Will virtual collaboration outlive the virus?

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Abstract

In response to COVID-19 and the subsequent measures taken against the further spread of the virus, organizations have moved much of their activities online. Consequently, employees have been forced to work from home and rely on virtual collaboration (VC) tools to communicate with colleagues and clients. In the midst of this global transition to virtual means of working, this paper investigates the experience of the working population with virtual collaboration and the implications this period will have on how organizational collaboration will be achieved in the future. The research consisted of two main methods: (1) A questionnaire (164 respondents) based on two models (Davis's (1986) Technology Acceptance Model and Denstadli et. al's (2012) task- and relational dimension model) targeted at the working population, and (2) semi-structured follow up interviews with respondents. The main findings are that (1) the continuance intent of VC technology is related to its ease of use and utility, (2) these factors are shaped by organizational support, (3) the transition to virtual ways of working has been the cause of organizational learning about the opportunities of VC, and (4) the choice of meeting formats are increasingly becoming the conclusion of a negotiation process between those involved.

Keywords: virtual collaboration, technology acceptance, task- and relational dimension, meetings, virtual meetings, COVID-19, coronavirus

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1. Introduction

The way we work has changed throughout history. While meeting your coworkers at an office may seem normal now, it has not always been like that. For centuries, most of us worked outside doing manual labor. The way we work, where we do it and how we are rewarded is something which changes over time. Only in 1956 were more people working in offices than outside of them (Mance, 2020). Since then the office space has evolved, from a place in which executives looked down on their workers on a lower level, to what the likes of Google, Facebook and Airbnb call a 'homelike experience'. A place where you can dress down, do your laundry and bring your dog. In all these different office forms, one thing has always been certain, these were the places business was conducted, the place to ask your coworkers about the weekend and maybe even the place where an office romance started. However, in 2020 office life as we knew it changed. Instead of turning our offices into homes, our homes were now our offices. This thesis will look into what this will mean for the way we collaborate with our coworkers.

What changed in 2020 was the arrival of a new virus, one humans had not been exposed to yet and therefore had huge influences on the way we live. It started with a cluster of pneumonia cases in Wuhan, China (WHO, 2020). A couple of days later, these cases of pneumonia turned out to be caused by a novel coronavirus with the name SARS-CoV-2. This virus leads to patients suffering from what is now known as COVID-19, an infectious disease which in most cases causes mild symptoms such as coughing and a fever. However, in a limited number of cases these symptoms progress into viral pneumonia and multi-organ failure which can eventually lead to the death of a patient.

This novel disease had an influence on many areas of our lives. People around us got infected, borders closed and following the latest number of infections replaced football as a national sport. The most impactful change however, was a concept called social distancing, which meant that people were told to keep distance in order to limit the spread of the disease. One of the biggest consequences of this phenomenon was that access to work was also restricted. So while essential

workers started working with as much distance as possible, most non-essential workers were forced to go remote. As they moved from face to face into the virtual world, organizations had to adapt rapidly. Suddenly, the platform used to meet your coworkers was no longer called the 'coffee machine' but 'Zoom'. A video conferencing app whose user figures went up from 10 million to 200 million daily users in three months (Financial Times, 2020).

This transition has had multiple implications on the way collaboration is achieved, and acts as the catalyst for the research purpose of this paper. Up until this point, it is fair to say that the majority of communication both within and between organizations has been preferred to take place in a physical setting. Therefore, the default meeting format has meant for people to catch a flight to meet clients or commute to work to interact with colleagues. Due to the lockdowns in response to the coronavirus outbreak, much of this travel was made impossible. Virtual collaboration does not necessitate travel; Instead, one can comfortably attend meetings from the setting of one's home. However, while reduced travel is great in terms of less impact on the environment, traffic congestion and traveler's stress, it is not clear whether or not the current mass use of virtual collaboration is here to stay or not, which is the central question of this research. Will we return to the default meeting format of physical co-presence, or will current levels of virtual collaboration outlive the virus?

This research will look into this new virtual reality, the way it is adopted by individuals and its impact on the future of how we work. The conclusions could be vital for organizations which are looking to restart their physical activities after the lockdown. It will serve as guidance for a possible new virtual future of our work, as well as a basis for academics to answer the age old question of how to work most effectively, therefore contributing to the fields of management, psychology and communication studies. In order to do this, the concept of virtual collaboration is used, which can be defined as ''the use of ICT for supporting the collective interaction among multiple parties involved'' (Hossain & Wigand, 2004). Its use will then be investigated using a combination of different approaches. Several initial interviews with travel managers were conducted in order to get a better understanding of the state of work within organizations during

corona, investigate the balance between meetings and travel, and develop the research questions stated below. These inputs were combined with a literature study to select two different models which served as the basis for a survey with 164 respondents, 9 of whom were interviewed at a later stage to produce stronger results and explore some of the practical implications behind their answers. The results of this research is therefore based on the statistical insights gained from the survey, the initial exploratory interviews and a number of follow up interviews.

The following research questions were used:

RQ 1: What influence has the coronavirus had on the use of virtual collaboration technology in organizations?

RQ 2: What are the current experiences of virtual collaboration technology among the working population?

RQ 3: What are the current perceptions of the future role of virtual collaboration?

- Is virtual collaboration perceived to be a valid alternative to physical collaboration?

To answer the research questions, the task and relationship dimension model (Denstadli et. al., 2012) and an adapted version of the Technology Acceptance Model (Davis, 1986, p. 24) were used. It was found that face to face meetings are highly preferred when there is a focus on relationship building as well as when tasks are ambiguous or complex. For tasks of low complexity, virtual meetings formats are much more preferred. The fundamental principles of the technology acceptance model were confirmed; The perceived ease of use and usefulness of virtual collaboration are predictors of attitudes towards it. Furthermore, both the perceived usefulness and attitude regarding virtual collaboration are in turn predictors of users' intention to continue using this technology.

There are both upsides and downsides to virtual collaboration, however. People struggle with many aspects of its use, especially the increased difficulty of social interaction and maintaining focus in one's home where there are many distractions to be found. Nonetheless, a wide support for the further use of virtual collaboration was documented; It was perceived to be a great

alternative to both short- and long distance travel, especially in relation to poorly planned meetings without clear agendas. The possibility of working from home is very attractive in the sense that one can decide more freely one's working hours as well as not having to commute long distances to work. It was reported that more and more people will want a balance between working virtually from home and physically in the office.

Organizations are also noting the benefits of the opportunities that virtual collaboration provides, and have long sought to transition some of their activities to virtual settings, an aspiration which has been achieved due to the necessity of adapting to the lockdowns. It is concluded that while certain elements of virtual collaboration are very probable to be permanently integrated within business structures, co-presence continues to play an important role in organizational collaboration. Yet, organizations are now generally better equipped to handle virtual collaboration, both technologically and knowledge-wise. They also have an increased sensitivity in regards to what type of meeting agendas necessitate travel and are more prone to discussing the possibilities and benefits of moving certain activities to virtual settings. As this increased awareness is prevalent in many organizations, the format in which meetings are to be conducted is increasingly decided by means of dialogues between those involved.

2. Background

In this section, relevant academic research is reviewed in order to discover critical aspects of the theme of this research. Academic search engines such as Google Scholar and the licensed research database 'LUBsearch' were used during research. Frequent search terms were 'virtual collaboration', 'virtual meetings', 'physical meetings', 'business travel', 'technology acceptance', 'digital collaboration', 'travel management', and variations of these. An important extra source of information was collected with the help of three travel managers and a global category manager. These discussions provided meta-knowledge on what is currently happening in organizations in terms of virtual collaboration and travel.

Firstly, this chapter presents the general insights that were gathered from initial interviews with travel managers. The transition to virtual collaboration as an effect of the lockdowns caused by the coronavirus outbreak is then contextualized in terms of learning and change; As organizations are forced to adapt to new ways of work and develop new ways to interact, one can think in terms of previous and new status quos. Successful transitions into virtual ways of working can be the products of 'transforming ideas'. Later, travel is discussed. A closer look into the reasons as to why we travel shows that travel is a way for humans to meet. Subsequently, the differences in the ways we meet are presented. Two distinct forms of meetings are explained, virtual meetings and face to face meetings. Lastly, as virtual collaboration platforms are being widely used by organizations as mediums for virtual meetings, one can think of these platforms as new technologies. The cause of eventual attitudes and continuance intents of new technologies is explained by the so called 'technology acceptance model' (TAM) (Davis, 1986).

2.1 Interviews with travel managers

In this subsection, insights that were gathered from preliminary interviews with three travel managers and a global category manager will be presented. The interview questions can be found in the 'Appendix B'. Thanks to the participants, the authors could better understand the impact of the coronavirus on how we meet and more accurately frame the purpose and research questions of this research. Since a large part of a travel manager's role is to create the conditions for work and meetings, the thoughts of the interviewees can be viewed as real-time glances into the world of (virtual) collaboration and travel during the time of the coronavirus outbreak. Hence, why travel managers were sought after is because travel and meetings are intrinsically linked; We travel in order to meet. In light of the coronavirus outbreak, travel took a big hit. It was therefore believed to be of importance to conceptualize this development as virtual collaboration substituting business travel in organizations as an emerging alternative method of facilitating interaction between different parties and what this means in relation to overall business policies when it comes to, most importantly, meetings and, secondly, travel.

First and foremost, there was a unanimous agreement that we find ourselves in an unprecedented environment. No single event in the past has ever had such an encompassing effect on the way we travel and meet. As access to the office and travel has been greatly restricted, most organizations have had to rethink the way they communicate. Platforms such as Zoom, Google Hangouts and Microsoft Teams are popular choices of medium.

When it comes to what types of challenges have arisen in face of a widespread transition to virtual collaboration, they concluded the following. In general, employees are experiencing a multitude of issues when it comes to connecting to colleagues, collaborating on complex tasks and utilizing available technology effectively. In response, organizations are using their intranets to share information on how to deal with these problems. Employees are given tools on how to run virtual meetings. One of the travel managers emphasized the issue of mental health that arises from the isolation people are experiencing and pointed out that this is a huge problem, one which organizations must take seriously. Indeed, another travel manager explained how their organization encourages their employees to have virtual coffee breaks and to socialize virtually in order to sustain the idea that they are part of a context. It seems that active management and visible leadership is important in these times; Many of the interviewees implied that it is important to manage contextual differences in the way communication is achieved. These differences may be cultural or technical in nature and it can also be a matter of age difference. Weighing these different parameters against each other is paramount in deciding how collaboration should look like.

In terms of what organizations themselves are learning and experiencing in these times, is that the choice of, and nature of, collaboration between organizations has become the product of an increased dialogue between said organizations and important stakeholders. As most organizations are finding themselves in the same boat so to speak, clients are more and more accommodating to conducting business online. One of the travel managers argued that it has actually always been the case that people have preferred not to travel; The reason why many

people feel this way is due to numerous reasons, be it the stress that arises from excessive travel or the fact that work-life balance has taken a bigger role in people's lives. Consequently, being able to be present at home while still fulfilling one's organizational role is increasingly attractive. Additionally, organizations are learning that it is indeed possible to conduct business and communicate virtually on a grand scale. So much so, that the interviewees believe that organizations are seeing these times as an opportunity to rethink their travel policies and to ask the question "can this be done virtually?". And judging from the fact that the VC infrastructure of most organizations has improved greatly as a consequence of the virus, this is even more viable now according to the interviewees. A surge in CSR and environmental awareness has also caused travel policies to take environmental impact into account.

Lastly, the lasting effects of the coronavirus on organizations were discussed. It was quite agreed upon that there is still a need for a recovery time. Organizations are still dealing with challenges as they come; That is why, in the eyes of one of the interviewees, agile leadership will be in high demand as organizations are facing times of uncertainty. Another interviewee spoke generally about important questions that are still up for debate; (1) How long will we be in this situation? (2) Will it be a slow rebound? (3) How much of our former activities will return to physical settings and how much of them will move to virtual environments? One of them believed that by the autumn of 2020 the 'results' will be in; Companies will have solidified their virtual collaboration infrastructure and come to the conclusions that business travel is not necessary to the degree of which it has previously been conducted. One of the managers expected a 30% overall reduction in business travel but not more since co-presence is still highly valued both in business relationships but in interpersonal relationships in general. The types of meetings that will be greatly reduced are poorly planned meetings with a lack of strong agendas. Henceforward, meetings that require much travel will be the ones that are much more detailed and take the form of prolonged collaboration or are very practical in nature. In the long-term, as organizations will have become much more comfortable with virtual collaboration in place of physical collaboration, the interviewees believe parts of businesses will move to travel free business structures. This is not to say that there will not be a potential rebound to physical

settings. A key point that was brought in the interviews is the fact that we crave physical connection and that this fact will not go away. However, in the words of one of the travel managers, “travel management should be called meetings management”. Travel is simply a way to get to a place where you meet people. The focus from now on will be on how to create the most valuable interactions while thinking sustainably.

2.2 Learning and change

The coronavirus presented humanity with an unprecedented situation. In order to minimize the loss of human lives, people were told to distance themselves from each other, not to go to work, not go out for dinner, and certainly not to travel. These measures were highly impactful on people’s lives. Since change can also be perceived as the root of many of the effects discussed in this research, it is important to discuss change and learning in further detail.

