes place in virtual setting. Therefore, they have to consider differences in time zones when preparing activities and organizing virtual meetings (Jawadi et al., 2009).

In addition, virtual leaders need to ensure that all the technical resources are available and must also make certain that all virtual employees get the technical training and support to develop skill in using technology in virtual setting as well as use different electronic media effectively to convey the various types of information among them. According to Graves and Karabayeva (2020), offering technical training to employees and making the necessary technical tools and support available for them not only helps them boost their competence but also increase their availability to handle the work's demands.

In the virtual environment, communication can be identified as a significant competence in leading effective virtual workplace. As physical contact is missing in virtual communication setting, virtual leaders have to develop new communication skills for creating socializing activities and feeling of togetherness which promote inclusion of all team members (Lilian, 2014). Also, virtual leaders need to keep their employees updated what is taking place in the organization in order to get them feel part of the organizational community. In addition, virtual leaders must consider the requirement of social connection between team members because it is the basic need to create a bond with others. It is helpful to have a frequent regular conversation among virtual employees by using synchronous technology tools that provides social cues such as video chats (Graves et al., 2020). Moreover, Graves and Karabayeva continue that not only work discussion but also informal interaction such as impromptu conversation with colleagues should be included to keep members of the work groups connected with one another.

According to many researchers, keeping track of team's performance in virtual workplace is more difficult than the traditional teams. However, with the growing capabilities of technology over recent years, virtual teams have increasing options for collaboration tools. By utilizing the technologies which facilitate unique collaboration with higher level of information richness (e.g., cloud tools, video conferencing capabilities, collaboration boards) and incorporating tools which allows greater transmission of communication cues and physical gestures can lead to minimizing the gap between face-to-face and virtual collaboration (Lumseyfai et al., 2019).

Likewise, it is important to enhance virtual member participation and commitment to the team. With that said, virtual leaders can do that by setting clear task goals and specifying role divisions and contributions for each member so employees know what they should do and how their success will be measured. Furthermore, virtual leaders must establish a recognition to let them feel a sense of appreciation in their efforts and

contribution. Lumseyfai, Holzer, Blessner, and Olson (2019) offer the following practices in order to create a safe environment where team members can speak openly, share feedback and raise concerns.

- (1) Engage team members to ask questions on virtual calls.
- (2) Encourage team members to reach out and trust in them to manage the task effectively.
- (3) Motivate team members to explore new solutions, encouraging failures and lesson learned.

Since virtual environment includes the constraints and advantages of different time zones, lack of social cues and cultural differences, virtual team members often need to share work-in-progress with others which may require team members to adopt new attitudes and new mindsets towards work. Not only virtual leaders but also virtual members require to develop new ways of sharing understanding and knowledge in the electronic space to become an effective virtual team (Kimble et al., 2005). In fact, knowledge and information sharing can help result satisfaction, motivation and increased performance for the virtual teams as well as evolve trust in the virtual environment.

Although establishing and maintaining trust is the same for both traditional and virtual teams, the importance of trust for virtual team is more critical (Tormanen ,2017). As a given fact by Graves and Karabayeva (2020), open communication is fundamental for establishing trust between virtual leaders and employees. In addition, Kimble, Li and Barlow (2005) consider that developing common communication procedures and a team culture are also essential components for the development of trust in a virtual workplace. In fact, trust is basically originated in communication. Therefore, by creating a structure to encourage informal interactions between team members can result in growing the huge amount of trust among each other. For example, taking five minutes at the beginning of every meeting to check in and engage with people before diving into the task at hand.

Furthermore, virtual leaders must express concern for employees' well-being and consider and value the interest of their members because this is one of the most important factors in determining the level of trust. Trust is related to all the critical elements of virtual team's success such as team's cohesion, communication, and shared understanding. Moreover, trust is a strong motivational factor since motivation drives from the certain degree of cohesion of the team in the virtual environment. For this reason, it is the responsibility of the virtual leaders to build trust by increasing the motivation of the team

members (Zaccaro et al., 2003). Virtual teams remain to grow in adoption with the opportunities of flexibility and cost saving incentives. However, these teams need to be aware of the added challenges driven by geographical dispersion of members, core reliance on communication technology, and composition of various cultures. Because these added challenges can cause the virtual teams to result in lower performance of the team and eventually, failure. Therefore, the above findings for the most occurred challenges regarding communication issues, technological problem, establishing effective relationship and trust, finding common understanding from a wide range of diversity, and team cohesion management, are extracted to enhance practices in the virtual workplace in this diploma thesis.

4. Practical Part

4.1 Questionnaire Design

The questionnaire was made up of 20 questions and created using Google Forms to get the respondents to be able to participate easily and conduct online. The questionnaire was carried out in English language and it includes 14 closed ended questions, 4 semi-closed ended questions, and 1 open ended question. At the beginning of the questionnaire, it was briefly explained the purpose of the questionnaire and guaranteed that all the gathered data are protected confidentially as well as the findings of this research will be anonymous. In addition, to get a better understanding for the participants, the definition of the virtual team and the traditional team are concisely described. Technical terms are also briefly explained.

The questionnaire has four major sections.

The first section was asking for the general information of the organization where the participant works, such as number of employees, types of the organization, primary business, operational market, and basic structure of the organization. Most of the answers were provided in multiple choice form and additional option was possible to be added in some of them.

In the second section of the questionnaire, the project environment of the participant was mainly examined. For example, what kind of projects are operated in the organization, what types of team members are included in the project (i.e., local or international team member), and a specific role of the participant in the project. Multiple choice questions were given and at the end, other option was offered to be able add a different answer.

The third section included questions which particularly study the opinions of the participant on the virtual team, and the main reasons of establishing virtual team in the organization as well as the process of collaborating with a remote team member. Questions were composed of various forms: check box, multiple choice, linear scale and writing option at the end.

In the final part of the questionnaire, the questions were centered on the challenges that occur in managing the virtual team. There are 1 open ended question and 5 close ended questions including check box, multiple choice, and linear scale. The purpose of these questions is to see what types of challenges are mostly occurred in managing the virtual team and to suggest the solutions to enhance the practices in virtual workplace and get an effective virtual team in the organization.

Full Questionnaire can be seen in appendix.

4.2 Analysis of Collected Data

In the questionnaire, the total number of respondents who fulfilled the questionnaire is 80.

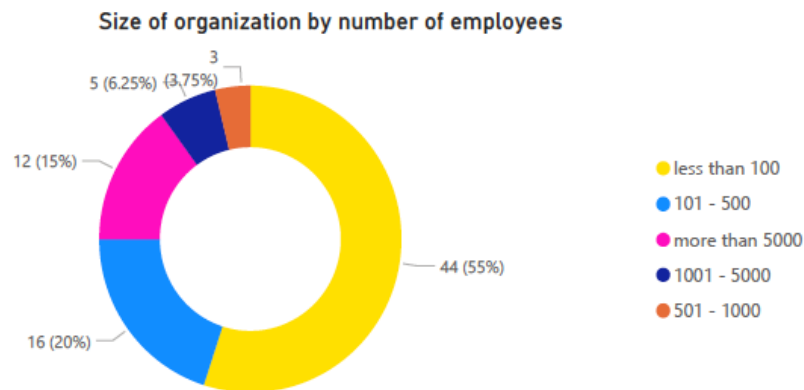


Figure 2. Distribution of the respondents by the size of organization

(Source: Own Elaboration, 2020)

As it is presented in Figure 2, the majority of respondents (55%) are working at the company which has less than 100 employees and 20% of respondents are from the organization where number of employees are more than one hundred but less than five hundred. On the third position, there are about 15% of respondents who are from company which has more than 5000 employees. Respondents from the number of employees in company with the range of 501-1000 and 1001-5000 are in the minority with 3.75% and 6.25% respectively.

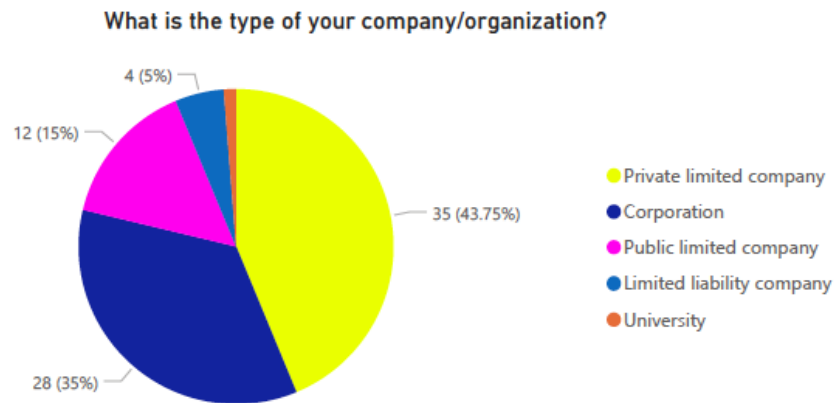


Figure 3. Distribution of the respondents by the type of organization

(Source: Own Elaboration, 2020)

From the information shown in this above pie chart, the large yellow area represents that the private limited company where the majority of respondents are working, and the dark blue area illustrates the corporation as a second most popular organization. Of the rest of the categories, the pink color area explains that fifteen percent of respondents are in the public limited company, and only a small minority are in the organization of limited liability company and university.

In order to analyze the most operational market of the respondent's organization, the question was formed as "Primary business/activity of your company/organization?".

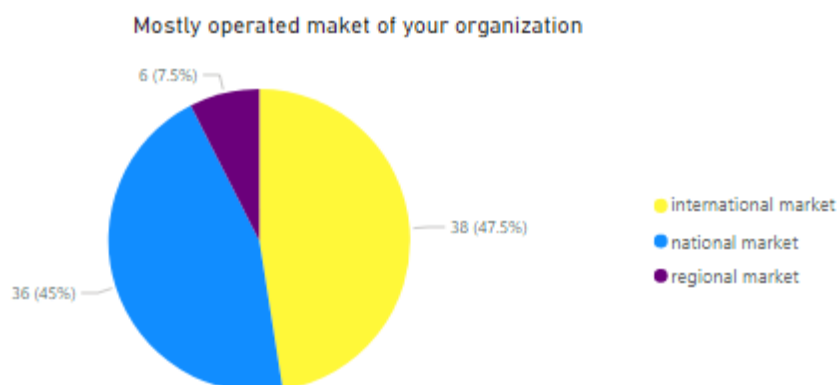


Figure 4. Distribution of the respondents by operational market

(Source: Own Elaboration, 2020)

As it is illustrated in Figure 4, which shows the distribution of respondents across in three different markets in which their projects are mostly operated.