Surprisingly, while one can find definitions for societal change or change in organizations, it is difficult to find a definition for just the word change in academic literature. However, the online Oxford Learner’s Dictionary for Academic English (2020) does give a definition. It states that change is ‘’the act or process of something becoming different’’. In the current situation, the way we live our daily lives has become different. Connected to the concept of change is the idea of learning. This was described by Buchanan and Huczynski (2019) as ‘’the process of acquiring knowledge through experience which leads to a change in behaviour’’. In this research the experience is the exposure to more virtual collaboration, which could then lead to a change in behavior.

In order to get a better understanding of how these concepts are related to this research, one could have a look at Satir’s (Satir & Banmen, 1991, p. 118) model of change.

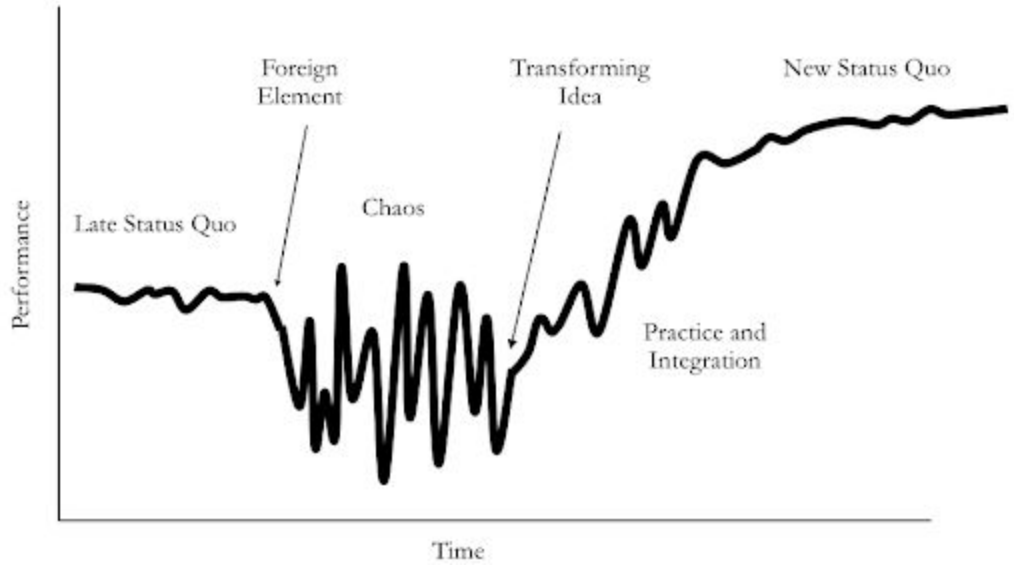

Figure 1. *Satir's model of change* (adapted from Satir & Banmen, 1991, p. 118)

While Satir developed her model as one for therapy, it has since been used in a wide range of subjects (Cameron & Green, 2015). The main idea of the model is that one usually tries to maintain the status quo; Life goes on as normal, there is harmony and performance is on a steady level. Then something changes and it is impossible to sustain the equilibrium. Satir describes this as the introduction of a foreign element. Just like what happens to our body when we contract the coronavirus, we do not have a set response, so a period of chaos ensues. This period of chaos will continue until the introduction of a transforming idea. This idea can mean many things; In therapy it can be input from a therapist, in trauma it can be acceptance, and in the world of social distancing it may be virtual collaboration. After this transforming idea is accepted, one can start integrating it and turning it into practice. If the new practice is integrated well, it can increase productivity and turn into a new status quo. This idea is compatible with the travel managers' prediction that we will see a lasting transition of some business activities to fully virtual (and therefore non-travel) structures once they have proved to function well in virtual settings, or in other words survived the period of chaos and been successfully integrated in practice.

2.3 Meeting and travel

If virtual collaboration is the new status quo, then business travel can be imagined to be the old. Ever since we have needed to meet, or buy and sell stuff, we have needed to travel. The Silk Road is a testament to this fact. Nowadays, organizations pay great sums to fly great distances to meet with clients, develop networks and expand their markets, to name a few reasons. To support this phenomenon, many organizations employ travel managers who can deal with the systems required for smooth travel policies, and negotiate with suppliers. This view constitutes a very popular one regarding travel management; That it deals with the more administrative and economic aspect of corporate travel, which is reflected in several research papers such as Bell's & Morey's (1995) '*Increasing the efficiency of corporate travel management through macro benchmarking*' or Ajitha et. al's (2016) '*Optimal travel management using software agent*'. However, recent trends show that travel management is preoccupying itself with the people aspect of travel to a larger degree. Gustafsson (2012, p. 276) said in his own words that "travel managers question travelers' reasons for traveling and encourage audio, video or web conferencing in order to reduce travel" for various reasons, be it care for the environment, reduction of costs or concern for travelers' health. He continues by stating that travel management has become much more concerned with 'how to meet' rather than 'how to travel', a sentiment which was corroborated during the discussions with travel managers, one of whom stated that travel management should be renamed 'meetings management'.

Yet, corporate travel has not been decreasing these recent years. One of the reasons is explained by Mokhtarian (2002) to be the fact that there is a simultaneous convergence and divergence between the growth of information and communication technologies (ICT) and business travel. Simply explained, it is argued that as ICT is developed, digital communication between organizations is facilitated, thus limiting the need for travel. However, paradoxically, as opportunities for digital communication increase, so do our networks which results in even more reasons for travel. To bring it back to the Silk Road, let's say that merchants started on foot.

Travel took a long time which meant that one could only go so far. Then people started traveling on horse; Now they could travel even further which meant that they could establish new trading routes. But they could only carry what the horse could carry on its back. Eventually horse carriages which could carry a lot more spices and goods were designed which made travel cheaper, thus further incentivizing more travel. A similar phenomenon is observed as ICT is developed. While Mokhtarian (2002) argues that the rise in ICT exceeds that of business travel, the net result still equals an overall increase in business travel. Lindeblad et. al (2016) brought up the potential rebound effect of virtual meetings in organizations. Without clear policies and strategies concerned with minimizing emissions via virtual meetings, the resources saved from utilizing virtual meetings could be used to further increase other travel. This goes to show that there is no black-or-white picture to be seen; Organizations' travel behavior is a product of a multitude of factors.

Not only does excessive business travel affect global warming, it can have adverse effects on employees' wellbeing. Burkholder et. al (2010) found positive relations between international business travelers and signs of poor health such as sleep deprivation, low blood pressure and overconsumption of alcohol. Striker et. al (2000) also pointed out that these stressors, which also include a heightened experience of not being able to cope with workloads as well as family disruptions, is of great concern not only to the individuals themselves but also the organizations which employ them. Høyer & Næss (2001) challenged the value of excessive travel for non-personal reasons, not only due to increased greenhouse gas emissions but that it essentially conflicts with time efficiency, something of obvious importance to organizations.

So why do we travel for business? Sometimes, it can not be avoided. When asked about what type of business travel constitutes as necessary travel, the travel managers interviewed for this research referred to work of practical nature as self-explanatory reasons. Another reason is that virtual communication is not always adequate in expressing valuable information in the form of non-verbal cues (Schaubroeck & Yu, 2017). This is perhaps a contributing factor as to why frequent business travelers whose jobs rely on close contact with their networks consider virtual

meetings to be of ‘second class’ and are less inclined towards virtual communication, in addition to sometimes considering business travel a lifestyle (Arnfalk & Kogg, 2003). The notion that co-presence, being in the same room as one’s interlocutor, adds to the quality of interaction is certainly not a rare one. So when do we choose virtual meetings and when do we choose face to face meetings? This question will be discussed below.

2.4 Virtual versus physical meetings

The effects of the introduction of virtual collaboration have been discussed for decades already. While once, the perception might have been that machines would by now have taken over most of our work, progress has not been as forthcoming. A similar development applies to the field of virtual collaboration. A paper by Geels & Smit (2000) very clearly presents how overoptimistic our expectations once were. It discusses an article written in 1964 which expected the need for business travel to have evaporated by the year 1984. In those days, a concept then called teleconferencing was seen as the future substitute for physical meetings. The assumption was that work only requires a set number of social contacts and that these interactions could easily be replaced by teleconferencing. Interestingly, the article also voiced the expectation that by 1984 everyone would own a personal computer with access to centralized files, therefore undermining the raison d’etre of public libraries across the developed world. Luckily for those who prefer a hard copy, this concept we now know as the internet was only introduced later and did not mean the end of the library.

More recently, a change can be observed in the perception of the role of virtual collaboration. As reflected upon in the earlier mentioned paper by Geels & Smith (2000), it seems that earlier visions about virtual collaboration did not take into account the idea that virtual collaboration could become an addition to physical meetings. Therefore, instead of physical and virtual communication substituting each other, they should be seen as fulfilling slightly different needs (Denstadli et al, 2012). Subsequently, the question should be: for what kind of meetings is virtual collaboration a good alternative?

This question can be answered using several different theories. According to media richness theory, the more complex communication is, the more complex the medium should be (Trevino et. al., 1987). Simple meetings could thus be done over the phone, while complex ones require sophisticated forms of video communication or even a face to face meeting. Another theory, the social influence theory, argues that the use of certain media is not dependent on its features. Instead, it focuses on the experience level of the individual user and the influence of those around this person (Fulk et. al., 1990).

Another approach to this dilemma, and the one used in this paper, is the one brought forward by Denstadli et. al. (2012). They present a model which combines relational and task-related dimensions.

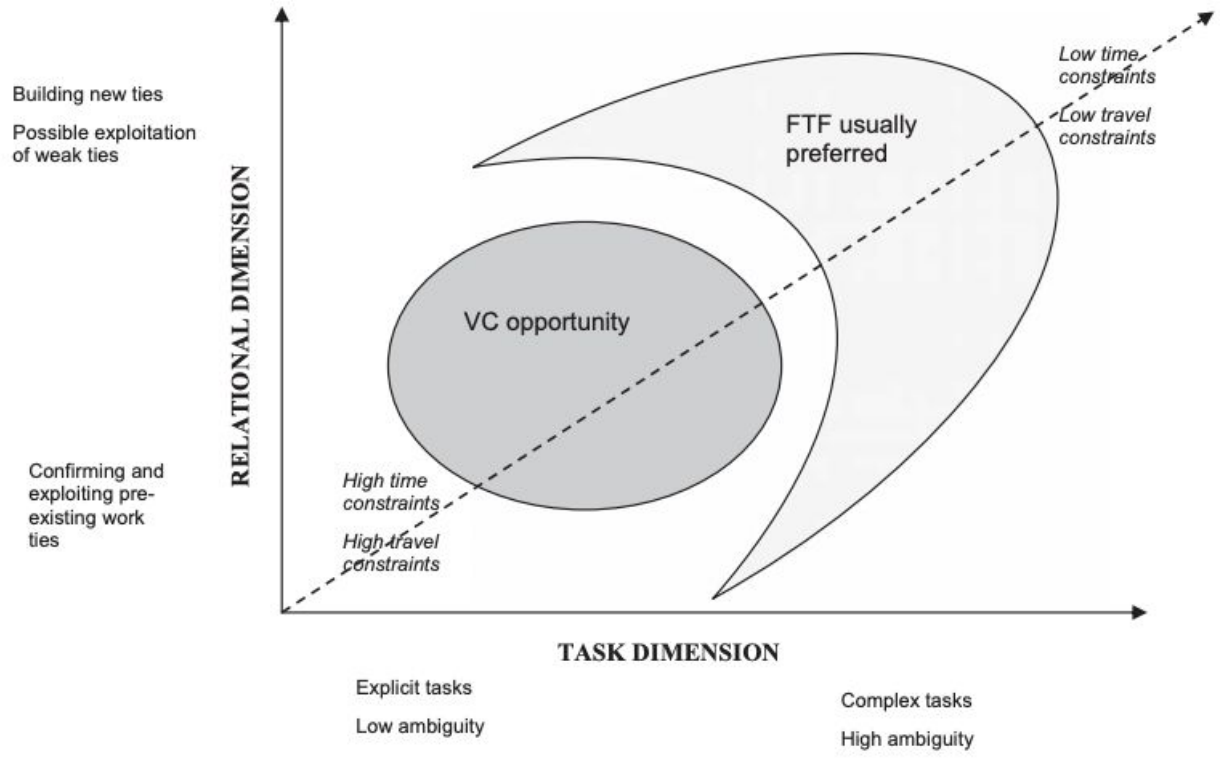

Figure 2. *Task and relationship dimension model (Denstadli et. al., 2012)*

The research, which mainly looked into the opportunity of videoconferencing, consisted of a survey filled out by 1.400 business travelers. The results stated that virtual communication is less suited when the participants still need to build a relationship or do not know each other. It also concluded that face to face meetings are better suited for communicating complex or ambiguous tasks. It therefore concludes that when deciding on how to perform a meeting, two dimensions are important; the relational and the task dimension. This means that the more complex the task is and the less developed the relationship, the likelier a face to face meeting will be.

2.5 Virtual collaboration acceptance

To answer the proposed research questions, which seek to measure people's experiences with virtual collaboration (VC) and predict its impact on the way we will collaborate in the future, some sort of framework is required in order to adequately explain the results. This aim introduces the idea of technology acceptance. Among the most prominent of all information systems acceptance models, is the technology acceptance model (TAM), which was created in 1986 by Davis (1986). In this research, the wide variety of virtual collaboration platforms that are used by organizations is viewed as the target technology. What the model essentially allows for, is to measure important variables which ultimately affect users' willingness to use certain technologies. While many people are now forced to use VC technologies whether or not they like it, now is an opportune time to measure overall satisfaction levels and what influence various factors have had on the potential continuance intent of these technologies in the minds of the working population. The impact of the coronavirus can be one of many contextual factors which affect our choice of collaboration medium. Therefore, it is important to take a number of encompassing factors into account in order to try to answer the research questions.

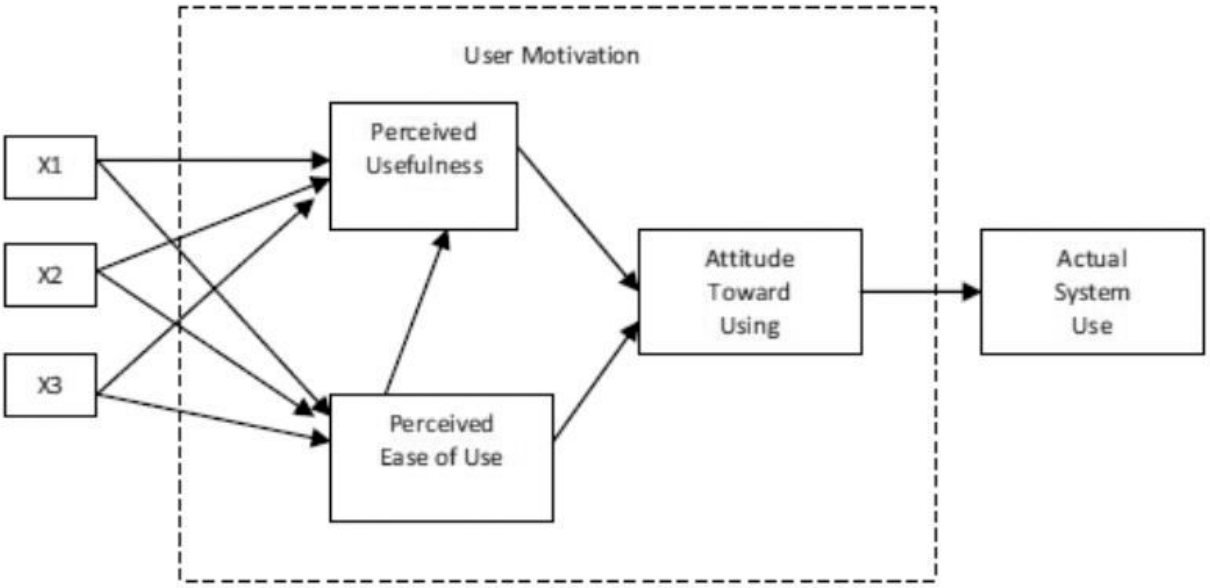

Figure 3. *Technology Acceptance Model* (Davis, 1986, p. 24).

While TAM has seen a multitude of variations (Lee et. al, 2003), the central variables 'perceived ease of use' (PEOU) and 'perceived usefulness' (PU) are considered to be critical to the model. These two variables are deemed to affect the respondent's attitude toward using the target technology. Attitude towards using is in turn hypothesized to be strongly correlated with 'actual use' (Lee et. al, 2003). The independent variables used in the TAM model may vary depending on the nature of one's research environment. However, frequently used variables are: 'self-efficacy' and 'anxiety' (Park et. al, 2014), image (Venkatesh & David, 2000), and 'voluntariness' (Abbasi et. al, 2011).

Not all of these variables have been deemed by researchers to adequately explain the variance of the model. Wu & Chen (2017) argued that by integrating the TAM model with the task technology fit model (TTF), stronger results could be procured by measuring the fit between the targeted technology and the respondents' individual and occupational characteristics. They came to two important conclusions: (1) Perceived usefulness and attitude are critical to the continuance intention and (2) Perceived ease of use does not influence attitude.Venkatesh et. al (2003)

proposed the unified theory of acceptance and use of technology (UTAUT) as a result of a meta analysis of technology acceptance models. It included several variables such as performance- and effort expectancy and facilitating conditions, such as institutional support (Park et al. 2014). The UTAUT model includes motivation variables as well. However, Pedrotti & Nistor (2016, p. 474) argue that they are "primarily extrinsic motivators" such as salary and promotion. Instead, they argue that the full spectrum of motivation should be included, meaning intrinsic motivation as well. Self Determination Theory (SDT) (as cited in Pedrotti & Nistor, 2016, p. 473) proposes that motivational attitude is a product of the experienced level of autonomy over one's decisions.

3. Research models and hypotheses

As the research questions of this thesis differ substantially in nature, two research models are needed; One to assess attitudes towards substituting virtual meetings for face to face meetings and another to assess technology acceptance.

The first model put to the test in this research is an adapted version of the task and relationship dimension model (Denstadli et. al., 2012). The adaptation of this model will focus on different levels of task and relationship complexity and its effects on the preferred meeting form.

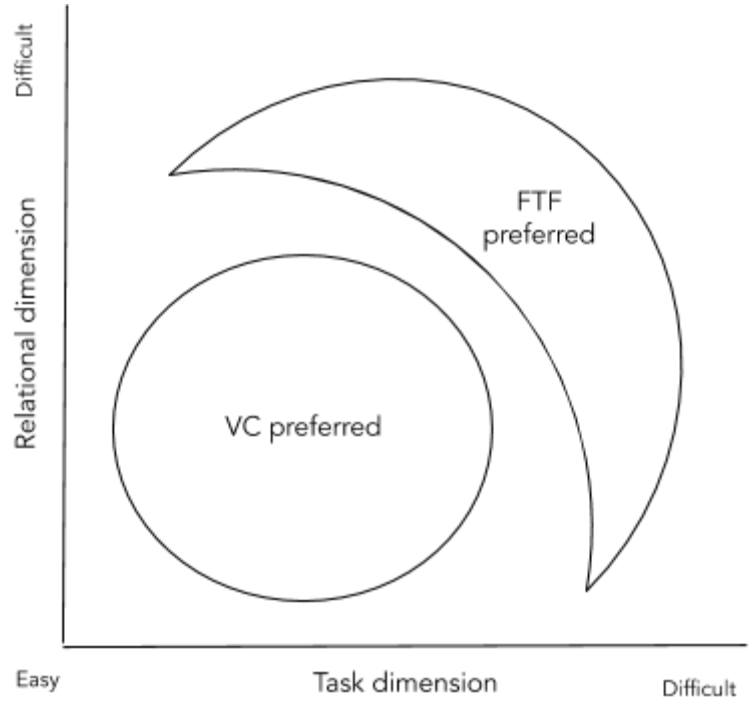

Figure 4. Proposed research model 1.

The above model will be tested using four hypotheses.

H1

High relationship dimension has a positive effect on face to face preference.

H2

Low relationship dimension has a negative effect on face to face preference.

In these hypotheses, the relationship dimension will be measured in terms of whether a relationship is well-established or whether it still needs development. The hypotheses are based on the work of Denstadli et. al. (2012) who concluded that when there is a need to build or exploit relationships, face to face meetings are often preferred.

H3

High task dimension has a positive effect on face to face preference.

H4

Low task dimension has a negative effect on face to face preference.

H3 and H4 will look into the task dimension or the difficulty of a certain task. In line with Denstadli et. al. (2012) it is hypothesized that more difficult tasks will create a preference for face to face meetings, and the opposite for simple tasks.

Based on the earlier mentioned findings regarding the theoretical background of the Technology Acceptance Model, the following research model is proposed in order to answer the research questions regarding technology use. The arguments for using TAM boil down to its flexibility; It can allow for independent variables of one's own choice. Specifically in the case of this research, the impact of the coronavirus on the use, attitude and continuance intent is of special interest. Furthermore, it is easily conducted via quantitative measures, which allows for the possibility to inquire all of the questions designed for this research within the same questionnaire.

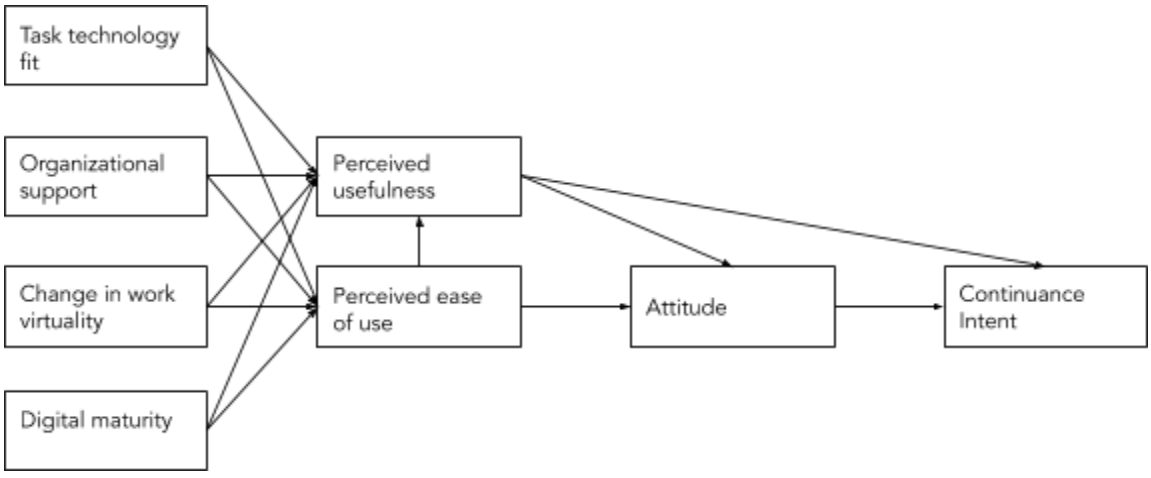

Figure 5. Proposed research model 2.

The research model is the product of previous research and includes four exogenous variables: perceived task technology fit, support from organization, the degree to which one's work has been affected by the coronavirus outbreak (change in work virtuality) as well as one's digital maturity. These variables act as the predictors of PEOU and PU, which in turn are predictors of attitude and continuance intent.

Perceived usefulness

PU is generally perceived to pertain to whether or not the target technology has a positive effect on the respondent's performance (Davis, 1986; Lee et. al, 2003). It was found to be a leading predictor of attitude by Wu & Chen (2012) and has been shown to accurately predict continuance intent (Joo et. al, 2017; Stone & Baker-Eveleth, 2013; Weng et. al, 2017). Consequently the following two hypotheses are proposed:

H5

Perceived usefulness has a positive effect on attitude.

H6

Perceived usefulness has a positive effect on continuance intent.

Perceived ease of use

Along with PU, PEOU makes up the very essence of the technology acceptance model. While it has been shown to directly affect PU and attitude repeatedly (Baturay et. al, 2017; Yang & Yoo, 2014), whether it has a direct correlation with continuance intent can be debated. There is some research on technology acceptance that has concluded that PEOU has a positive effect on continuance (Roca et. al, 2006; Terzis et. al, 2013), In contrast, Wu & Chen (2012) only found an indirect link instead when they researched continuance intent of MOOCs. Similar findings were discovered by Mohamed et. al (2014) who researched continuance intention of online

shopping and by Lin (2011) who researched e-learning. The difference may be due to several reasons, such as differences in research models or in the nature of the target technology. This research will not test the relationship between ease of use and continuance intent. Instead, as much research shows a cause-and-effect direction from PEOU to both PU and attitude, the hypotheses are as follows:

H7

Perceived ease of use has a positive effect on perceived usefulness.

H8

Perceived ease of use has a positive effect on attitude.

Attitude

Attitude, in the context of technology acceptance, can be defined as the desirability to use a certain system (Mathieson, 1991). Davis (1986) theorized early on that attitude towards using technology has a direct effect on actual use. This hypothesis has since then been confirmed multiple times (Lee et. al, 2003; Dwiwedi et. al, 2019). Based on prior empirical findings, the following hypothesis is proposed:

H9

Attitude has a positive effect on continuance intent.

Task technology fit

The task technology fit model was first created in 1995 by Goodhue & Thompson. Its aim was to more adequately explain the link between information systems and individual performance. It has since then been successfully integrated with the technology acceptance model on multiple

occasions (Dishaw & Strong, 1999; Klopping & McKinney, 2004; Wu & Chen, 2017), and produced strong correlations to PU and PEOU. As can be concluded from its name, task technology fit is concerned with whether a "technology provides features and support that fit the requirements of a task" (Goodhue & Thompson, 1995, p. 214). As poor task technology fit is hypothesized to have a negative effect on PU and PEOU, the following hypotheses is also brought forward.

H10

Task technology fit has a positive effect on perceived usefulness.

H11

Task technology fit has a positive effect on perceived ease of use.

Organizational support

Critical to successful implementation of virtual collaboration in organizations is the availability of organizational support; Tan & Kondoz (2008) noted that there are just as many organizational barriers to VC as there are technological ones. Arnfalk & Kogg (2003) made a similar remark in their article, stating that managers need to express support for the use of new technologies as well as offer clear systems for implementation. Organizational support was shown to have a direct link to telecommuter productivity by Neufeld & Fang (2005, p. 1047) who said that for effective telework, organizations "should engage in activities that engender positive beliefs and attitudes among their employees". Managing virtual employees is not always an easy task, however. As distance is increased and co-presence is reduced, managers' abilities to communicate with and offer help to employees may be negatively affected (Dulebohn & Hoch, 2017), making the management of technology implementation of critical importance. Conclusively, the following hypotheses are proposed.