Generally speaking, the outstanding feature of the chart holds the proportion of international market, which accounted approximately 48% while the second most operated market was national market with a slightly lower contribution at 45%. However, there was only a fewest percentage for the regional market.

In another word, this pie chart proves that the respondents from this survey are performing their projects most in international market and national market.

In the interest of primary business sector of each participant, the question, “Primary business/activity of your company/organization?” was investigated and the result is analyzed and interpreted in the following.



Figure 5. Respondents distribution according to their primary business activity

(Source: Own Elaboration, 2020)

The above given pie chart provides the information about the proportion of respondents according to their primary business of the organization.

Overall, the general trend of respondents showed that the greater part of the respondents was functioning IT (information technology) industry as a leading field.

In terms of the most significant feature of the chart, the largest category of the participants was the group of people from software development field, which accounted for 46% of the total respondents. Additionally, the next major segment of the participants included people from information and communication technologies (ICT) field, which showed a slightly lower contribution at 29%. When added together, these two categories

made up three quarters of the total respondents who are performing the work of information technology as a main business.

With regard to the remaining modes of business activity, there was 7.5% of the respondents from the enterprise of banking and finance and business services, and other business activities such as research and development, digital marketing, and education were included by the minority of the respondents

4.2.1 Analysis and interpretation of the results

With the objective to find out which project types are mostly operated across various markets, the question of “projects in your organization” was analyzed along with different markets.

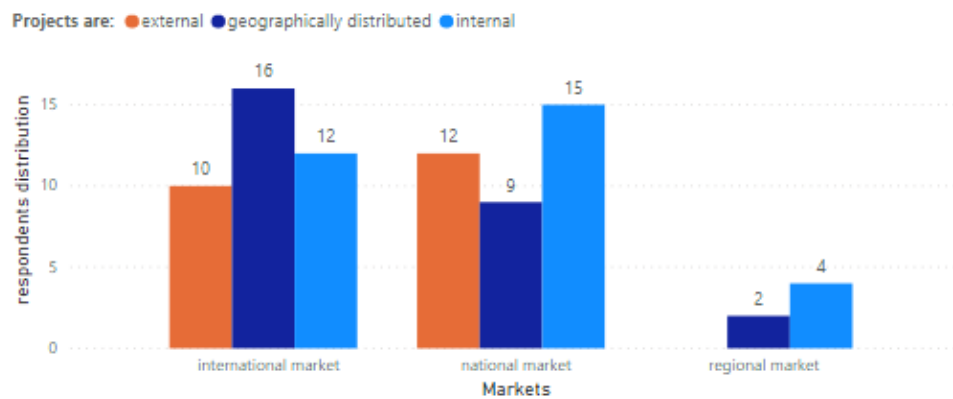


Figure 6. Distribution of respondents by project types along with markets

(Source: Own Elaboration, 2020)

As it is presented in Figure 6, this bar chart represents that the distribution of respondents by project types across three different markets.

Overall, it can be seen that the group of respondents who ran internal projects more than geographically distributed projects in national market exceed those in regional market by almost three to one.

Looking specifically, the proportion of respondents who operated internal projects outnumber those operated geographically distributed ones in national market and regional

market, as opposed to international market, where the number of respondents ran geographically distributed projects are more than the people who conduct internal projects.

Regarding to external projects, they were operated by the higher proportion of participants in national market and a slightly lower distribution of participants in international market. However, it is found that external projects were not operated in regional market.

To be able to examine the existence of project manager position in the participant’s organization, the result was investigated together with the basic structure of the organization.

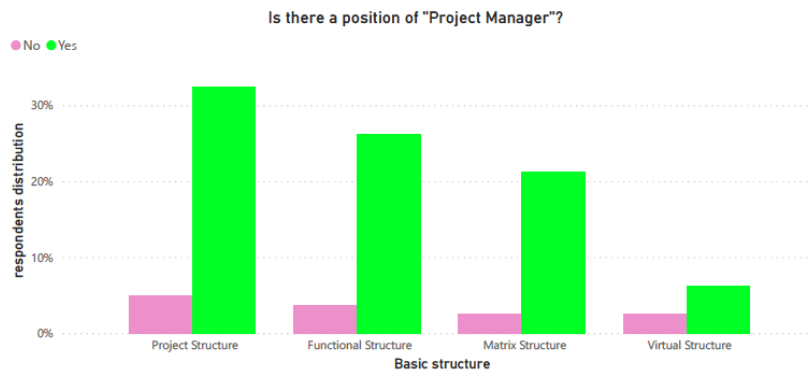


Figure 7. Respondents distribution by the existence of project manager across different structures

(Source: Own Elaboration, 2020)

The bar chart in Figure 7 illustrates that the proportion of the respondents who reported the position of project manager exist or not in their organization across four different organizational structures.

Generally, the chart shows that the answer ‘yes’ outnumbers the answer ‘no’ in most basic structures, the gap between those two answers for each structure was significant with the notable exception of virtual structure. To put it another way, it can be interpreted as almost every organization has the position of project manager regardless of their basic structures.

With respect to the basic structure, which is utilized most, the project structure was found with the evidence of highest percentage in total, over three times higher than using virtual structure.

Similarly, the question for the specific roles of the participants in the participation of the work of projects was studied, the following Figure 8 illustrated the result for this question.

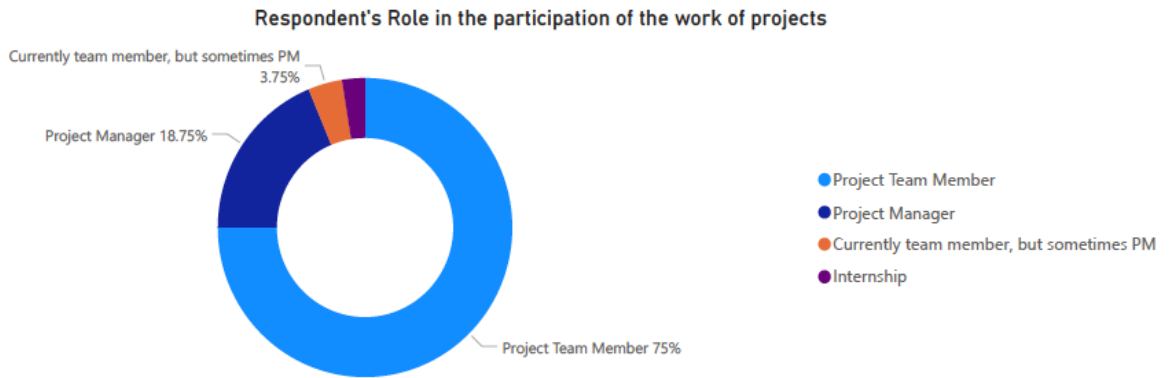


Figure 8. Distribution of the respondents by their roles

(Source: Own Elaboration, 2020)

The chart in Figure 8 demonstrates that three quarter of the total respondents are project team members in their work of projects. Of the rest one quarter of the group, nearly 19% of the respondents are project manager and a few percentages of the respondents hold the internship position and dual job position, i.e. respondent who can be project team member and project manager at the same time.

The next question is about project teams, and the participants were provided two options. The responds are demonstrated accordingly in the following Figure 9.

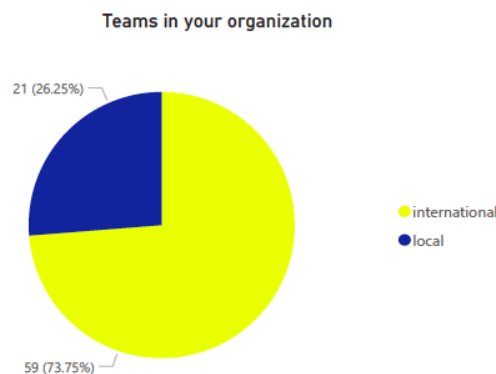


Figure 9. Distribution of respondents by different teams

(Source: Own Elaboration, 2020)

This above pie chart provides the information about that the portion of respondents according to two different teams which are international team and local team.

As it is clearly presented in the pie chart, the portion of the respondents who are working in international team made up the biggest part of the chart, which accounted for approximately 74% while the smallest part of the chart holds the group of respondents from local team, which showed the contribution at nearly 26%.

With the aim of obtaining best information about the participant's point of views on virtual teams, the next block of questions regarding to the opinions on task accomplishment, team efficiency, and importance of involvement of IT were included in the questionnaire. The responds to those questions will be examined and interpreted below.

To examine the suitable team for achieving fast results, the participants were given two team structures, virtual team or traditional team, as choices to the question, which was set up as "In your opinion, which team structure is more appropriate for accomplishing projects' tasks?". In order to understand more, the answers to this question were analyzed along with the project teams in which the participants are currently working in their organization.