H12

Organizational support has a positive effect on perceived usefulness.

H13

Organizational support has a positive effect on perceived ease of use.

Change in work virtuality

The coronavirus outbreak presents this thesis with a unique opportunity. It can be argued that no prior event has ever had the same substantial impact on work behavior. What is interesting to know is whether this drastic change has had an effect on the respondents' PU and PEOU variables. One could argue that increased exposure to virtual collaboration as an effect of the coronavirus has increased both the respondents' proficiency with it and their knowledge of it, thus increasing their perceptions of VC usefulness and ease of use. However, in accordance with Pedrotti's & Nistor's work (2016), the potential lack of autonomy the respondents feel over the choice of utilizing VC might negatively affect PU and PEOU variables. In order to determine which is correct, the following hypotheses are presented:

H14

Change in work virtuality has a positive effect on perceived usefulness.

H15

Change in work virtuality has a positive effect on perceived ease of use.

Digital maturity

The last exogenous variable which will be tested is digital maturity, or 'self-efficacy' as it is commonly called. Simply put, self-efficacy is "one's belief in his or her ability to execute a particular task" (Holden & Rada, 2011, p. 345). As it has been repeatedly shown to have a positive effect on PU and PEOU in a wide array of different technology systems (Ariff et. al, 2012; Lee & Lehto, 2013; Wang et. al, 2015), the following hypotheses are presented for digital maturity.

H16

Digital maturity has a positive effect on perceived usefulness.

H17

Digital maturity has a positive effect on perceived ease of use.

Overview of hypotheses:

H1: High relationship dimension has a positive effect on face to face preference
H2: Low relationship dimension has a negative effect on face to face preference
H3: High task dimension has a positive effect on face to face preference
H4: Low task dimension has a negative effect on face to face preference
H5: Perceived usefulness has a positive effect on attitude.
H6: Perceived usefulness has a positive effect on continuance intent.
H7: Perceived ease of use has a positive effect on perceived usefulness.
H8: Perceived ease of use has a positive effect on attitude.
H9: Attitude has a positive effect on continuance intent.
H10: Task technology fit has a positive effect on perceived usefulness.
H11: Task technology fit has a positive effect on perceived ease of use.
H12: Organizational support has a positive effect on perceived usefulness.
H13: Organizational support has a positive effect on perceived ease of use.
H14: Change in work virtuality has a positive effect on perceived usefulness.
H15: Change in work virtuality has a positive effect on perceived ease of use.
H16: Digital maturity has a positive effect on perceived usefulness.
H17: Digital maturity has a positive effect on perceived ease of use.

Table 1. *Overview of hypotheses.*

4. Methodology

4.1 Procedure

This research was carried out by performing both a quantitative survey and 9 qualitative semi-structured follow up interviews. The questionnaire, which was open for responses between April 14th and May 7th, was divided into three sections. The first focused on background information like the country they are located in and their reliance on virtual collaboration for their work. The second focused on the respondents' opinions on virtual collaboration. Lastly, the third section asked people about their expectations regarding the lasting implications of the coronavirus on virtual collaboration within their organizations. After the responses had been saved, they were analyzed using the SPSS statistical analysis software. This was done in consultation with professor Björn Holmquist from the statistics department at the Lund School of Economics and Management.

In April, during the early stage of this research, three travel managers and one global category manager were interviewed. They were deemed to be valid sources of information as travel managers are not only preoccupied with business travel, but the goal of business travel itself, i.e. meetings (Gustafsson, 2012). The interviews were semi-structured (the specific questions used can be found in the appendix). Information was sought regarding expected trends and developments in terms of organizational meeting structure. In short, the utility of these interviews lies in their role as sources of knowledge; They provided the authors with real-time information regarding the actions taken by organizations in times of the coronavirus and how travel is taken into consideration in deciding meeting formats.

Nine of the respondents to the questionnaire who indicated their willingness to be interviewed were interviewed between late May and early June. These follow-up interviews were made in order to explore the statistical results of the questionnaire. The goal was to find early signs of

common thoughts and beliefs amongst the respondents, especially in terms of the impact of VC on productivity and its lasting effects on organizations. In order to be able to explore ideas and thoughts, interviews were semi-structured. When selecting follow up interviewees, their profession was taken into account. Interviewee diversity was sought to be maximized this way so that diverse opinions and beliefs could be gathered; Different experiences can be expected to be had in different occupational environments. Interviews were conducted via 'Zoom' and recorded with the interviewees' consent.

4.2 Population and sample

The survey was designed for individuals who were working at the time of response. It was shared through social media channels Linkedin and Facebook through posts and direct messages. The sample which was used to run the statistics consisted out of 164 individuals who worked in 18 countries. By far, most respondents were working in Sweden (53.7%) and the Netherlands (20.1%). Other countries followed far behind like Brazil (4.3%), the United States and Australia (each 3.0%). All other countries had less than 3% of respondents.

Since statistics were used in this research, a sizable sample size was needed. While an even higher number could have been beneficial in order to perform certain more sophisticated statistical analyses, an N of 164 was sufficient for the analyses done when compared to research of similar nature.

Apart from country information, no comparable data was gathered. This was done in order to limit the time it takes to fill in the questionnaire. However, this makes it harder to make any judgments about the generalizability of our study. More information on this can be found 'Limitations'.

For the follow-up interviews, a sample of nine interviewees was selected. After a number of interviews, saturation was deemed to have been met, meaning that much information which had already been stated by previous interviewees was provided again by each new interviewee.

4.3 Instruments

The survey used a number of different categories of questions. The first part, which asked for basic information, used a drop down menu to ask for the country they were employed in. Following this question were four questions which asked for respondents' virtual abilities and reliance on technology using a five point Likert scale. The second part, which was aimed towards compiling an image of the respondents' opinions of virtual collaboration was a multiple choice grid with 11 statements. These could be answered using a five point Likert scale which ranged from strongly disagree to strongly agree. The third section, which discussed future expectations and learning, consisted of two multiple choice grids. The first one asked respondents to fill in their expectations about what meeting form will be used in one year's time (virtual meeting/don't know/face-to-face meeting). The other grid asked for expectations regarding travel and learning using a five point Likert scale which ranged from strongly agree to strongly disagree. In order to contact the respondents if they agreed to a follow up interview, they were asked for their email address, name and role. Below, one can observe all constructs and items which were used for the two research models (to view all of the questions used in the questionnaire, please refer to Appendix A).

Construct	Item(s)
Digital maturity	Digital.maturity: How would you rate your digital abilities?
Change in work virtuality	Prev.work: How much of your work interactions were done online 6 months ago?

	Cur.work: How much of your work interactions are done online currently?
Task technology fit	T.T.Fit: How much did your job rely on virtual collaboration tools before the corona-outbreak?
Organizational support	Org.Sup1: My organization endorses the use of VC.
	Org.Sup2: I do not have enough support for VC from my organization
Perceived ease of use	P.E.Use: In general VC is easy to use.
Perceived usefulness	P.Usefulness1: I believe using VC increases my performance.
	P.Usefulness2: The use of VC decreases my productivity.
Attitude	Attitude1: Connecting with my colleagues is harder with VC.
	Attitude2: Using VC makes my job less interesting.
	Attitude3: VC should be used more in organizations.
	Attitude4: Employees should use VC more.
Continuance intent	Con.Int1: I will not use VC after COVID-19.
	Con.Int2: I will use VC a lot in the future.
High relation	High.relat1: Developing relationships with people.
	High.relat2: Introductory meeting with an important client.
Low relation	Low.relat1: One-time meeting with unfamiliar people.
	Low.relat2: Meeting with coworkers.

High task	High.task1: Making an important decision for one's company.
	High.task2: Discussing complex topics.
Low task	Low.task1: Daily progress meeting.
	Low.task2: Quick informative meeting.

Table 2. *Constructs and items*

After the results were gathered, statistical analysis was performed in order to check for statistically meaningful results. This process was started with reversing negatively worded questions (*Attitude1, Attitude2, Org.Sup2, Con.Int1, P.Usefulness2*). Secondly, 'change in work virtuality' was calculated by subtracting Prev.work from Cur.work, resulting in 'Change.Work'. Following this, constructs consisting of multiple questions were tested on their reliability. Since the questions were answered using a Likert scale, the answers could be perceived as on an interval level (Parker et al., 2002). Therefore, the constructs created were the average of the answers for each question used in the construct. The constructs created were for organizational support (*Org.Sup.Aver* consisting of *Org.Sup1* and *Org.Sup2*), Attitude (*Attitude.Aver* consisting of *Attitude1, Attitude2, Attitude3* and *Attitude4*), perceived usefulness (*PU.Aver* consisting of *P.Usefulness1* and *P.Usefulness2*) and continuance intent (*Con.Int.Aver* consisting of *Con.Int1* and *Con.Int2*). The reliability of these constructs was then tested using a reliability analysis, which tests if a collection of questions is really measuring the same construct. A Chronbach's Alpha level of 0.60 was used as a requirement. This requirement was set using a report from the Dutch committee on tests and testing (Everts et. al., 2009), which believes a value between 0.60 and 0.70 is sufficient for group level. Below is a table which shows Cronbach's alpha value for each multi-item construct.

Variable	Number of items	Alpha value
Attitude	4	0.606
Perceived Usefulness	2	0.668

Organizational Support	2	0.455
Continuance Intent	2	0.613

Table 3. Chronbach's alpha.

As can be observed in the table, the items for 'organizational support' did not meet the requirement of ≥0.6. Closer inspection of the questions led to the realization that they were indeed not measuring the same factor. One of them measured actual organizational support ("I do not have enough support for VC from my organization") whereas the other one measured 'voluntariness' ("My organization promotes the use of VC"), e.g. the degree to which the respondents experience being forced to use VC. As a result, the question measuring voluntariness (*Org.Sup.1)* was not used in the analysis of the data in order to stay in alignment with the research model.

From those who agreed to be interviewed, a sample of nine respondents was chosen based on the diversity of their occupational roles. All interviews were conducted using a virtual collaboration tool called Zoom, which allows for virtual meetings to be recorded. The interviews were conducted in a semi-structured way, which allowed for asking questions which arose from the survey results but also provided the flexibility to respond to insights the interviewees provided.

4.4 Ethics

The authors of this research have no financial interests within this field of research. All respondents (both questionnaire respondents and interviewees) were able to give informed consent. Participation was voluntary and anonymity was ensured unless participants chose to disclose their identity. To guarantee anonymity, respondents mentioned in this article are not identified by their name. Given the characteristics of this research, no ethical review was needed.

5. Results

5.1 Questionnaire

The verification of H1 (high relationship dimension has a positive effect on face to face preference), H2 (low relationship dimension has a negative effect on face to face preference), H3 (high task dimension has a positive effect on face to face preference) and H4 (low task dimension has a negative effect on face to face preference) relied on four multi-item constructs within the questionnaire, consisting of: 'High relation' (scenarios where relationship is emphasized) , 'Low relation' (scenarios where relationships are not emphasized), 'High task' (scenarios of high task complexity) and 'Low task' (scenarios of low task complexity). The hypotheses predicted that for questions with high relational and task dimensions, respondents would prefer face to face settings. For the three options 'face to face meeting', 'don't know' and 'virtual meeting', the values '1', '2' and '3' were given respectively. A chi-square test for goodness of fit was used to check the probability of the answer for every question occurring. In order to do this all 'don't know' responses were deleted. In this test it was assumed that if there was no effect, the distribution of the 'face to face' and 'virtual meeting' responses would be 50/50. A P-value of 0,001 would mean that there is a 0.1% chance of this result occurring given the 50/50 assumption. 'High relation' came back with a mean of 1,29, i.e. a preference for face to face meetings, and a standard deviation of 0,48. 'Low relation' showed a less clear cut result; It had a mean of 2,00 and a standard deviation of 0,66. Interestingly enough, both of the items for 'Low relation' had a near 50/50 split between preferences for either virtual meetings or physical meetings. Since the results for *High.relat1* and *High.relat2* were significant (<0,001), but for *Low.relat1* and *Low.relat2* were not, we can accept H1 but not H2. Therefore, one can conclude that when relationships are perceived to be important, face to face meetings are preferred.

When it comes to the task relationship, 'High task' produced an average of 1,40 and a standard deviation of 0,57, while 'Low task' had a mean of 2,69 and a standard deviation of 0,58. Since *High.task.1, High.task.2, Low.task.1* and *Low.task.2* were significant (<0,001), both H3 and H4

can be accepted. Consequently, it can be concluded that when tasks complexity is high, face to face meetings are preferred, while when tasks complexity is low there is no such preference.