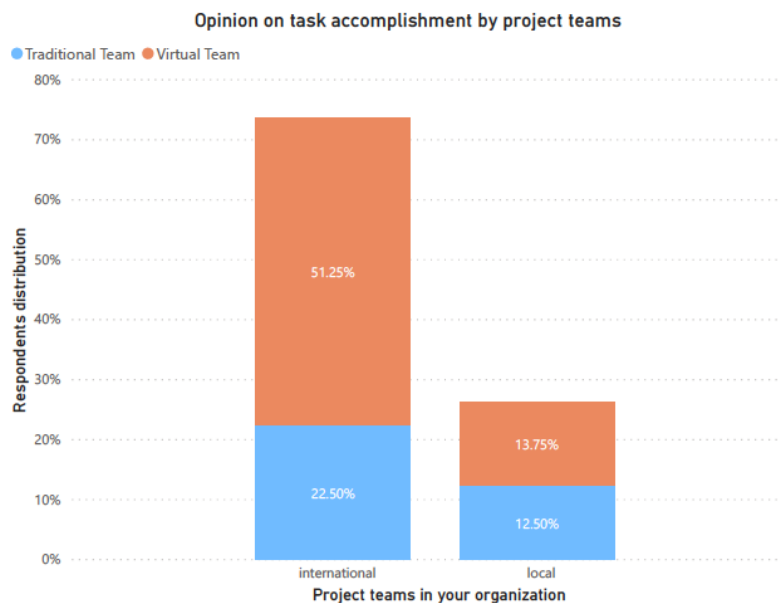


Figure 10. Distribution of respondents' opinion by project teams

(Source: Own Elaboration, 2020)

According to this bar chart from Figure 10, it gives information about the perspectives of the respondents on the task accomplishments.

Overall, the larger part of the category shows that the answers from international project team significantly outnumbered the answers from local project team by almost three to one. Regardless of project teams, there were 65% of the total respondents who agree with the fact that virtual team structure is more appropriate for accomplishing projects' tasks.

Looking specifically at international team, more than 51% of the respondents believe that virtual teams are more appropriate for accomplishing the tasks whereas 22.50% of the respondents refused to agree with this.

Regarding local team, the perspectives of the respondents on the task accomplishments of virtual team and traditional team are not highly differentiated with 13.75% and 12.50% respectively.

Correspondingly, another question for examining more efficient team was raised in the questionnaire and five alternative answers were offered to the participants. The question and the answers can be seen in the following Figure 11.

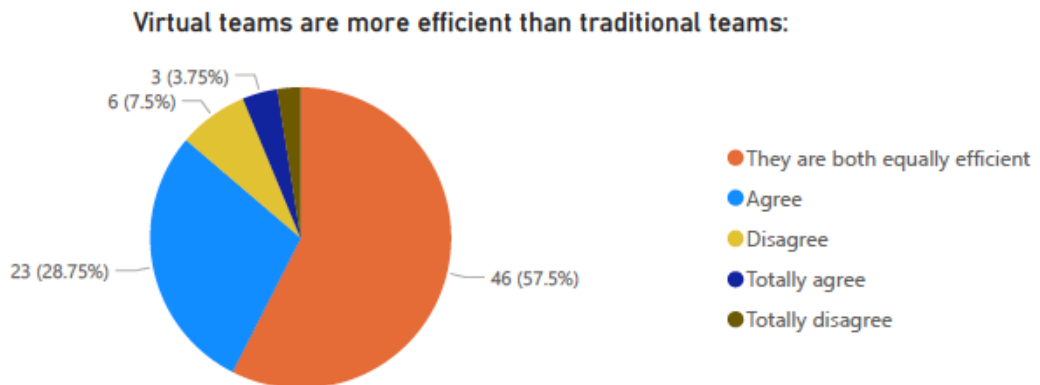


Figure 11. Distribution of respondent's opinions

(Source: Own Elaboration, 2020)

The given pie chart in Figure 11 provide the information about the proportion of respondent's views on the statement that traditional teams are less proficient than virtual teams.

Overall, the general trend of the respondents' opinions showed that both teams are equally efficient because the largest part of the category holds that option, which accounted for 57.5% of the total respondents.

In terms of the category where the opinions provided by the respondents who concur with the statement was 32.5% of all respondents, which is the result of adding together the percentage from the group of agree option and totally agree option.

The remaining part of the category described the group of respondents who fail to recognize the statement, which was only 10% of the total respondents.

On this particular note, it can be assumed that the respondents who expressed agreement are three times more than those who expressed disagreement while more than half of the total respondents remain neutral.

In the interest of learning deeply, the same question was analyzed together with the business sectors in order to know distinctly the group of the respondents who expressed agreement, disagreement, and neutral from which business sectors. The following Figure 12 illustrated the analysis accordingly.

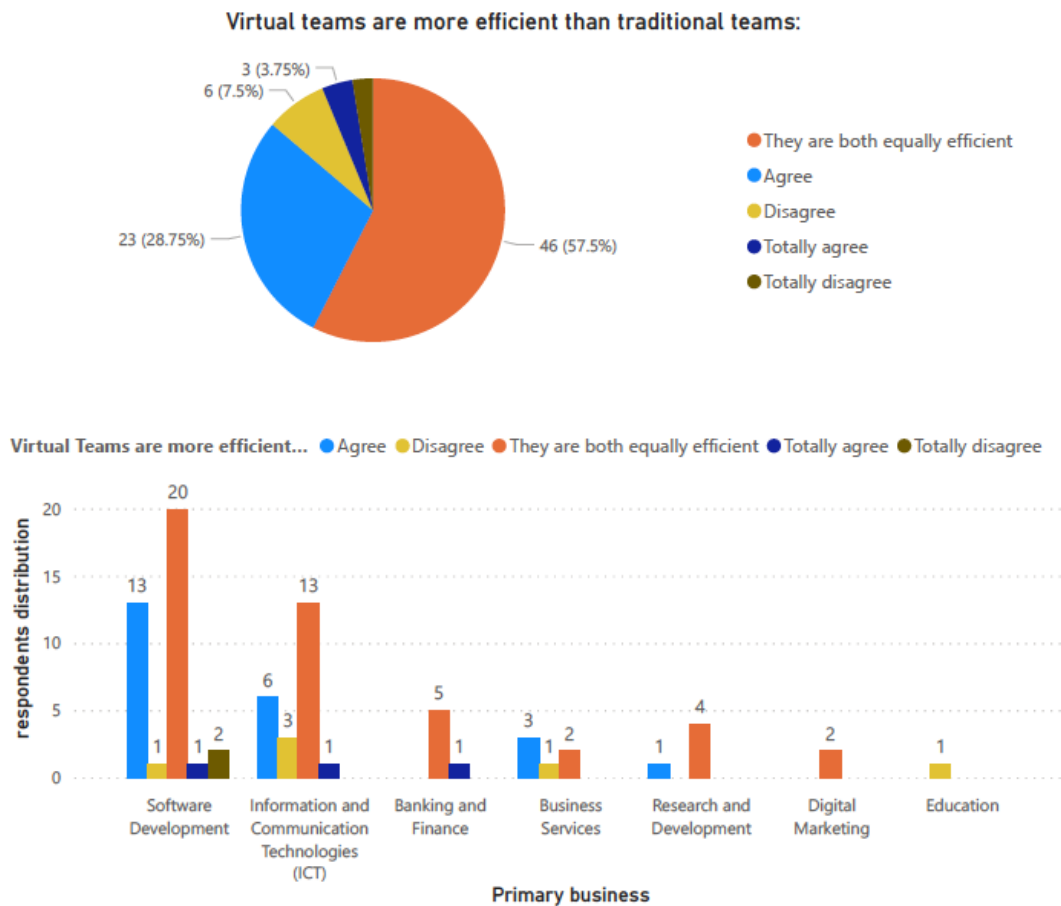


Figure 12. Distribution of respondents' opinion by business sectors

(Source: Own Elaboration, 2020)

As it is presented in Figure 12, the illustration represents that the number of respondents, who provided their opinions on virtual teams are more efficient than traditional teams, from different business sectors.

Regarding to the equally efficient opinion, which represents with the orange color in the bar chart, the majority of respondents were from software development and ICT (information and communication technologies) sectors, while the minority of respondents

from banking and finance, research and development, business services, and digital marketing sectors.

In the matter of agreement, exhibited with the color of light blue and dark blue, the greater part of the agreement opinions came from software development and ICT sectors, which is similar to the results of equal option.

With respect to the disagreement, only a few respondents, from ICT and software development sectors opposed the statement.

Consequently, the next question of examining the respondents' perspective on information technology involvement in virtual team was asked in the questionnaire and the result is studied not only by itself but also in accord with the project types of the respondents. The following Figure 13 represents that.

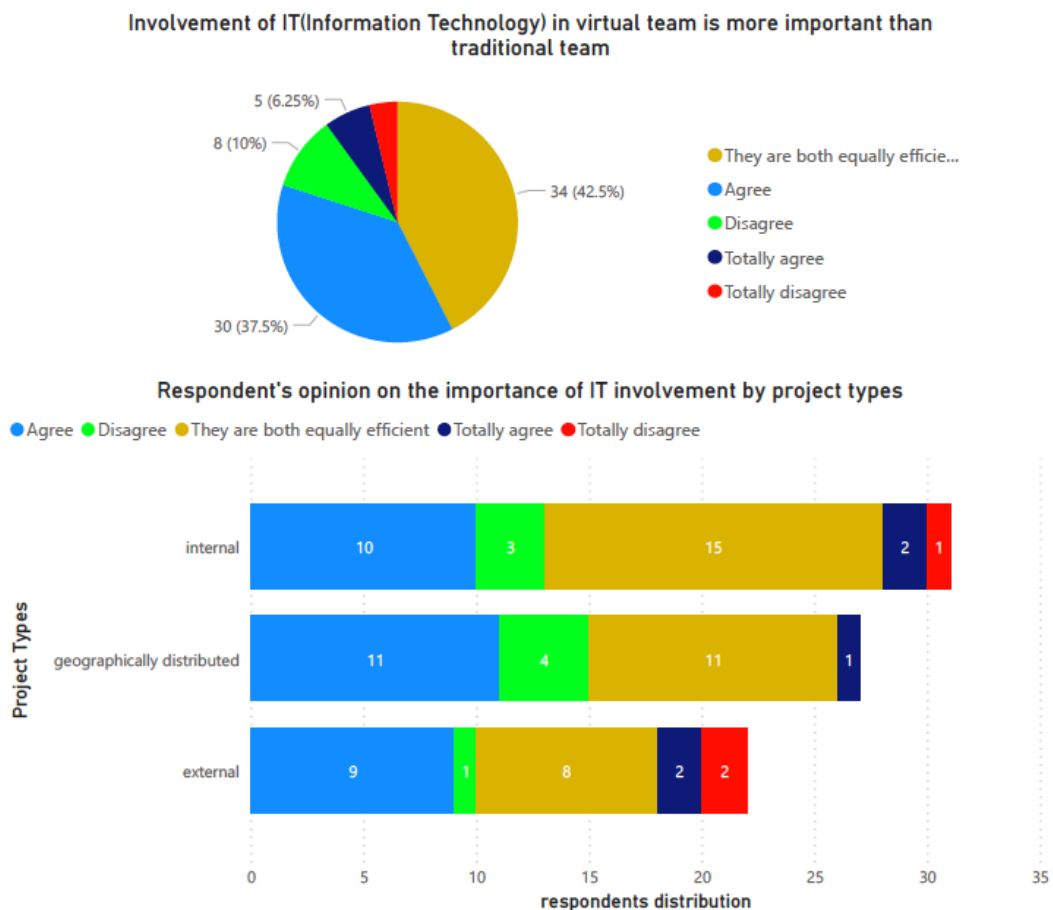


Figure 13. Distribution of respondents' opinion on the importance of IT by project types

(Source: Own Elaboration, 2020)

As it is shown in Figure 13, the largest part of the respondents come to an agreement in the statement that the involvement of information technology is equally important in both traditional team and virtual team. As it can be seen in the bottom part of the following figure, those largest part almost equally distributed across three project types which are internal, geographically distributed and external according to the respondent distribution per project types.

The same situation is occurred for the second largest part of the respondents who have the same opinion about information technology involvement in virtual team is more important than traditional team.

Among the rest of three categories, the least number of respondents strongly disagree the statement as well as the third least number of respondents disagree. The response of totally agree to the statement was reflected by the second least number of participants.

After the questions of the participants' opinion on virtual team comparing with tradition team, the next interest questions were brought that up, which are "What are the main reasons for establishing virtual teams in your organization?" and the question of rating frequency of usage in different cooperation tools for communication with virtual team members.

The answers to the main reasons of establishing virtual team question was analyzed and interpreted in the following Figure 14.

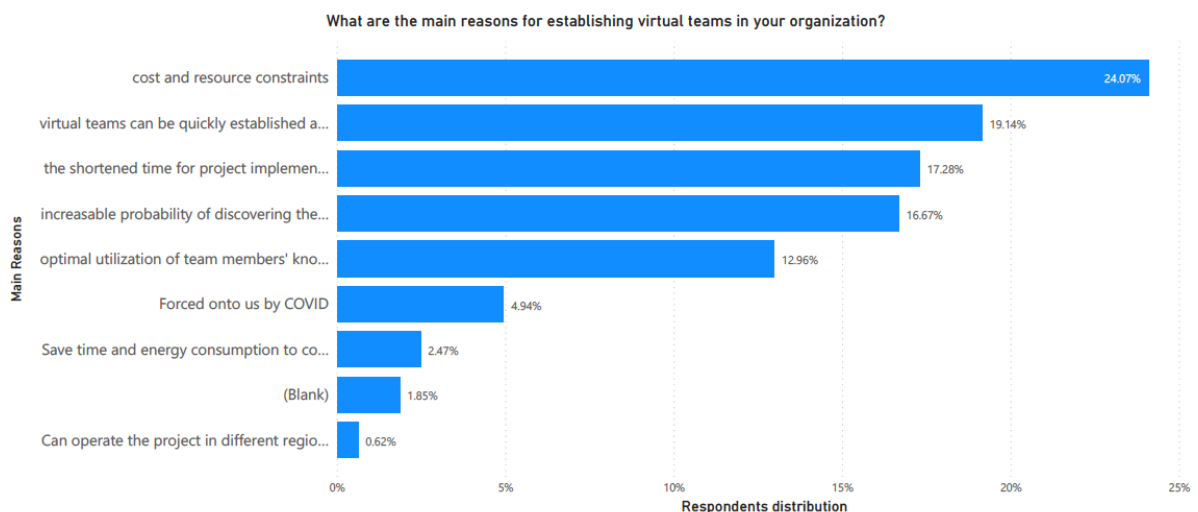


Figure 14. Main reasons for establishing virtual teams

(Source: Own Elaboration, 2020)

According to the information from the bar chart, it can be said that the cost and resource constraints is the first main reason of establishing virtual team with the evidence of highest percentage among others. The reason of being able to establish virtual teams quickly according to the market's demands is the second highest reason among others.

There is only a smaller difference in percentage for the reasons of the shortened time for project implementation and increasable probability of discovering the new innovations across the respondent's distribution.

As it is presented, the level of percentage with the optimal utilization of team member's knowledge is reduced by half of the reason with the cost and resource constraints. There were only approximately five percent of respondents answered to the question for a reason of obligation to establish a virtual team because of the covid-19 situation.

The number of reasons in percentage with save time and energy consumption to commute workplace and being able to operate the project in different region are relatively low and there were 3 respondents preferred not to answer this question.

Furthermore, the answers to the questions of rating the frequency of usage in different cooperation tools regarding to the efficiency of communication with virtual team members was analyzed in the following chart.

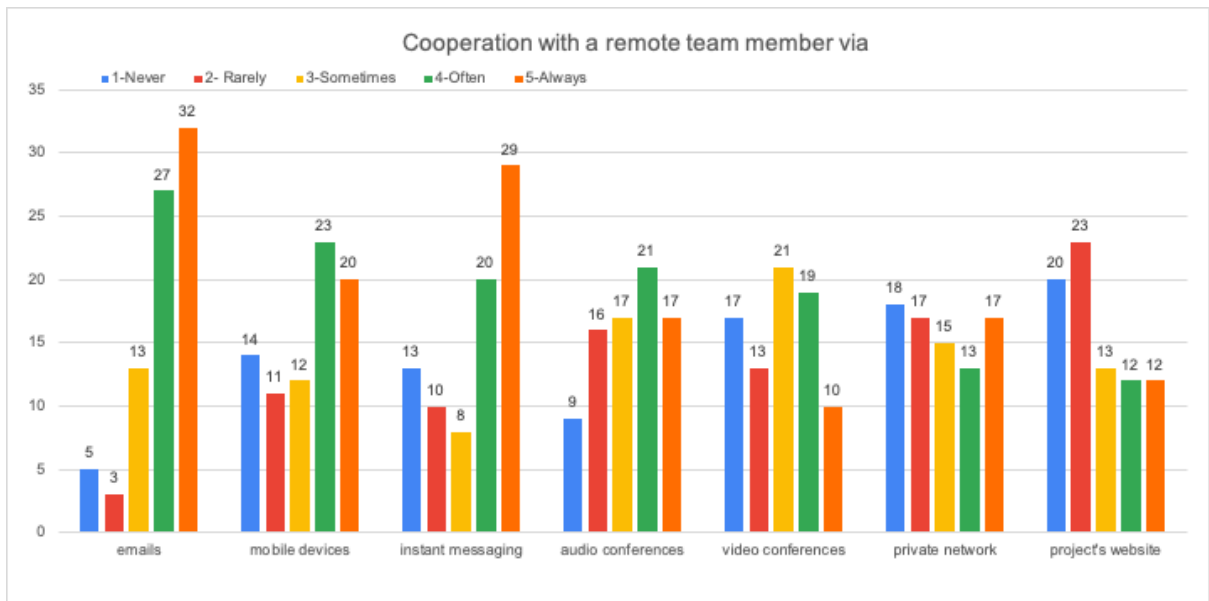


Figure 15. Frequency of usage different cooperation tools

(Source: Own Elaboration, 2020)

The chart indicates the frequency of practice on 7 different cooperation tools email, mobile devices, instant messaging, audio conferences, video conferences, private network, and project's website for communication with a remote team member.

Overall, the chart shows that the most frequency of usage (5-always) on email and instant messaging outnumber those of other tools.

In the group of frequency of always (5), video conference and project's website are the only cooperation tools with the fewer number of responses among the participants, which means only 10 and 12 out of 80 respondents always use video conference for communication with a remote team member while the number of responses in other tools for frequency 5, are above average in mobile devices, audio conferences, and private network with 20, 17, and 17 participants respectively.

Generally, the second most frequency of usage (4-often) on the tools are more than average in email, mobile devices, instant messaging, audio conferences and video conferences, with the notable exception of private network and project's website, where the least frequency (1-never) and second least frequency (2-rarely) extremely exceed other frequencies.

Looking specifically at sometimes (3) frequency, the most attracted tool for using 50% of the time is video conference with the highest proportion of respondents comparing to those in other tools.

The upcoming questions were investigated regarding to the management of virtual team in terms of different techniques comparing with tradition teams, difficulties in establishment of virtual teams, current issues that are impacting virtual teams, and rating the influence factors on communication with virtual team members.

On closer examination, it was found that some respondents who believe there are different techniques for managing virtual team compared with traditional team. According to the following pie chart in Figure 14, there are 12 respondents, who answered 'Yes' to this question.

Does your company/organization have different techniques for managing virtual team compared with traditional team?

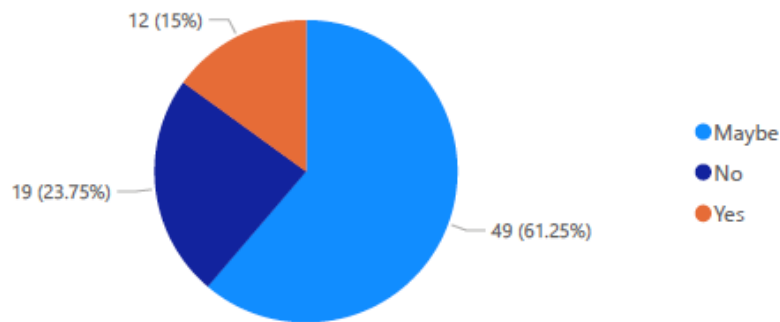


Figure 16. Respondents' opinion on different management techniques

(Source: Own Elaboration, 2020)

The next question is focusing on the answer 'Yes' of the previous question and the participants were given the availability of providing their opinion on main differences of techniques for managing virtual team compared with traditional team. Figure 15 represents those answers accordingly.