Item	Face to face meeting	Don't know	Virtual meeting	P-value
High.relat1	141	12	11	<0,001
High.relat2	125	14	25	<0,001
Low.relat1	74	17	73	0,934
Low.relat2	69	22	73	0,737
High.task1	135	12	17	<0,001
High.task2	109	23	32	<0,001
Low.task1	15	6	143	<0,001
Low.task2	29	7	128	<0,001

Table 4. *Relation and task dimension results*

ANOVA (Analysis of Variance) calculations were used in order to reach conclusions for hypothesis five to seventeen. This statistical technique is used to compare the mean scores of two groups. This comparison then lets one draw conclusions on whether there are (statistically significant) differences between the groups. While this approach is most often used to compare scores between different groups, it can also be used to compare the different scores of the same group. Conclusions are mainly drawn by assessing the effect size and significance level. The effect size gives an indication of the extent to which two variables are associated with each other (Pallant, 2016). In this research Partial Eta Squared is used, which ranges from 0 to 1, with higher numbers indicating stronger strength of association. The other important measure is the significance level (P-value), which gives us an indication of how confidently we can conclude the existence of correlation between two groups (Pallant, 2016). The lower the number, the smaller the probability that this relationship was caused by chance or sampling error, which means that one can say with more certainty that an observed effect was caused by the effect of one variable on the other. The limitations of the approach used will be discussed in the

'Limitations' section. Below are the p-values for each hypothesis. Please note that in some cases, the full p-value could not be shown by the statistics program which was used (SPSS) and that in these cases, the authors have written "<0.001" instead of the actual value. In total, six out of the thirteen hypotheses between H5-H17 were found to be insignificant.

Hypothesis	**Effect size (eta squared)**	**P-value**
H5: Perceived usefulness has a positive effect on attitude.	**0,346*** **	**<0,001*** **
H6: Perceived usefulness has a positive effect on continuance intent.	**0,131** **	**0,004** **
H7: Perceived ease of use has a positive effect on perceived usefulness.	**0,073** **	**0,015***
H8: Perceived ease of use has a positive effect on attitude.	**0,042***	**0,144**
H9: Attitude has a positive effect on continuance intent.	**0,268*** **	**<0,001*** **
H10: Task technology fit has a positive effect on perceived usefulness.	**0,034***	**0,241**
H11: Task technology fit has a positive effect on perceived ease of use.	**0,045***	**0,119**
H12: Organizational support has a positive effect on perceived usefulness.	**0,029***	**0,324**
H13: Organizational support has a positive effect on perceived ease of use.	**0,307*** **	**<0,001*** **
H14: Change in work virtuality has a positive effect on perceived usefulness.	**0,045***	**0,298**
H15: Change in work virtuality has a positive effect on perceived ease of use.	**0,135** **	**0,001** **

H16: Digital maturity has a positive effect on perceived usefulness.	**0,030***	**0,183**
H17: Digital maturity has a positive effect on perceived ease of use.	**0,185*****	**<0,001*****
	*Small (>0,01) effect size **Medium (>0,06) ***Large (>0,138) (Cohen, 1988. P22)	*0,05 significance level **0,01 ***0,001

Table 5. *Testing of hypotheses.*

The results presented above indicate several noteworthy relationships. Firstly, it has been proven that organizational support, change in work virtuality and digital maturity have an influence on perceived ease of use. So, if someone perceives more support from one's organization, one will find virtual collaboration tools easier to use. A similar relationship can be found with change in work virtuality, meaning that if someone has gone through a big change of physical to virtual work, one will tend to find virtual collaboration easier to use. Likewise, if one has more digital abilities (digital maturity) one will find virtual collaboration easier to use. The second important finding is the relationship between perceived ease of use and perceived usefulness, which means that if someone finds virtual collaboration easier to use, it will also be more useful in the eyes of the respondent. The last major finding in the statistical analysis was the relationship between perceived usefulness and continuance intent. Here, both a direct and indirect relationship was found. Directly, a medium sized effect was found between the two values. However, if a value called attitude was included, a bigger effect could be observed. Other non-significant relationships (H8, H10, H11, H12, H14, H16) were also found but were not included here because no definitive statements could be made. A more detailed analysis of the results and the questions asked can be found in the appendix.

Taking into account all significant relationships, one can deduce a new model of virtual collaboration integration. This model (which can be found below) clearly shows through what route the three independent variables have an effect on continuance intent.

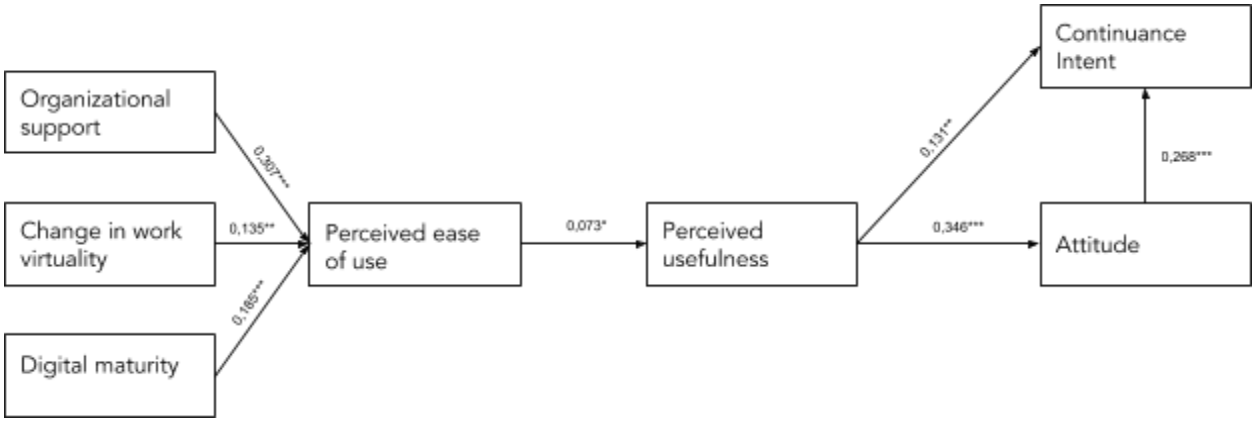

Figure 6. *Simplified TAM model*

5.1.1 Other questionnaire results

Two questions were added in the questionnaire in order to measure whether or not the respondents had learnt anything during the coronavirus pandemic.

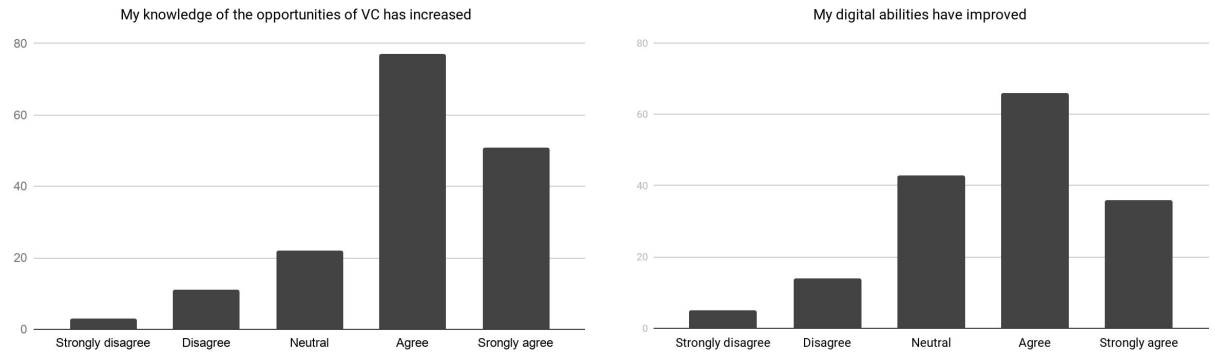

Figure 7. *Learning*

Out of 164 respondents, 128 said that they either ‘agreed’ or ‘strongly agreed’ that their knowledge of the opportunities of VC has increased whereas only 14 stated that they either ‘disagreed’ or ‘strongly disagreed’. Similarly, in contrast to the 19 respondents who said that they either ‘disagreed’ or ‘strongly disagreed’ with the statement “My digital abilities have improved”, 102 respondents answered that they either ‘agreed’ or ‘strongly agreed’.

In addition to questions regarding H1-H17 and learning, two questions were included in the questionnaire regarding the respondents' attitudes towards short-distance and long-distance business travel.

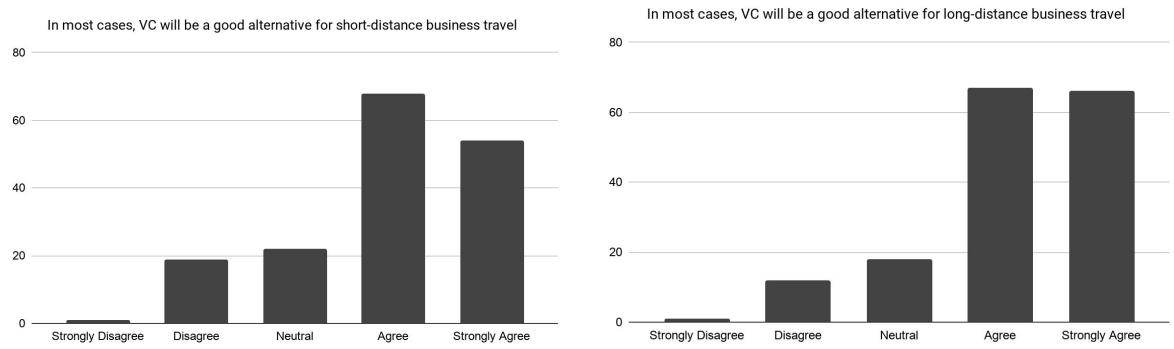

Figure 8. *Flying*

In response to both questions, there was an overwhelming amount of people who were in favor of replacing business travel with virtual collaboration. 122 respondents believed VC is a good alternative to short-distance business travel while an ever higher number of 133 respondents believed that it is a good alternative to long-distance business travel.

As part of the construct 'Attitude', a statement which gauged the respondents' beliefs regarding the ease with which one can socialize via virtual platforms was included in the questionnaire. Figure 9 presents the results visually.

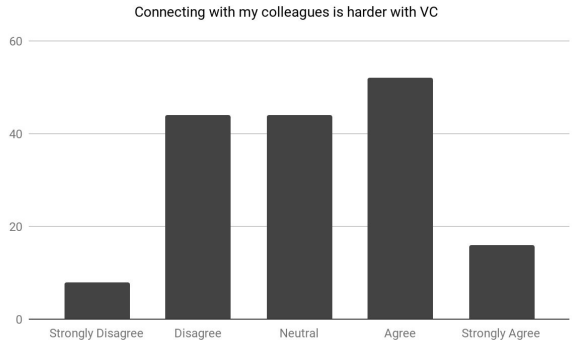

Figure 9. *Connecting*

8 people strongly disagreed with the statement “Connecting with my colleagues is harder with VC”, (M= 2,85, SD= 1,075 (inverted mean)) followed by 44 respondents who said that they at least disagreed. In the neutral slot, another 44 responded ‘neutral’. A bit more answers were found on the other edge; 52 respondents agreed with the statement and 16 strongly agreed.

Another part of the construct ‘Attitude’ dealt with the respondents’ perceptions of how interesting their occupations are as impacted by virtual collaboration. They were asked to rate the statement ‘Using VC makes my job less interesting’ (M= 3,03, SD= 1,071 (inverted mean)). Figure 10 presents a simple illustration of the results.

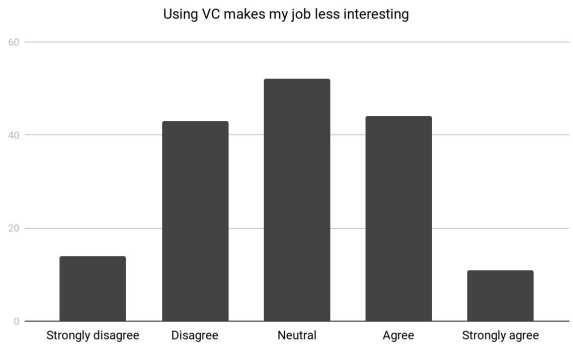

Figure 10. *Interest levels*

As with the previous statement, there was not an obvious pull to either side (while one can argue that slightly more believed the statement to be true). 14 respondents strongly disagreed with the statement, accompanied by another 43 who also disagreed. The neutral slot took up the majority of replies, consisting of 52 responses. On the other hand, 44 people said that they agreed with the statement, while a small number of 11 said that they strongly agreed.

Overwhelming support was found for the use of VC by organizations. Respondents were asked to rate the statement ‘VC should be used more in organizations’ (M= 3,98, SD= 0,8).

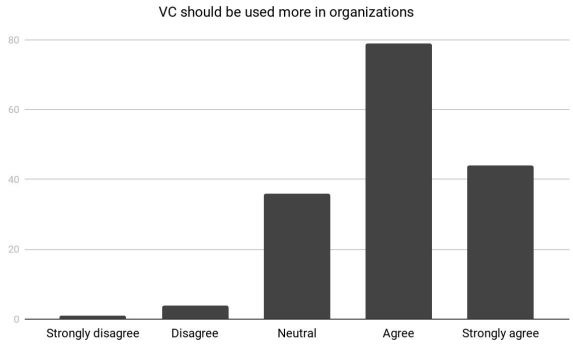

Figure 11. *In support of VC*

As can be appreciated by figure 11, most of the respondents were in favor of an increased use of virtual collaboration within organizations. One single respondent disagreed with this statement, followed by two other respondents who disagreed. 36 were neutral in the matter. A big majority of the responses fell into the 'agree' slot, home to 79 of the respondents' answers. Another 44 respondents strongly agreed with the statement.