If the answer is "Yes", what are the main differences?

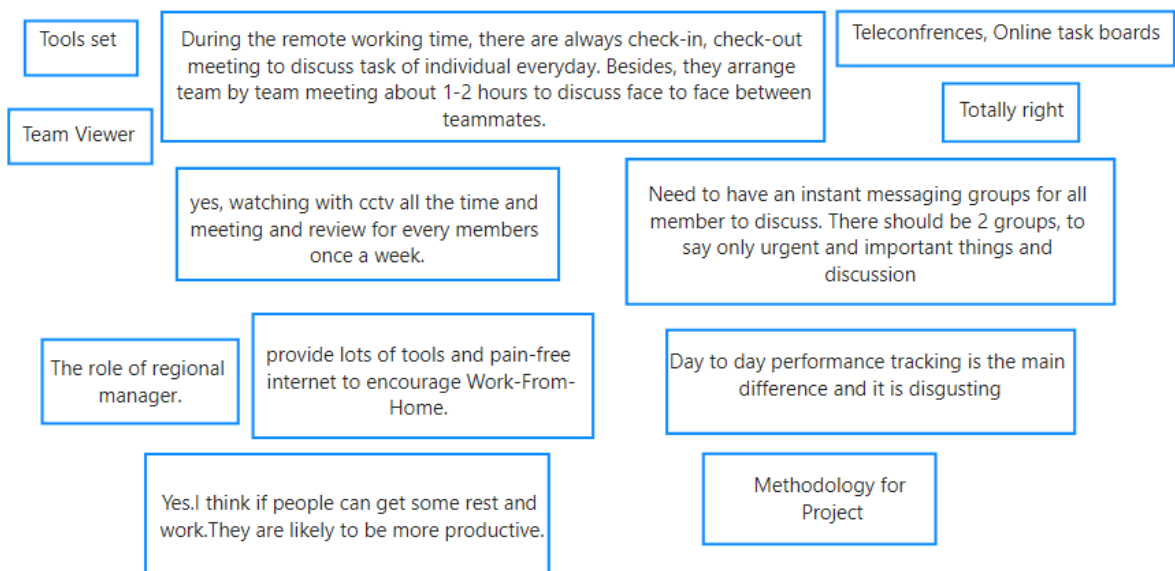


Figure 17. Differences of managing technique provided by the respondents

(Source: Own Elaboration, 2020)

The above figure is shown the answers of the respondents who believe there are the main differences in managing virtual team and traditional team. By looking into their answers, it can be divided into two main categories. As the first category, it can be assumed that most of them are likely to feel annoyed about the tools which are used for watching them and their performance all the time such as video surveillance. In addition, they believe that frequent meetings and day to day performance tracking lead to making them feel like management does not trust them.

As the second category, suggestions are provided in order to set good methodology and encourage employees to be more productive. Moreover, the respondents believe that the role of manager is very important as leadership in virtual team is critical to the success of the virtual team's performance.

The next question was studied about the opinion on the comparison of establishing collaboration virtual team and traditional team.

It is more difficult to establish collaboration in virtual team compared with traditional team.

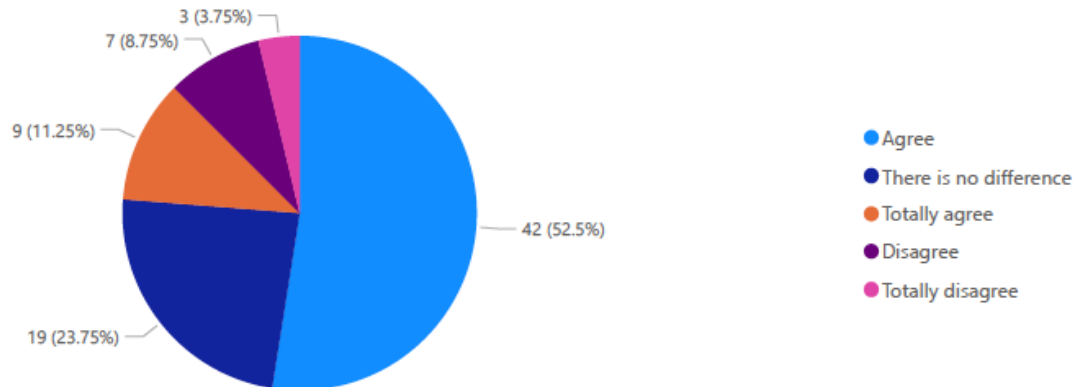


Figure 18. Respondents' opinion on establishing collaboration

(Source: Own Elaboration, 2020)

The given pie chart in Figure 18 provides the information about the proportion of respondents according to their opinion on the statement that establishing collaboration in virtual team is more difficult than in traditional team.

Overall, the general trend of perspectives by respondents showed that 63% of the participants were brought together by agree and totally agree options of the statement

whereas only 12% of the group refused to agree with the statement and approximately 25% of the people remained neutral.

In terms of the most significant feature of the chart, the largest category of the participants accepted the mentioned statement, which accounted for 52.5% of the total participants. Additionally, the next major segment of the respondents included people voted for the equality of establishing collaboration in both teams, which showed the contribution at 23.75%. When added together, these two categories made up three quarters of the total participants.

In stark contrast, the category with the lowest percentage of respondents included people who strongly disagree with the statement, accounting for a minute 3.75% of all respondents. This trend was joined by respondents who disagree and respondents who totally agree with the statement, representing 8.75% and 11.25% respectively. Of particular note is that those made up approximately 25% of the total participants.

Consequently, the next question was investigated the influence factors on collaboration between virtual team members.

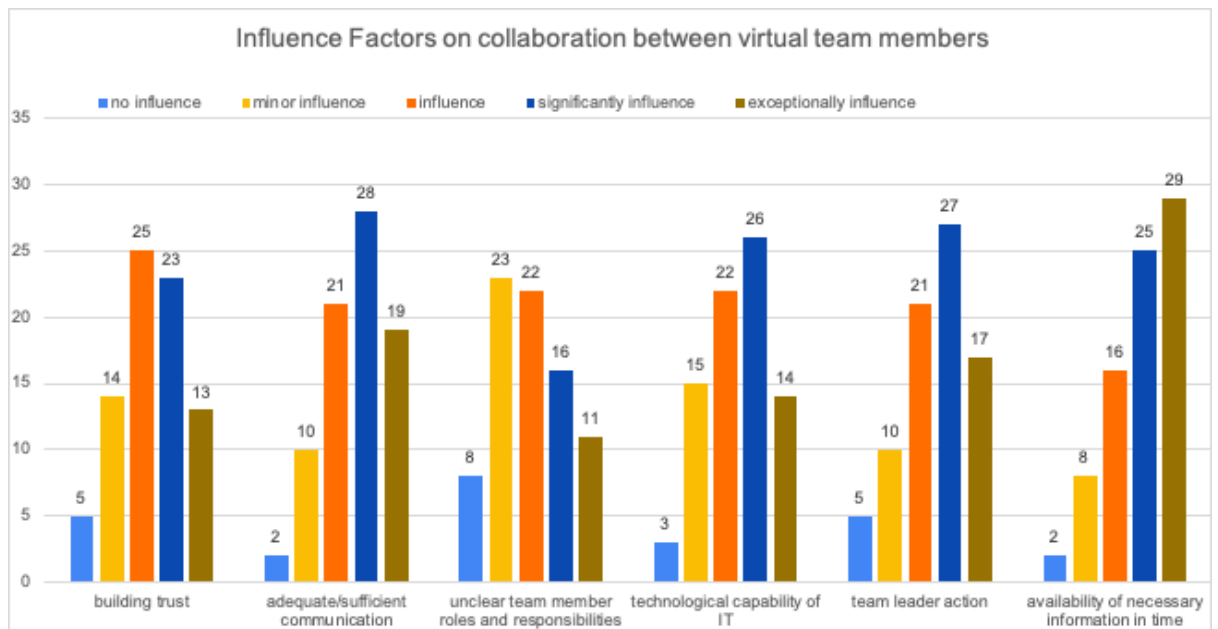


Figure 19. Influence factors on collaboration

(Source: Own Elaboration, 2020)

The above bar chart in Figure 19 compares the degree of influence on six different factors in collaboration between virtual members including building trust, adequate communication, unclear team member roles and responsibilities, technological capability of IT, team leader action, and availability of necessary information in time.

Of the six factors, the majority of respondents believe that availability of necessary information in time exceptionally influence, with around 29, on working together with virtual members while the minority think that they are affected by unclear team member roles and responsibilities with around 11.

Also, they view that they are significantly impacted by adequate communication, team leader action, technological capability of IT, and information richness with the number of respondents 28, 27, 26, and 25 respectively. Of the rest two factors, building trust is rated for significantly influence by 23 respondents and unclear team member roles and responsibilities is rated for the same by 16 respondents.

In the group of medium degree of influence, the factor of building trust is the most popular with the agreement of 25 persons while other factors such as communication sufficiency, blurry roles and responsibilities, facility of IT, and performance of team leader with around 22 participants in each except for accessible of information in time factor with the smallest number of 16 participants.

Regarding the minor influence degree, which is shown in yellow color, the greater number of participants consider unclear roles and responsibilities has relatively impacted. As it is presented in the chart, of all mentioned factors were rated for no influence on their collaboration with virtual team members by the smaller group of participants.

With the purpose of learning the primary difficulties for building virtual team, the question, "What are the main obstacle for establishing a virtual team" was included in the questionnaire, and the answers were analyzed below.