5.2 Follow up interviews

In order to get a better understanding of why people filled in our survey the way they did, nine follow-up interviews were conducted. The aim was to get a better understanding of our results in terms of their practical implications (please refer to Appendix C for the interview questions). The participants were selected according to the role they stated at the end of the survey. A mix of different roles was selected, from individuals who had just recently started their career to those in senior management positions (the occupation of each interviewee can be looked up in Appendix D). The respondents included employees of multinationals, government workers, educators and independent consultants.

If one looks at the impact corona has had on the group of respondents, one can conclude that the series of lockdowns caused by the outbreak of the coronavirus severely changed the way they work. All of them are now working virtually, stating that their employers have told them to work from home as much as possible. However, they do not see this switch as mainly negative as most

of the respondents also talk about the positive impacts of the exposure to virtual work. Almost all of them (eight out of nine respondents) mentioned that the corona crisis and its effect on work showed them and their organizations new ways of working. They talk about how their organizations have now been convinced that certain tasks, which beforehand seemed impossible to be executed virtually, will now be able to be done online. One respondent brought up that a former employer told her there would be no remote work opportunities if she would move abroad, while now these ways of working are way more acceptable. Four of the respondents mentioned that organizations which were afraid to move activities online earlier, are now getting convinced because of the circumstances. This also seems to be connected to a realization that virtual work does not necessarily need to have a negative influence on productivity. One respondent, who is the vice-president of IT in a global security firm, stated that in the first week of remote work productivity went up. While this effect did not last, probably due to a reshuffle of work-life balance, productivity did not go down.

Looking at the process and the eventual struggles of virtual collaboration adaptation which may impact usefulness, a couple of factors were mentioned to be of importance. Firstly, the impact of the coronavirus has created a sense of shared experience, an idea which was explicitly stated by three of the respondents. Since everyone has to make the change to virtual work, there seems to be a feeling of 'we are in this together'. Our respondents talk about coworkers helping each other out, inquiring how others are feeling and being way more tolerant to hiccups and technical difficulties than they would be otherwise. "We've been thrown into the deep end but we're all holding hands" is what one of the respondents said. A second aspect mentioned is the importance of an organization's leadership being a vocal supporter for virtual collaboration (mentioned by five out of nine respondents); This type of leadership is achieved not only by offering the right tools to work virtually, but also by acknowledging that this situation is different and that it may have effects on people's state. One of our respondents, who works at a global professional services firm, recalled how the CEO and her managers had spoken about the emotional effects of working from home, acknowledging that this situation is no ordinary one and that it is okay if people feel affected by it. This CEO even went as far as promising everyone that their jobs were

secure in this difficult time, something which has been echoed by other top executives, albeit those of financially healthy companies. Another respondent spoke well of executives who acknowledge the impact of closed schools on parents working from home. An additional factor mentioned by one of the respondents as important in the change to virtual work is that it also has to be fun in some way.

A sizable part of our interviewees (seven out of nine) noted that they had difficulty with keeping concentrated and motivated if they were expected to work all day. Some of their companies had found solutions to this by including creative group activities in order to keep everyone motivated. One example of this would be a respondent who works at an online sports company and participates in a 15 minute company-wide online gym class every day. Lastly, the respondents seem to support the assumptions of the task and relationship model by Denstadl et. al. (2012), since a large number (six out of nine) mentioned that more complex tasks are hard to execute in virtual settings.

If it is then considered that more technical aspects could influence the ease of use of VC technology, one can observe two main ones being mentioned by the interviewees. The most often mentioned one (six respondents) is simply the functionalities a certain platform has. Not all of them are similar, even though tech companies are quickly rolling out new features, and organizations often have their own preferences, which can make interorganizational communication difficult. Then there is the issue of security, both in the sense of security issues of certain communication platforms, as well as the difficulty of having secure access to certain files when working from home. The earlier mentioned vice-president of a security company named this as one of the most important deciding factors when the company had to choose between different technology providers.

While corona is having a big effect on the way we work now, it is also important to look at the future. In this area, our interviewees seem convinced that these times will bring positive change. Firstly, many respondents (six out of nine) state that they believe that from now on people will

be more conscious about the need for meeting in real life, especially if travel is involved. One of the respondents, an assistant professor in communication studies, hoped people would now ask the question ‘’What is the benefit of this engagement?’’. Two respondents stated the hope that this realization, combined with our awareness about a changing climate, could help limit the amount of unnecessary travel. Many also believed that this period could change people’s opinions about working from home and therefore the willingness of employers to allow their staff to work from home more (six out of nine respondents). One of the most surprising revelations for the authors of this study was the introduction of the idea that virtual work could serve as an equalizer for those who have difficulty speaking up. An interviewee, who works as a consultant and coach, explained that she had heard from a manager that employees who normally are not as vocal during physical meetings now find it easier to speak up during virtual meetings. Similarly, individuals who normally find social interactions at work difficult may perform very well from the safety of their own home, which may convince employers that their role can also (partially) be done remotely. These realizations may not have come about if employers were not forced to send employees home and make the necessary arrangements, something which fits in with an idea that seemed to be supported by most of our interviewees; The idea that we live in special times which require extraordinary solutions and that afterwards we need to reflect on our experiences so that we may retain that which has worked well in order to enhance our working experience.

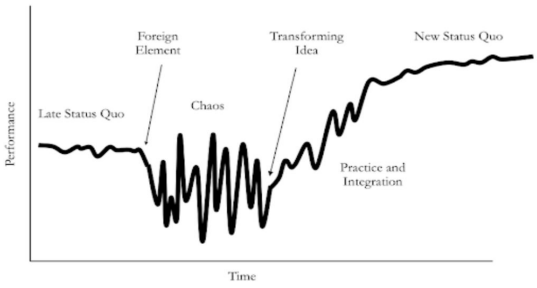

Figure 1. *Satir’s model of change* (adapted from Satir & Banmen, 1991, p. 118)

If one considers the similarities in the experience of all interviewees and their respective organizations, a pattern of learning and change appears. All organizations were forced to change the way they and their staff operate radically. After an initial phase of chaos, new and improved ways of working were discovered which can now be implemented in the long term way of working. This process is in line with Satir’s (Satir & Banmen, 1991, p. 118) model of change. In this model, a foreign element causes a period of chaos. This period of chaos is then interrupted

by a transforming idea which, if implemented well, can create a new and improved status quo. In the chaos of social distancing, better and more efficient ways of working were introduced. These ways of working may outlast the virus if they turn out to improve efficiency. According to our interviewees, concepts like working from home more and replacing travel by virtual meetings may be here to stay. In its own surprising way, corona may therefore improve our working lives.

6. Discussion

This research explored the way we work and how it has been affected by the coronavirus. Using a quantitative survey and several interviews, answers were found for the three main research questions: "What influence has the coronavirus had on the use of virtual collaboration technology in organizations?" (RQ1), "What are the current experiences of virtual collaboration technology among the working population?" (RQ2), and "What are the current perceptions of the future role of virtual collaboration?" (RQ3). In order to find answers to these questions, two research models were used. The first one, the task and relationship model adapted from Denstadli et. al. (2012), argues that when relationships are more important or tasks are more complex, face to face meetings are prefered. The data showed that respondents do indeed clearly prefer face-to-face meetings when tasks are more complex or relationships are more important. This therefore supports hypothesis one and three. For the multi-item construct 'Low task', there was a strong preference for virtual meetings. For meetings with low task dimensions, for example daily progress meetings, virtual meetings are consequently preferred (supports H4). This may be due to the 'automatic' sensation of these types of meetings. They follow a certain protocol and have a very 'tick the box' kind of feel to them. In these

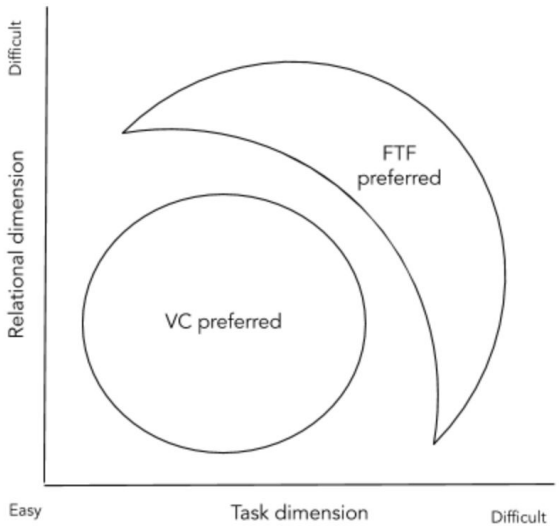

Figure 4. Proposed research model 1.

settings, it is more desirable to cut down the time which is required, something VC is known to do (Denstadli et. al, 2012). Interviews with the respondents confirm that meetings that take place in virtual environments do indeed take much shorter time. There is something about virtual meetings that allows for a much more intense focus on tasks, perhaps due to the fact that the relational dimension is weaker in a virtual setting. This idea is further corroborated by the result that the same preference for virtual meetings in 'Low task' was not discovered for the multi-item construct 'Low relation'. An example of a scenario which was used in this case is: "One time meetings with unfamiliar people". As reported in the results section, almost half of the respondents chose face to face meetings and the other half chose virtual meetings. The scenario was to be interpreted that the complexity of the task was not specified and that there was a low level of experienced desirability to nurture the relationship as it was a one time meeting and that the status of the meeting participant was undefined; It was simply 'people'. The answers point in the direction that physical presence and interaction are still valued to a certain degree despite low relationship dimensions, that virtual meetings are of 'second class' (Arnfalk & Kogg, 2003).

Insights that were gathered from the follow up interviews also point to the fact that meetings are increasingly becoming the product of a dialogue between parties, as has been previously mentioned in this paper. It is not a matter of having a predetermined choice between virtual and physical meetings; Instead, context and preferences are taken into account in shaping the nature of collaboration. Indeed, one of the interviewees who worked as an assistant client executive claimed that she had no problem working virtually. However, she insisted that if her clients were to prefer face to face meetings, that is the medium of collaboration she would choose. This is an example of how meetings are becoming much more of a result of negotiation. This development in how meetings are shaped can perhaps explain the reason as to why there was such a clear cut between the preferences of either virtual meetings or physical meetings for the construct 'low relation'.

The second model used was an adaptation of the technology acceptance model by Davis (1986), which formed the basis for hypothesis five until seventeen. The results of the statistical analysis of these variables can be found below.

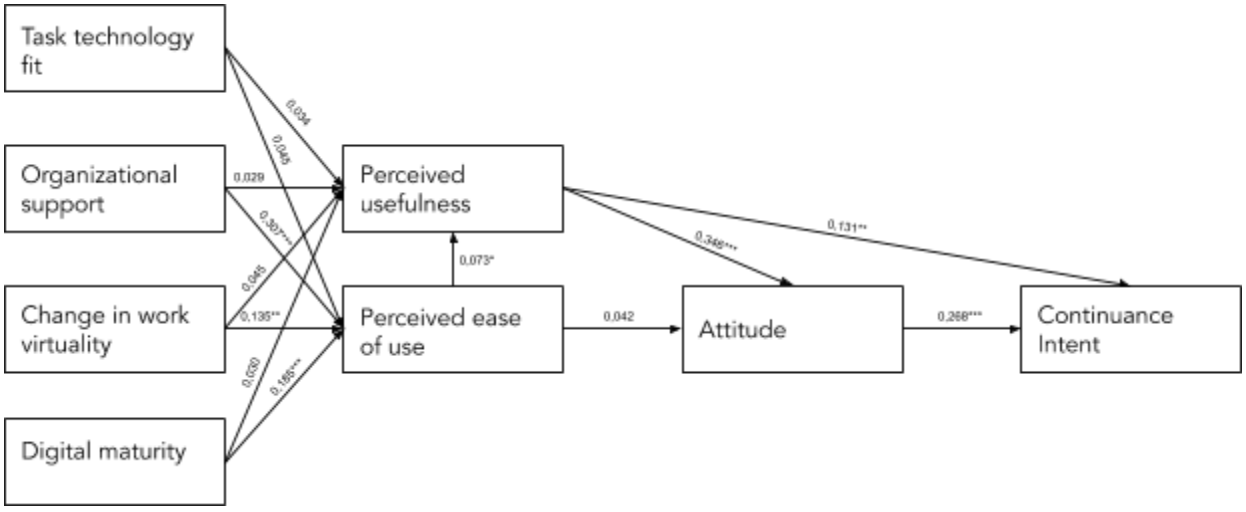

Figure 12. The original proposed research model, including relationships.

As one can observe from the model above, not all relationships were significant. The variable ‘task technology fit’ did not have any significant relationship to any variable, nor was this the case between ‘organizational support’, ‘change in work virtuality’ and ‘digital maturity’ with ‘perceived usefulness’ or between ‘perceived ease of use’ and ‘attitude’. Using the statistically significant relationships, a revised model was created which more easily shows the relationship between the variables; This can be found below. It does of course not mean that the relationships not drawn in the model below do not exist, just that no significant relationship was found within the sample. Perceived ease of use has for example been reported by Wu & Chen (2017) to not have a significant relationship with attitude.