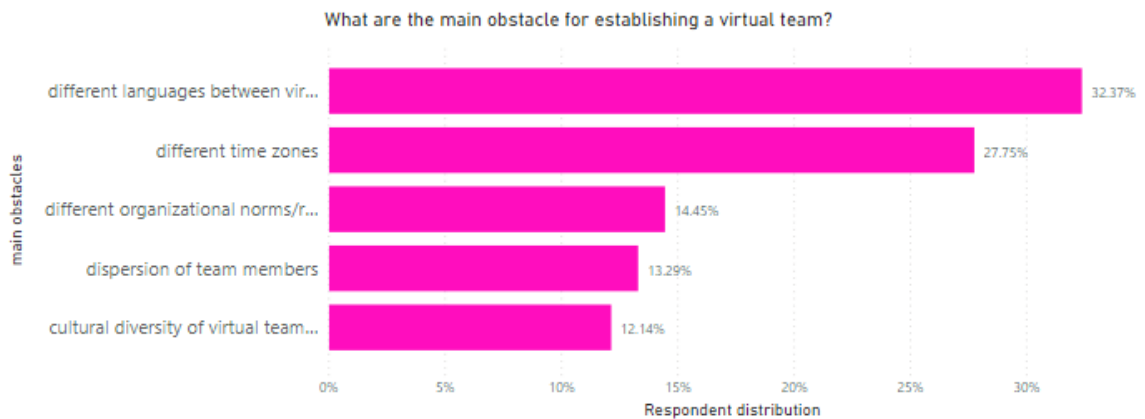


Figure 20. Main obstacles of establishing virtual team

(Source: Own Elaboration, 2020)

The bar chart illustrates the percentage of respondents reported on different main barriers for creating a virtual team.

As a whole, there were substantial differences between the first two reasons and the last three reasons.

Of the top two reasons, the greater number of participants recognized that different languages between virtual team members was the main obstacle with the evidence of highest percentage 32.37% while different time zone was acknowledged as the main barrier, which accounted for 28% of the total respondents. When added together, these two reasons were considered to be the greatest difficulties in establishing a virtual team with the agreement of more than half of the group of total respondents.

According to the bottom part of the chart, the reasons such as cultural diversity, dispersion of team members, and different organizational rules were averaged by the respondents, which showed a slightly difference contribution between each other at 12%, 13% and 14% respectively. All in all, those three reasons were observed as the second major hardship of establishing a virtual team.

The major objective of the last question is to get to know more the issues that are currently impacting on the effectiveness of the respondent's virtual team in reality.

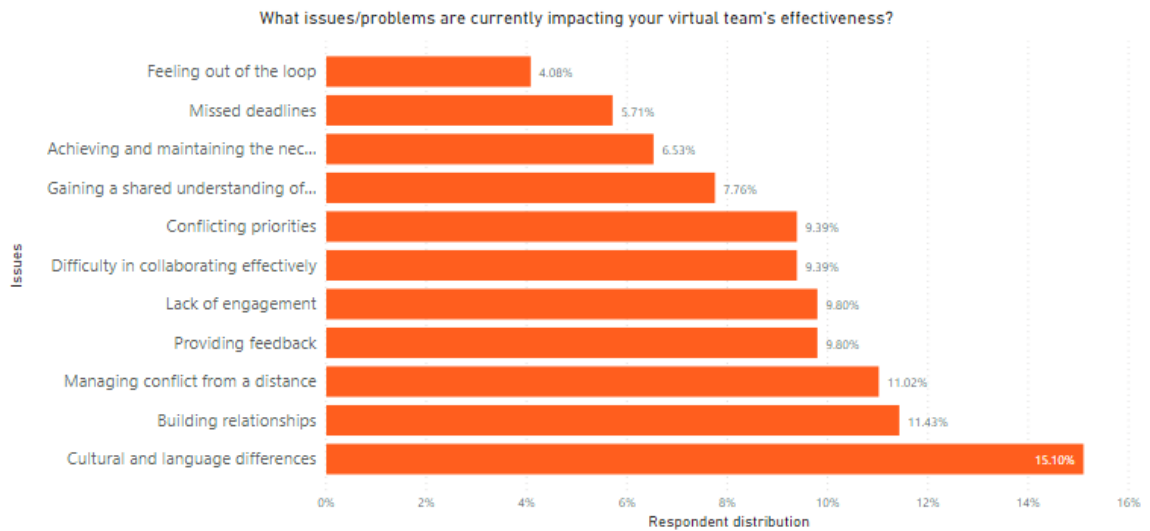


Figure 21. Current issues of the virtual team's effectiveness

(Source: Own Elaboration, 2020)

The bar chart demonstrates the proportion of the current issues which are negatively impacted on the practices of a virtual team.

On a whole, the general trends of problems reported by the respondents were not highly differentiated in percentage with the notable exception of the first and last ones.

Of the top four issues recorded by the respondents, the first issue was occurred with the lowest percentage, which accounted for 4%, that means only four percent of the respondents were feeling out of the loop during their work in a virtual team. With a smaller difference in the problems of missed deadlines, achieving and maintaining trust, and gaining a shared understanding were averaged 5%, 6%, and 7% respectively, which showed that these problems are slightly impacting on the respondents' virtual team while the problem of cultural and language differences are heavily impacting with the highest percentage of 15%, which is over 3 times higher than the first problem.

As the second highly impacted problems, building relationships and managing conflict from a distance have been considered with around 11% agreement by the respondents. In addition, it can be said that the problems of providing feedback, lack of engagement, difficulty in collaborating, and conflicting priorities are moderately impacting on the effectiveness of virtual team with around 9% in each.

5. Results and Discussion

The results of the present study demonstrate two categories. First, the results confirm the findings about the challenges in the virtual workplace in general as well as in specific teams. Second, these results highlight the perspectives on the virtual team comparing to the traditional team in terms of team efficiency, task accomplishments, and collaboration establishment.

First of all, the significant challenges which are found from the result of the present study will be discussed in the following.

From the results, it is clear that different languages and different time zones are the major challenges in the virtual team in general, which can be seen in Figure 20 with the evidence of responses analysis from the participants of this study. When it is taken a look into the specific virtual team, the cultural diversity in virtual team is also drawn as a main challenge in the workplace. Although cultural difference was the least of all main obstacles in general research, it was occupied at the first place of the current issues in the real-world practice of the virtual team (Figure 21).

Another promising finding is that building relationships between virtual members and it was found as the second major challenge, which is currently impacting in the virtual team effectiveness. This finding can also be proved with the confirmation of the analysis result from Figure 19, where participants answered that sufficient communication factor significantly influence the collaboration between virtual team members. This finding was mostly as expected because in the literature part of this diploma thesis, communication is described as the critical factor in virtual team's success.

In addition, it can be said that creating trust is the part of building relationships between virtual members. Despite the fact that trust is specified as the virtual workplace's famous issue in the literature review, the finding from this study casts that the factor of building trust has less impact on collaboration comparing to the communication factor (Figure 19). On the other hand, the results from Figure 16, where participants of this study provided their honest answers to the question of different techniques in managing comparing to the traditional team. In their answers, it can be seen that the participants are nervous of being watched them all the time via video surveillance and being kept track of their performance by their supervisor or manager. Therefore, it can be drawn a conclusion through these findings that those mentioned different techniques of managing are derived

from the lack of trust between manager and team members, and trust is still a popular issue that need to be developed more in virtual team's success.

A further novel finding is about the management challenge in the workplace. This challenge can be related to the leadership issue. As leadership is very important in the virtual team management, the function of team leader or project manager has a huge effect on team's performance. With the result of collected data analysis from Figure 19, the factor of team leader action was rated as the third most approved influential factor as well as managing conflict from a distance was reported as third most serious issue in Figure 21. Also, it is notable that the support of team's manager is absolutely necessary in management because providing feedback to team member's performance and lack of engagement to keep team members motivated were studied as currently impacted problems on the virtual team's effectiveness.

The next substantial finding is that challenge in the availability of information in time as it was recorded as exceptionally influence factor on collaboration in virtual workplace (Figure 19). It can be generally accepted that this finding is based on the technology matter since technology plays an important role in virtual work and information can be only flowed through the technology. Therefore, the capability of conducting necessary information through technology can be a big issue when adequate technological infrastructure is not supported.

As the second category of the result from the present study, the opinion of the participants on virtual team will be discussed below.

The analysis from this study found the evidence for virtual teams in a fact that virtual teams are more appropriate for accomplishing the tasks than traditional teams. Most of the approvals for this fact are coming from the participants who are working in international team and it is reasonable because in international team there are employees from various location and different time zones, thus shares some characteristics of virtual team.

In terms of the opinion on team efficiency and the role of IT in virtual team comparing to traditional team, the findings from the analysis show that they are as equally efficient as possible in both teams. However, when it comes to establishing collaboration with coworkers, more difficulties are found in virtual team than in traditional team, as anticipated, with the evidence of analysis result from this study (Figure 18).

To sum up, this conducted study discovered the challenges in the virtual workplace and participant's opinions on the virtual team compared with traditional team in a certain degree.

5.1 Recommendations

According to the objective of this diploma thesis, the following recommendations are suggested to overcome the specific challenges, those were discussed in above section.

1. Keen to learn cultural differences

Each member in the virtual team should be eager to learn cultural diversity at any given situation to get along with another because it can have huge impact on communication and team performance. By getting to know more differences in each other, it can lead to reducing misunderstanding among team members. However, learning the cultural differences alone is not sufficient for addressing the challenge, paying respect and attention to those diversity should be also added together.

2. Develop small talk as much as possible

To build a relationship between virtual team members, having a conversation between team members plays an important role. Regardless of time zone differences and tight schedule during the implementation of project, there might be a small amount of time before starting any meetings or conferences. Virtual team members should have a small talk during such mentioned time as well as at any given time since making small talk with your coworker is the starting point of building relationship and trust.

3. Be aware of well-being

This recommendation is mainly focused on the leadership roles. To overcome the challenges regarding to the relationship between leaders and their employees, managers should show interest in their employee's welfare, happiness, and health. Most importantly, managers should let the employees feel secure in a way that they are available when it is necessary to help them and support them. As a consequence, trust can be emerged, and a good relationship between managers and employees can be easily maintained.

4. Create encouragement

Another recommendation for the leadership roles is to set up the motivation and to provide personal feedback as much as possible for the virtual team members. Since the distance and lack of personal interaction matter in virtual team, it is a lot harder than in traditional team. However, it can be done by arranging face to face meeting through video communication tools frequently and offer them the necessary feedback to their work. Having sufficient support from managers can result to the team's success.

5. Set a great technology infrastructure and improve information processing

As the information are conducted through technology in virtual team, the availability of information is essential in the work of projects. Without technology, the work cannot be done. So, the great technology needs to be set in the virtual organization as well as the required technical training and support should be offered to the employees in order to be capable of carrying out the necessary information in time.

6. Conclusion

Starting from the last 20 years, virtual teams have been taking off in business world with the help of advanced technology and the great deal they offer. When the world pandemic started, people are forced to work from home and working from a distance has become a boost. This introduces the rapid development of virtual team has accelerated and the trend of remote working lengthen again with the benefit of cost effectiveness, convenient assist, 24/7 services, and getting more energetic employees.

The capability to collaborate with coworkers is critical in the teamwork. Every teamwork needs to have strong communication and ability of working together in the team because they are very essential and they provide huge effectiveness to the performance of the team and eventually, it can result in the success. Therefore, virtual team needs those effective collaboration more than traditional team as virtual team has some limitations such as lack of face-to-face interacting, cultural diversity as well as different languages and time zones, electronic-mediated communication.

As a result of those limitations, virtual team require special characteristics including global mindset, taking advantage of advanced technology, ability of resolving conflicts from a distance, and an exclusive leadership. Considering that, those characteristics are making virtual team distinguished from traditional team.

Nowadays, due to the great profits of what virtual team offers, several industries have been using virtual teams. It is notable that the industries in which virtual teams are practiced with the service of digital platform have less impact in the face of world crisis. Several examples can be found in the real-world situation during the pandemic.

Regarding to the different types of virtual teams, researchers introduced possible explanations depending on the types of the organization. In general, virtual teams are divided into three main classes which are time, space, and culture or organization. Those classifications are thoroughly depicted in the literature part of this diploma thesis.

Although virtual work offers extensive advantages, it cannot be denied that it is associated with many drawbacks including technological problems, communication difficulty, cultural diversity, leadership problems, work-life balance, and trust issue. Each of those challenges are widely discussed and solutions for enhancing practices in virtual setting are also proposed with the references of researches by many authors.

In the view of virtual team management, as virtual team comes with various challenges and adds complexity in management, additional management strategies are required in order to be efficiently managed comparing to the management of traditional team. The role of leadership in virtual team management need to pay constant attention to their employees in terms of giving motivation, building relationship, providing personal feedback, monitoring their performance, recognizing their achievement, and most importantly, establishing and maintaining trust. Although those areas can be simply improved in traditional team management, extra strategies and added leadership skills are needed in virtual team management. Consequently, advantages and disadvantages of managing a virtual team are widely discussed comparing to those of traditional team in the literature part.

The main aim of this diploma thesis is to identify the concepts of virtual teams compared to traditional teams by distinguishing the differences of managing virtual teams and traditional teams. In addition, another major objective of this diploma thesis is to analyze the significant challenges of managing in virtual workplace and suggest recommendation on how to overcome those challenges based on the finding of the conducted study.

In the theoretical part of the diploma thesis, all the proposed matters were fully examined. In the practical part, the survey questionnaire was being focused for own research and results from the questionnaire were analyzed and expressed to meet the objective of this diploma thesis.

In conclusion, it would appear that the findings from the analysis results were achieved to reach the target of this diploma thesis in the matter of studying the significant challenges in the virtual workplace. In addition, own recommendations to overcome those challenges were added together. Implementation of these recommendations should help to address the challenges and improve effectiveness of the virtual work. Collectively, own research appears consistent with the aim of the diploma thesis.

Further research should consider the potential effects of emotional responses by virtual workers. For example, as long as the world crisis is carrying on, the negative emotions such as feeling of isolation and loneliness, lack of social support, being unable to share being stressed, and missing the life at office, are gradually approaching to virtual employees. Those assumptions might be addressed in future studies.

7. Bibliography

Anoye, A. B. & Kouamé. J. S. (2018). *Leadership Challenges in Virtual Team Environment*. INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH. 7(7). 160–167 ISSN 2277-8616

Back. K. (2020). *June 2020 Remote Jobs Report* [Online]. Available at: <https://www.virtualvocations.com/blog/telecommuting-news/june-2020-remote-jobs-report/> (Accessed: 23rd July 2020)

Barber, L. K., Conlin, A. L., and Santuzzi, A. M. (2019). *Workplace Telepressure and Work Life Balance Outcomes: The Role of Work Recovery Experiences*. Stress and Health. 35(3). DOI: 10.1002/smi.2864.

Bergiel, B. J., & Bergiel, E. B., & Balsmeier, P. W. (2008). *Nature of Virtual Teams: A Summary of Their Advantages and Disadvantages*. Management Research News. 31(2). pp. 99–110. Emerald Group Publishing Limited. ISSN 0140-9174

Berry, G. R. (2011). *Enhancing Effectiveness on Virtual Teams Understanding Why Traditional Team Skills Are Insufficient*. Journal of Business Communication - J Bus Comm. 48. pp186-206. DOI 10.1177/0021943610397270.

Conley. R. (2014). *3 Characteristics of Successful Virtual Teams* [Online]. Available at: <https://leaderchat.org/2014/09/25/3-characteristics-of-successful-virtual-teams/> (Accessed: 28th July 2020)

DasGupta. P. (2011). *Literature Review: e-leadership*. Emerging Leadership Journals. 4(1). Pp 1-36. Regent University School of Global Leadership & Entrepreneurship. ISSN 1930-806X

DeRosa, D. M., & Lepsinger, R. (2010). *Virtual team success: A practical guide for working and leading from a distance*. 1st Edition. Jossey-Bass, San Francisco USA. ISBN 978-0-470-53296-6

Fisher, K., & Fisher M. D. (2001). *The distance manager: A hands-on guide to managing off-site employees and virtual teams*. New York: McGraw Hill Professional. ISBN 0071374523, 9780071374521

Gibson, C. B., & Cohen, S. G. (2003). The last word: Conclusions and implication. In C. B. Gibson & S. G. Cohen (Eds.), *Virtual teams that work: Creating conditions for virtual team effectiveness* (pp. 403-421). San Francisco, CA: Jossey-Bass.

Golden, T. D. (2006). *The role of relationships in understanding telecommuter satisfaction*. *Journal of Organizational Behavior*, 27, 319–340. <https://doi.org/10.1002.job.369>

Graves L.M., Karabayeva A., (2020), "*Managing Virtual Workers—Strategies for Success*," in IEEE Engineering Management Review, vol. 48, no. 2, pp. 166-172, doi: 10.1109/EMR.2020.2990386.

Hering, B. B. (2020). *Remote Work Statistics: Shifting Norms and Expectations* [Online]. Available at: <https://www.flexjobs.com/blog/post/remote-work-statistics/> (Accessed: 12th June 2020)

Javenpaa, S.L., Knoll, K.& Leidner, D.E. (1998). *Is there anybody out there? Antecedents of trust in global virtual teams*. *Journal of Management Information Systems*.14(4). pp. 29-64.

Jawadi, N. & Daassi, M. & Kalika, M. & Favier, M. (2009). *Virtual Teams: The role of Leadership in trust management*. *Computer-Mediated Communications: Implications for individuals and Organizations*. Pp. 34-45

Juneja, P. (2015). *Virtual Teams Vs Traditional Teams*. MSG Management Study Guide [Online]. Available at: <https://www.managementstudyguide.com/virtual-teams-articles.htm> (Accessed: 30th May 2020)

Kayworth, T. & Leidner, D. (2001/2002). *Leadership effectiveness in global virtual teams*. Journal of Management Information Systems. 18(3). pp. 7-40.

Kimble, Chris & Barlow, Alexis & Li, Feng. (2005). *Effective Virtual Teams through Communities of Practice*. EconWPA, Industrial Organization.

Krawczyk-Brylka, B. (2017). *Comparative Study Of Traditional And Virtual Teams*. 21(3). Pp 233-245. DOI 10.17466/TQ2017/21.3/O

Kumar, N & Haydon, D. (2020). *Industries Most and Least Impacted by COVID-19 from a Probability of Default Perspective– March 2020 Update* [Online]. Available at: <https://www.spglobal.com/marketintelligence/en/news-insights/blog/industries-most-and-least-impacted-by-covid-19-from-a-probability-of-default-perspective-march-2020-update> (Accessed: 5th May 2020)

Leenders, Roger & Engelen, Jo & Kratzer, Jan. (2003). *Virtuality, communication, and new product team creativity: A social network perspective*. Journal of Engineering and Technology Management. 20. Pp 69-92. DOI 10.1016/S0923-4748(03)00005-5.

Lepsinger, R. & DeRosa, D. (2010). *Virtual Team Success: A Practical Guide for Working and Leading from a Distance*. John Wiley & Sons, Inc. ISBN: 978-0-470-53296-6 October 2010

Liliana, S. C. (2014). *Virtual teams: Opportunities and challenges for e-leaders*. *Procedia-Social and Behavioral Sciences*. Elsevier Ltd. 110. Pp 1251-1261. <https://doi.org/10.1016/j.sbspro.2013.12.972>

Lopez, A. (2020). *What Is a Virtual Team? Definition & Examples* [Online]. Available at: <https://www.projectmanager.com/blog/what-is-a-virtual-team> (Accessed: 4th August 2020)

Lumseyfai, J. & Holzer, T. & Blessner, P. & Olson, B. (2019). *Best Practices Framework for Enabling High-Performing Virtual Engineering Teams*. IEEE Engineering Management Review. PP. 1-1. 10.1109/EMR.2019.2916815.