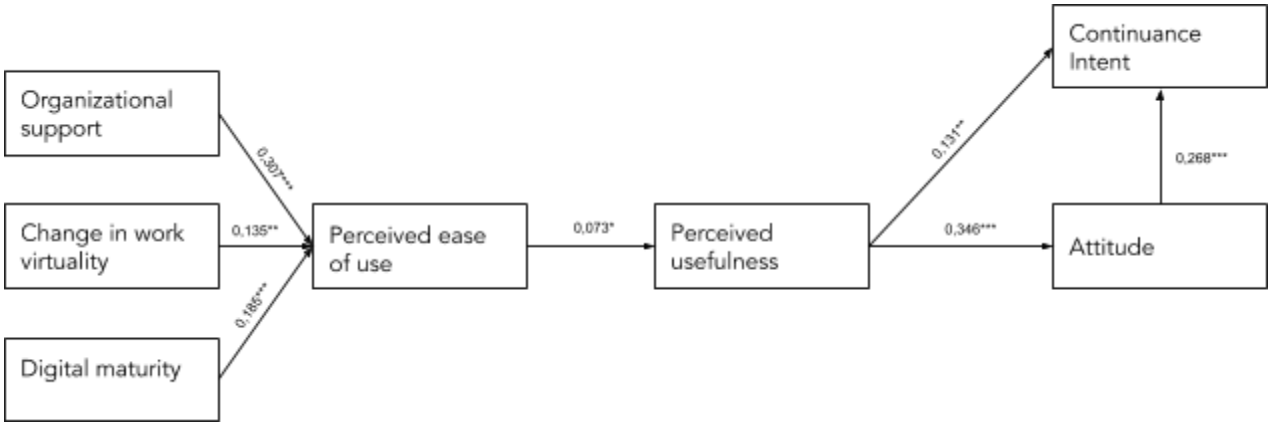

Figure 6. *Simplified TAM model*

As one can see from the model above 'perceived ease of use' is influenced by three factors, 'organizational support', 'Change in work virtuality' and 'digital maturity'. This value then has an influence on the perceived level of usefulness of virtual collaboration. That then has a direct effect on an individual's intent to continue to use the technology, as well as an indirect effect through one's attitude about virtual collaboration.

In the follow up interviews with the respondents, factors other than the independent variables were brought up to have an impact on both perceived ease of use and perceived usefulness. Firstly, in addition to organizational support, many interviewees brought up the fact that there is a sense of unity in that many people are experiencing the same type of difficulties with VC (a type of lateral organizational support). In reaction to this shared dilemma, employees receive help from one another and oftentimes also help their clients in navigating this new way of collaborating. Learning is actively shaped by a commitment by all parties to make virtual collaboration work. Secondly, in reaction to the term task technology fit, interviewees did indeed see an obvious connection between it and perceived ease of use. Yet, it seems that this construct does not paint the full picture. The interviewees kept going back to that no work is completely virtual or completely face to face. As a result of the transition to virtual collaboration on such a large scale, it is true that people with a higher task technology fit will adapt quicker and easier. However, tasks of more complex nature have also been forced to be integrated into virtual ways of working, something that is hard for anyone regardless of previous experience. It is in this

somewhat new territory of virtual collaboration that everyone is struggling to find effective strategies to work which can explain the lack of a significant relationship between task technology fit and both PEOU and PU. Furthermore, a recurring idea that was expressed in relation to productivity (the measure which was used to determine perceived usefulness) was that it was of extreme importance to manage one's schedule when working virtually. As the constant availability of sitting in front of the computer and being online can be overwhelming, many thought that having clear breaks and planned check-in meetings with colleagues helped them to deal with stress and allowed them to remain productive through maintaining relations with their coworkers, asking for help and recharging their batteries, so to speak.

Next to the models investigated, the survey also explored learnings from the coronavirus pandemic and implications for business travel. Here, it was found that an overwhelming majority of respondents felt they had increased their knowledge on virtual collaboration and improved their virtual abilities. Respondents also believed virtual collaboration could be perceived as a valid alternative to both short and long-distance travel. Many of the interviewees expressed the idea that more and more organizations are becoming comfortable with virtual collaboration. With this realization comes the other realization that if meetings can be conducted efficiently and effectively via virtual platforms, then the travel required to get to physical meetings becomes a real efficiency loss. Many also expressed that there are other motivations behind not traveling, such as reducing costs, emissions and easing traffic congestion.

6.1 Limitations

The limitations of this thesis will now be discussed. One needs to be aware that this research is not perfect and that there is room for improvements and further research. For this paper, a quantitative survey targeted towards the 'working population' was used. Respondents were found using the authors' personal networks as the main medium. For one, there is inherent bias to be found in the sample population as it is prone to be of similar character as the authors; That is to say, most of them can be assumed to be at least middle class and have higher education.

Similarly, as the survey was shared online, the respondents must already belong to a category of certain digital abilities. The initial idea of this research was to get a wide spectrum of working people; Yet, the nature of the sampling process could have produced a narrower sample population. One of the implications of this is that more skewed data could have been received, something which has further implications on the analysis. Future research could benefit from distributing surveys on a wider scale in order to maximize respondent diversity.

Very little data regarding survey population characteristics was gathered. The benefit was that the questionnaire could be done very quickly, something which is attractive to potential respondents. However, there is a risk in that important factors are neglected. Additionally, based on the mixed population, making claims about specific groups becomes increasingly difficult although we can still discuss important concepts, popular ideas and common experiences in relation to virtual collaboration.

The exact nature of the problems that were experienced with analysis of data for this research will now be explained. Initially, chi-squared tests were intended to be used in analyses for variable dependency of hypotheses 5 to 17. However, an assumption which has to be met in order for chi-squared tests to be adequately executed is that each cell must have an observed frequency of at least 5 (in the case of this research which based its questions on a 1-5 likert scale, there were 5x5=25 cells). This requirement was not met due to the characteristics of the responses in this limited sample. More respondents could have resolved this issue. In face of said problem, the authors consulted a university statistician who recommended ANOVA analyses instead. However, ANOVA comes with certain limitations, the most prominent one being the assumption that the gathered data is on an interval level. While analyses like ANOVA are widely used to explore Likert scale data, some authors have questioned whether this provides valid results. After further analysis of this discussion, it was decided to proceed with the ANOVA analysis based on a test conducted by Parker et. al. (2002) who found that Likert scale responses can be used as interval data. While chi-squared tests can produce much more precise results,

ANOVA analyses are certainly sufficient in discovering possible relationships and can adequately provide one with strong insights and ideas.

A possible source of limitations to this analysis may be the fact that the authors gathered self-reported data. Respondents' answers must be taken at face value and there is no way to verify that the questions are interpreted the way the authors intended. This fact always carries an inherent risk in terms of data analysis. Possible directions for future research would be to use other forms of research methodologies, such as interviews with multiple organizations or even case studies in order to gather very specific data. The strength of this research lies in its wide range and its ability to produce a snapshot of the general attitudes towards virtual collaboration and business travel during the time of the coronavirus outbreak. However, in choosing this deductive methodology, the opportunity to gather data on a more inductive level was missed.

7. Conclusion

In order to answer the first second research question ("How has the coronavirus had an influence on the use of virtual collaboration technology in organizations?"), one can easily say that there has been a substantial increase in the use of VC in organizations. The average increase of work virtuality was 1,55 on a 1-5 scale.

According to the travel managers, as well as the follow up interviewees, organizations are promoting virtual collaboration tools such as Google Hangouts, Microsoft Teams and Zoom. Technical support is also given, as employees do not necessarily have the technical skills required to operate these types of platforms. Usually information is shared on how to effectively and efficiently hold meetings online and in certain cases it is even encouraged to 'hang out' and have coffee breaks with colleagues virtually. Organizations such as these are actively shaping and engendering positive beliefs regarding VC and facilitating its use. An activity which Neufeld & Fang (2005) believe promotes effective telework. One of the follow up interviewees, who

works as the vice-president of IT transformation, believes that effective change management and active leadership is a key success factor in managing the transition to virtual collaboration.

Many organizations have long fostered the desire to go more virtual but have been held back because of concerns about productivity and willingness of staff. Corona has forced this change, created opportunities and has disproved many of these concerns. Therefore, one can say that corona has had a substantial impact on the way we work in organizations. Not only has it changed the way we communicate, it has also created a shared sense of experimental learning and prepared organizations for tackling a more virtual future.

The second research question investigated was ‘’What are the current experiences of virtual collaboration technology among the working population?’’. The main method to answer this question is to look at replies to the items used for the construct ‘Attitude’. This construct asked respondents to rate statements regarding the effect of VC on how interesting their jobs are, how hard it is to connect with colleagues and whether or not they believe organizations should use VC more. While respondents did not give any clear response for ‘interesting’, they did lean towards the opinion that VC makes it harder to connect with colleagues. The task and relationship model can explain these results as face to face meetings are generally preferred when one wishes to nurture relationships.

A common opinion in the follow up interviews was that one-on-one virtual meetings were much more productive. It was in multi-party meetings where it was harder to connect and where they had more difficulties in terms of focus. Also, a general sense of distance between colleagues was experienced by many. In an office space, interaction is often just a matter of walking over to your colleague’s desk and starting a conversation or asking for help. In a virtual setting, one must instead book a time where both parties can talk, making the threshold for reaching out for help higher. This fact, in combination with the need to sustain productivity levels, may cause people to experience a higher workload.

Despite the balanced result regarding attitude in the questionnaire, a staggering amount of respondents were in favor of increased use of VC within organizations and considered it to be a good idea. One can deliberate how this result came about. Keeping in mind the technology acceptance model, one could argue that organizational support has been one of the main determinants of respondents' perceived ease of use. This fact is corroborated by high degrees of learning among our population as well as the overall positive results for the 'perceived ease of use' construct. Moreover, the interviewees referred to a number of learnings which they hoped would be integrated in future business practices. They argued that this change in work forced them and their organizations to rethink the way they work and reconsider the usefulness of physical meetings.

Another interesting concept which could be used to answer this research question is Satir's model of change. Organizational support and new ways of working may have acted as the 'transforming idea' which brought back order to a situation of chaos, or in other words facilitated the use of virtual collaboration. As expected, the technology acceptance model showed a positive relationship between perceived ease of use (PEOU) and perceived usefulness (PU), and also between PU and attitude. Positive experiences with VC can therefore be said to have influenced the respondents' PU, thus influencing their attitudes and ultimately their overall continuance intent. A final conclusion can therefore be that corona served as a catalyst for organizations and their employees to have a more active discussion about the way they work. They are becoming more aware of the opportunities virtual collaboration offers and will now be able to make a better informed decision about the need for a physical meeting.

Will virtual collaboration outlive the virus? Yes it certainly will. Will it replace physical collaboration and business travel completely? Not quite. However, the coronavirus most certainly has impacted opinions regarding these activities. For the third and final research question ("What are the current perceptions of the future role of virtual collaboration?'') and its sub-question about VC being a viable alternative to physical meetings, it is important to remember that a big chunk of the respondents reported that they have learnt about the

opportunities that come with virtual collaboration. They reported to have improved their digital abilities, that they intend to use it increasingly and that they see it as a viable alternative to business travel. Since the respondents worked for a wide range of organizations, it can be expected that these organizations will invest in infrastructure, capabilities and resources towards more virtual communication. As a result, conditions are created for more digital inter-organizational collaboration, reducing the need for business related travel.

While travel in order to meet physically will continue to be part of our working lives, organizations are now stronger equipped, both materially and value wise, to reduce it. However, it is advisable to practice caution before reaching radical conclusions in this area. The potential rebound effect discussed by Lindeblad et. al (2016) and the complementarity effect discussed by Mokhtarian (2002) cause for uncertainty. Without active management of VC adoption with the goal of reducing business travel, companies might use the resources saved via said adoption to finance further travel. Another reason for why we will not see a complete avoidance of travel is that while organizations are better equipped for virtual collaboration, one of the most powerful developments in organizational behavior is not the shift to VC, rather an increased awareness and sensitivity about the topic. This may lead organizations to ask the question ‘what is the benefit of this engagement and can it be done virtually?”. So while this question might lead to the answer “yes it can”, it might sometimes lead to the answer “no, this engagement would benefit from co-presence”. Additionally, with increased capabilities for virtual collaboration there might be even more reasons for organizations to actually travel, paradoxically resulting in more travel. Furthermore, none of the follow up interviewees expressed a desire to go fully virtual, rather they see that some of the activities within their organizations will remain in physical settings whereas some of them will transition to virtual environments. They mentioned that their organizations are already having discussions and planning ahead in regards to this question. Explicit task-oriented activities have been proven to work extremely efficiently via VC, even more so than traditional methods. One can thus expect these types of activities to transition to digital methods. However, judging from shared experiences between the respondents, tasks which require innovation and are highly complex are extremely hard to navigate virtually.

Another noteworthy development which may influence the future of VC is that it revealed opportunities for individuals who have social difficulties in normal office settings. As mentioned by one interviewee, there have already been clear examples of how VC made people like this more at ease. VC could give people with social difficulties the opportunity to speak up on a more equal virtual playing field. Additionally, it could make it possible for these people to work from the comfort of home, lowering possible levels of anxiety and stress.

While one should not underestimate human adaptability and innovation, and that as we continue to use VC technologies we are discovering new challenges and opportunities of which supporting technologies are quickly being developed by tech-companies, it is quite a safe bet to say that activities that necessitate being able to interact freely and creatively are the ones which will see a return to the office.