Martin, L. M. (2020). *7 Challenges Virtual Teams Face (And How To Tackle Them)* [Online]. Available at: <https://biz30.timedoctor.com/challenges-of-virtual-teams/> (Accessed: 30th August 2020)

Mawson, A. (2020). *The Science Behind Managing Virtual Teams* [Online]. Forbes. Available at: <https://www.forbes.com/sites/amawson/2020/06/17/the-science-behind-managing-virtual-teams/#556fd4412023> (Accessed: 2nd September 2020)

Mayer, R., Davis, J., & Schoorman, F. (1995). *An Integrative Model of Organizational Trust*. *The Academy of Management Review*, 20(3), 709–734.

Mortensen, M. & O’Leary, M. (2012) *Managing a Virtual Team* [Online]. Harvard Business Review. Available at: <https://hbr.org/2012/04/how-to-manage-a-virtual-team> (Accessed: 12th August 2020)

Newman, E. (2015). *Serving Customers through Virtual Teams* [Online]. Available at: <https://corp.yonyx.com/customer-service/serving-customers-through-virtual-teams/> (Accessed: 27th July 2020)

Pearce, C. L., Yoo, Y., & Alavi, M. (2004). *Leadership, Social Work, and Virtual Teams: The Relative Influence of Vertical Versus Shared Leadership in the Nonprofit Sector*. In R. E. Riggio & S. S. Orr (Eds.). *Improving leadership in nonprofit organizations*. pp. 180–203. Jossey-Bass, San Francisco USA. ISBN 13:978-0787968304.

Pitagorsky, G. (2007). *Managing virtual teams for high performance*. Paper presented at PMI® Global Congress 2007—North America, Atlanta, GA. Newtown Square, PA: Project Management Institute.

Powell, A. Piccoli, G, Ives, B. (2004). *Virtual teams: a review of current literature and directions for future research*. *The Database for Advances in Information Systems*.. 35 (1). Pp 6-36. ISSN 1532-0936

Raghuram, S., Garud, R., Wiesenfeld, B., & Gupta, V. (2001). *Factors contributing to virtual work adjustment*. *Journal of Management*, 27, 383–405.

Raghuram, S. & Wiesenfeld, B. M. (2004). *Work-Nonwork Conflict and Job Stress among Virtual Workers*. *Human Resource Management*. 43. 259 - 277. DOI: 10.1002/hrm.20019.

Roseke, B. P.Eng., PMP (2019). *The Benefits of Virtual Teams* [Online]. Available at: <https://www.projectengineer.net/the-benefits-of-virtual-teams/> (Accessed: 4th June 2020)

Savolainen, T. (2013). *Trust Building in e-Leadership – Important Skill for Technology-Mediated Management in the 21st Century*. International Conference on Management, Leadership & Governance: 288-XI. Kidmore End: Academic Conferences International Limited.

Serrat O. (2017). *Managing Virtual Teams*. In: *Knowledge Solutions*. Springer, Singapore. https://doi.org/10.1007/978-981-10-0983-9_68

Shamir, B., & Salomon, I. (1985). *Work-at-home and the quality of working life*. *Academy of Management Review*, 10(3), 455-464. Available at: <http://dx.doi.org/10.2307/258127>

Sonnentag, S. (2018). *The recovery paradox: Portraying the complex interplay between job stressors, lack of recovery, and poor well-being*. *Research in Organizational Behavior*. 38. 169–185. <https://doi.org/10.1016/j.riob.2018.11.002>

Törmänen, M. (2017). *Virtual teams: considerations, advantages and disadvantages*.
Townsend, A. M., DeMarie, S. M., & Hendrickson, A. R. (1998). *Virtual Teams: Technology and the Workplace of the Future*. *The Academy of Management Executive*, 12(3), pp 17–29

Wong, K. (2020, Apr 1). *25 Key Remote Work Statistics for 2020* [Online]. Available at: <https://www.achievers.com/blog/remote-work-statistics/> (Accessed: 7th July 2020)

Zaccaro, S., & Bader, P. (2003). *E-Leadership and the Challenges of Leading E-Teams: Minimizing the bad and Maximizing the Good*. *Organizational Dynamics*, 31, 377-387. [http://dx.doi.org/10.1016/S0090-2616\(02\)00129-8](http://dx.doi.org/10.1016/S0090-2616(02)00129-8).

Zhang, S., Fjermestad, J., & Tremaine, M. (2005, Jan 3-6, 2005). *Leadership styles in virtual team context: Limitations, solutions and propositions*. Paper presented at the The 38th Hawaii International Conference on System Sciences. Waikoloa. HI. USA.

Zhang, J. (2016). *The Dark Side of Virtual Office and Job Satisfaction*. *International Journal of Business and Management*. 11(2). 40. DOI:10.5539/ijbm.v11n2p40.

Zigurs, I. (2003). *Leadership in Virtual Teams: Oxymoron or Opportunity?* *Organizational Dynamics*, Vol. 31, No. 4, pp. 339-351

Zofi, Y.S. (2012). *A manager's guide to Virtual Teams*. American Management Association. ISBN 1621983323, 9781621983323

8. Appendix

8.1. Questionnaire

Dear Participant,

As part of a master's Degree in Informatics, I am currently conducting a research to investigate the challenges likely to occur in managing the virtual teams compared to traditional teams.

Your collaboration is more than welcome. Participation is voluntary, and all data gathered will protect confidentiality and anonymity and any respondent has the right to withdraw at any time. The research findings will be anonymous and confidential and will not refer to company name, organization name or respondent names. The completion of this questionnaire will require approximately 12 minutes of your time. Your participation in this study is much appreciated.

For the purpose of this research, virtual teams are a group of people who work across time, space and often organizational boundaries using interactive technology to facilitate communication and collaboration whereas traditional teams work together in the same building.

I) General Information

1. What is the number of employees in your organization?

- Less than 100
- 101 – 500
- 501 – 1000
- 1000 – 5000
- More than 5000

2. What is the type of your organization?

- Corporation
- limited liability company
- Public limited company
- Private limited company

- University
- other

3. What is the primary business/activity of your organization?

- Information and Communication Technologies (ICT)
- Software Development
- Banking and Insurance
- Construction/Building
- Consultancy
- Production Industry
- Research and Development
- State Administration
- Financial Intermediation
- Business Services
- Education
- Other:

4. Does your organisation mostly operate on which market?

- national/domestic market
- regional market (for example, Central Asian market, Middle East market, Central American market etc.)
- international market

5. What is the basic structure of your organization?

- Project Structure (the organization structure in which the project manager leads the group and has complete control to make any/all decisions)
- Functional Structure (the organization is divided into various departments where people with similar skills gather together.)
- Matrix Structure (combination of Project and Functional Structures)
- Virtual Structure (a set of (legally) independent organizations that share resources and skills to achieve its mission / goal)

II) Project Setting

6. In your organization, is there a position of "Project Manager"?

- Yes
- No

7. What are the project types in your organization?

- geographically distributed (in the different regions)
- internal (within the company/organisation)
- external (they include team members outside of your company/organization)

8. What kind of project team exist in your organization?

- local (team members are coming from your country)
- international (team members are coming from different countries)

9. Your role of participation in the project is:

- Sponsor
- Project Manager
- Project Team Member
- Currently team member, but sometimes PM
- Other:

III) Opinion On Virtual Team

10. From your point of view, which team structure is more appropriate for accomplishing projects' tasks?

- Virtual Team (Virtual teams are groups of individuals who work together even though they are physically separated)
- Traditional Team (A single location face to face team environment)

11. What are the main reasons of establishing virtual teams in your organization?

- cost and resource constraints
- the shortened time for project implementation
- virtual teams can be quickly established according to the markets' demands
- optimal utilization of team members' knowledge
- increasable probability of discovering the new innovations
- Forced onto us by COVID
- Other:

12. Your cooperation with a remote team member is carried out via:

(1 – never, 2–rarely, 3 – sometimes, 4- often, 5 –always)

e-mails	1	2	3	4	5
mobile devices	1	2	3	4	5
Instant Messaging	1	2	3	4	5
Audio Conferences	1	2	3	4	5
Video Conferences	1	2	3	4	5
Extranet/Private Network	1	2	3	4	5
Project's web site	1	2	3	4	5

13. What is your view on virtual teams are more efficient than traditional teams?

- Totally disagree
- Disagree
- They are both equal efficient
- Agree
- Totally agree

14. Do you agree with the opinion that the involvement of IT (Information Technology) in the work of Virtual Teams is more important than in the work of traditional team?

- Totally disagree
- Disagree
- They are both equal efficient
- Agree
- Totally agree

IV) Virtual Team Management

15. In your organization, is there any different techniques of management between virtual team and traditional team?

- Yes
- No
- Maybe

16. If the answer is “Yes”, what are the main differences?

Write the answer down:

17. Do you agree with the opinion that It is more difficult to establish collaboration in virtual team compared with traditional team?

- Totally disagree
- Disagree
- They are both equal efficient
- Agree
- Totally agree

18. Rate factors which have effect on collaboration between virtual team members.
 (1 – no influence, 2– minor influence, 3 – influence, 4 - significantly influence,
 5 –exceptionally influence)

building trust	1	2	3	4	5
adequate/sufficient communication	1	2	3	4	5
unclear team member roles and responsibilities	1	2	3	4	5
technological capability of IT	1	2	3	4	5
team leader action	1	2	3	4	5
availability of necessary information in time	1	2	3	4	5

19. The main obstacles for establishing a virtual team are:

- different languages between virtual team members
- different time zones
- different organizational norms/rules
- cultural diversity of virtual team members
- dispersion of team members
- Other:

20. What issues/problems are currently impacting your virtual team's effectiveness?
 (check all that apply)

- Cultural and language differences
- Lack of engagement
- Managing conflict from a distance
- Conflicting priorities
- Missed deadlines
- Providing feedback
- Feeling out of the loop
- Building relationships
- Difficulty in collaborating effectively
- Gaining a shared understanding of goals and tasks
- Achieving and maintaining the necessary levels of trust between team members