In contrast, a final argument for why certain aspects of organizations will remain virtual is that during the coronavirus pandemic, many organizations have come up with digital solutions to solve various issues related to moving traditionally physical activities to virtual settings and procured new revenue streams via digital technology to survive. Now that these digital solutions and business opportunities have been discovered, companies will probably struggle to argue for a full reversal into previous business structures.

7.1 Contribution & Practical implications

This article lays down the groundwork for studies regarding virtual collaboration in mid- to post-coronavirus environments. There are great opportunities to be found by future researchers in terms of researching the lasting consequences of the coronavirus crisis, once knowledge and experience has been consolidated into policy and practice by organizations around the world. Interesting topics to research are the lasting effects of the coronavirus on B2B relationships and communication (several of the travel managers that were interviewed, as well as some of the

follow up interviewees, predicted increased dialogue between companies and clients in terms of meetings and communication, suggesting that the choice of collaboration medium will be negotiated much more openly in the future), successful strategies on digital transformation in times of crises and travel management trends in relation to meeting policies. From discussions with travel managers, the analytical results of virtual collaboration endeavours by organizations are predicted to be available in the autumn of 2020. Whether or not this exact prediction is correct is debatable. However, it is fair to say that not too far away in the future from the point of time at which this research was conducted, data will be more readily available and the academic world will experience an abundance of fascinating topics related to virtual collaboration.

Overall, the authors believe this research provided valuable results in highly turbulent times. First of all, it was found that the coronavirus pandemic, and the subsequent wave of virtual work, has led to an increase of both individual digital abilities and knowledge on the opportunities of virtual collaboration. Additionally, it was proven that the coronavirus played a major role in individuals' perceptions of virtual collaboration. Therefore, the virus may have long lasting effects on the way we work, even when the virus itself has been contained. Some of the results of this were already visible in respondents' positive opinions on virtual collaboration as an alternative to business travel and the increase of its use in organizations.

The second main finding is a model of virtual collaboration acceptance levels. The model clearly identifies the role of organizational support, digital maturity and the change in work virtuality on an individual's opinion towards virtual collaboration. However, the research did not only provide this relationship, it provided a clear roadmap from independent values like organizational support to continuance intent, a model which may help researchers and companies better understand the processes underlying acceptance of virtual collaboration.

Lastly, this research confirmed the findings of Denstandli et. al. (2012) in showing that employees have a preference for face to face communication when relationships are important or tasks complex. These results could guide decisions when it comes to virtual collaboration.

When considering the practical implications of this research, one can make a distinction between three different areas. The first area is academics, where this research could inform the debate on how the technology acceptance process works, especially when it comes to externally induced conditions of change like the coronavirus. Secondly, the results could serve as guidance for organizations which use or develop virtual collaboration tools. For those which develop virtual collaboration tools it can serve as a framework to better understand the decision making processes of their customers. The conclusions could, for example, be used to argue for targeting the technology towards simpler tasks and more basic meetings. This would mean accepting that the technology is less suitable for complex tasks. On the other hand, if this notion is not acceptable, this research could serve as an argument for more development to make these tools better suited for complex tasks. Thirdly, this research can support managers and organizations which make these tools available to their staff, it can be used to devise steps in order to increase the share of employees using the software. Insights like the importance of organizational support and digital maturity could inform choices when it comes to what department or roles to equip with VC tools first. Furthermore, the earlier presented findings on the task and relationship dimension could serve to enhance the debate on whether a meeting can be done virtually or warrants the investment of a physical meeting. Additionally, it could inform organizational policies with regards to the use of virtual collaboration instead of travel, reducing the impact on the environment and reducing stress and strain.

All in all, this research showed that corona is here to stay. Even if the virus can be contained in a timely manner, the effects of the virus on the way we work will linger on for a long time after. The way we work is changing and we may never return to the way we worked before the pandemic. However, no virus or pandemic will be able to change one of humans' most basic characteristics: that we are social beings who are sometimes in need of personal contact and connection. These are unprecedented times, but times in which we discover opportunities which we did not think were possible before.

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Appendix A: Virtual collaboration survey

Section 1.

1. Where do you work?

(Dropdown option)

2. How would you rate your digital abilities?

(1) Not experienced
(2)
(3)
(4)
(5) - Very experienced

3. How much of your work interactions were done online 6 months ago?

(1) None
(2)
(3)
(4)
(5) All

4. How much of your work interactions are currently done online?

(1) None
(2)
(3)
(4)
(5) All

5. How much did your job rely on virtual collaboration tools before the corona-outbreak?

(1) Not at all
(2)
(3)

(4)
(5) Very much

Section 2.

Please rate the following statements about virtual collaboration (VC)

My organization promotes the use of VC	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
In general VC is easy to use	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Connecting with my colleagues is harder with VC	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I believe using VC increases my performance	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Using VC makes my job less interesting	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I do not have enough support for VC from my organization	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I will not use VC after COVID-19	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
VC should be used more in	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

organizations					
The use of VC decreases my productivity	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I will use VC a lot in the future	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Employees should use VC more	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Section 3.

In one year, what do you believe will be seen as the most suitable meeting format for these scenarios?

One-time meeting with unfamiliar people	Virtual meeting	Don’t know	Face-to-face meeting
Making an important decision for one's company	Virtual meeting	Don’t know	Face-to-face meeting
Quick informative meeting	Virtual meeting	Don’t know	Face-to-face meeting
Developing relationships with people	Virtual meeting	Don’t know	Face-to-face meeting
Introductory meeting with an important client	Virtual meeting	Don’t know	Face-to-face meeting
Discussing complex topics	Virtual meeting	Don’t know	Face-to-face meeting

Meeting with coworkers	Virtual meeting	Don’t know	Face-to-face meeting
Daily progress meeting	Virtual meeting	Don’t know	Face-to-face meeting

Based on your experiences during the coronavirus pandemic, please rate the following sentences.

In most cases, VC will be a good alternative for short-distance business travel	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
In most cases, VC will be a good alternative for long-distance business travel	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My knowledge of the opportunities of VC has increased	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My digital abilities have improved	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Section 4.

For our research, we intend to conduct some short follow-up interviews. If you would be willing to potentially participate in one of these, please write down your email address so that we may contact you.

Email address:_____

Name and role:_____

Appendix B: Interviews with travel managers

Question 1: Could you elaborate on your career? Have you always been interested in this area?

Question 2: How much do you travel yourself?

Question 3: Could you explain the balance between virtual collaboration and travel within your organization (before corona)?

Question 4: Has your organization taken active measures to influence employee behaviour in this area?

Question 5: What effects has the coronavirus had on business travel? (In (effect on employees) and outside company)

Question 6: Have you ever encountered a phenomenon as powerful as corona on business travel? If so, what/when?

Question 7: What lasting effects, if any, do you expect to see from the coronavirus in terms of business travel?

Question 8: Do you think people will be more willing to substitute business travel with virtual meetings going forward? If not, why? And if yes, to what extent?

Appendix C: Follow up interviews from questionnaire

Question 1: Does your job look differently now compared to pre-corona times? If so, in what way?

Question 2: In the questionnaire, you were asked to rate the ease of use of virtual collaboration tools. We wanted to investigate what factors had an effect on this so-called ease of use. What factors have had an effect on your ease of use of virtual collaboration technology?

Question 3: Do you believe that any of these have an effect on ease of use?

(Task technology fit)
(Organizational support)
(Digital maturity)
(Change in work virtuality)

Question 4: In the questionnaire, you were asked to rate the effect of virtual collaboration on your productivity. We asked this question to measure the usefulness of virtual collaboration. What factors have an influence on the productivity achieved through virtual collaboration?

Question 5: Could you elaborate on how virtual your job will be in the future? And do you think this was something that was bound to happen or has corona played a big part in shaping the outcome?

Appendix D: Follow up interviewees' roles

Interviewee	Role
1	Embassy Secretary
2	Consultant
3	Management Consultant
4	VP Global IT Transformation
5	Software Developer
6	Associate Client Executive
7	Assistant Professor
8	Project Manager
9	Head of Customer Success

Appendix E: Detailed statistical findings

Hypothesis 5

In order to explore the impact of perceived usefulness on attitude, a one-way ANOVA was performed. In this test *PU.aver* (M = 3,33, SD = 0,87) was used as the independent variable and *Attitude.aver* (M = 3.41, SD = 0,65) was used as the dependent variable. There was a statistically significant difference at the P < 0,001 level (F (8, 155) = 10.250, P < 0,001). The effect size was 0,346 which can be classified as a large effect. Therefore, one can say that hypothesis 5 is accepted. Perceived usefulness has a positive effect on attitude.

Hypothesis 6

In this test *PU.aver* (M = 3,33, SD = 0,87) was used as the independent variable and *Con.int.aver* (M = 3,99, SD = 0,78) was used as the dependent variable. There was a statistically significant difference at the P < 0,01 level (F (8, 155) = 2,931, P = 0,044). The effect size was 0,131 which is a medium effect size. Taking these numbers into account, hypothesis 6 can be accepted. Perceived usefulness has a positive effect on continuance intent.

Hypothesis 7

In this hypothesis, the relationship between perceived ease of use and perceived usefulness was explored. *P.E.use* (M = 4,16, SD = 0,78) was the independent variable and *PU.aver* (M = 3,33, SD = 0,87) was the dependent variable. There was a statistically significant difference at the P < 0,05 level (F (4, 159) = 3,169, P = 0,015). The effect size was 0,073 which is a medium effect size. These numbers lead to the acceptance hypothesis 7, perceived ease of use has a positive effect on perceived usefulness.

Hypothesis 8

In this hypothesis, the relationship between perceived ease of use and attitude was explored. Hypothesized was that there would be a positive relationship between the two. While a small

effect of 0,042 between *P.E.use* (M = 4,16, SD = 0,78) and *Attitude.aver* (M = 3.41, SD = 0,65) was found, no statistically significant relationship (F (4, 159) = 1,738, P = 0,144) could be found. Therefore, one cannot accept hypothesis 8.

Hypothesis 9

For this hypothesis, it was analysed if there is a statistically positive relationship between attitude and continuance intent. *Attitude.aver* (M = 3.41, SD = 0,65) was used and the independent variable and *Con.int.aver* (M = 3,99, SD = 0,78) as the dependent. There was a statistically significant difference at a P < 0,001 level (F (14, 149) = 3,903, P < 0,001). This effect size was 0,268, which is a large effect. This means hypothesis 9 can be accepted, attitude has a positive effect on continuance intent.

Hypothesis 10

Through this hypothesis, the relationship between task technology fit and perceived usefulness was explored. A low effect of about 0,034 was found between *T.T.Fit* (M= 2,96, SD= 1,22) and *PU.aver* (M = 3,33, SD = 0,87). Unfortunately, the relationship between the two was not perceived to be statistically significant (F (4,159) = 1,387, P = 0,241. Therefore, one cannot accept hypothesis 10.

Hypothesis 11

A statistically positive relationship between task technology fit and PEOU was investigated. A negligible effect (0,045) was found between *T.T.Fit* (M= 2,96, SD= 1,22) and *P.E.use* (M= 3,33, SD= 0,87) together with an insignificant p-value (F (4, 159) = 1865, P= 0,119). As a consequence, H11 cannot be accepted.

Hypothesis 12

This hypothesis aimed to explore the relationship between *Org.Sup2* (M= 3,85, SD=1,04) and *PU.aver* (M= 3,33, SD= 0,87). The effect size was found to be minimal (0,029) and the p-value insignificant (F (4, 159) = 1174, P= 0,324). Conclusively, H12 can not be supported.

Hypothesis 13

This hypothesis tested the dependency of *P.E.use* (M= 3,33, SD= 0,87) on *Org.Sup2* (M= 3,85, SD= 1,04). The effect size was large (0,307) and the p-value was strongly significant (F (6, 157) = 11 580, P= <0.001). Consequently, organizational support has a positive effect on PEOU.

Hypothesis 14

Respondents were asked to answer how much of their work interactions were done online 6 months ago as well as their current work interactions based on a likert scale from 1 to 5. 'Change in work virtuality' was calculated by subtracting respondents' previous virtuality levels from their current virtuality levels and given the name '*Change.Work*' (M= 1,55, SD= 1,10). The effect size of change in work virtuality on *PU.aver* (M= 3,33, SD= 0,87) was found to be small (0,045) with an insignificant P-level (F (6, 157) = 1221, P = 0,298). H14 can ultimately not be accepted.

Hypothesis 15

The relationship between *Change.Work* (M= 1,55, SD= 1,10) and *P.E.use* (M= 4,16, SD= 0,78) was tested by this hypothesis. The effect size was found to be medium at a size of 0,135. The p-value was found to be (F (6, 157) = 4076, P= 0,001). It follows that H15 can be accepted; Change in work virtuality has had an effect on PEOU.

Hypothesis 16

This hypothesis tested the relationship between digital maturity and perceived usefulness. Digital maturity (M= 4,09, SD= 0,79) had a small effect size (0,03) on *PU.aver* (M= 3,33, SD= 0,87). Yet, the p-value was found to be insignificant (F (3, 160) = 1638, P= 0,183). H16 is therefore not accepted.

Hypothesis 17

The final hypothesis measured the effect of digital maturity (M= 4,09, SD = 0,79) on perceived ease of use (M= 4,16, SD= 0,78). Significance was found to be high (F (3, 160) = 12 097, P<0,001). The effect size of 0,185 can also be classified as high. Considering these findings, H17 is accepted.