Shifting attitudes towards team collaboration and the role of the marketing message

Master's thesis

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Abstract

The way that office workers collaborate with their team members has changed a lot during the COVID-19 pandemic. All of a sudden, employees were forced to work and therefore collaborate with team members, from home. For that reason, virtual tools were replacing physical tools as the standard workplace material during the pandemic. Both virtual and physical materials each offer specific advantages and disadvantages for team collaboration. Still, it is not clear to what extent these tools are beneficial for collaboration post-pandemic.

The purpose of this study is to identify how Dutch companies offering physical collaboration tools can use the latest insights about team collaboration and the marketing message to reposition their products within the market. First, it is investigated quantitatively to what extent office workers' appreciation of physical and virtual tools influences the fulfilment of team collaboration goals. This is done by surveying 192 office workers in the Netherlands during November 2020. Now that working from home is not forced anymore, it is also assessed what the role of the home environment is for team collaboration. Finally, Company X has been selected as a case company to identify in what way firms can reposition their physical tools in the Dutch market of team collaboration tools by using the marketing message. Its current marketing message strategy is identified by assessing internal documents and its marketing channels.

The results of the study show that office workers in the Netherlands believe that both physical tools, virtual tools and a good quality of the home environment help to fulfil team collaboration goals. Nevertheless, regression analysis indicates that only 7.6% of the variability of the variance is explained by the independent variables. Therefore, it is very likely that there are other variables explaining the fulfilment of team collaboration.

Theoretically, the results do not confirm a clear shift from physical to virtual tools for team collaboration, as suggested by previous studies. Office workers in the Netherlands are still interested in physical tools and these materials help to fulfil team collaboration goals. On the other hand, the increasing popularity to work from home does make it likely that virtual tools will be the norm in the upcoming years. Still, physical materials can be utilised complementary or alternatively for team collaboration. Therefore, recommendations are given about how companies offering physical tools can reposition their physical products by using the marketing message to communicate the benefits of physical collaboration in the wake of COVID-19.

Keywords: team collaboration, office workers, COVID-19, marketing message strategy

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1. Introduction

1.1 Background

Recently, the COVID-19 pandemic has been causing major uncertainty and changes to existing business activities. It has even been described as one of the most significant environmental changes in modern history, affecting the needs and wants of customers in several industries (He & Harris, 2020).

The uncertainty caused by the pandemic is clearly notable in the sector of collaboration tools. These collaboration tools, designed for office workers, can be used for activities such as brainstorming, planning and presenting. It appears that the latest global developments heavily changed the way people collaborate with their teams within organisations. In the past, using physical tools such as whiteboards, scrum boards and sticky notes was the standard for team collaboration (Waizenegger et al., 2020). During the pandemic, virtual tools such as Zoom, Microsoft Teams, Jira and Trello quickly gained popularity.

Currently, the developments caused by COVID-19 heavily affect companies offering physical workplace materials for team collaboration. Now that employees are slowly starting to get back to the office again, Dutch companies offering physical tools are looking for ways to reposition the products within the market. Therefore, they want to know (a) the added value of both virtual and physical tools for team collaboration in the wake of COVID-19, and (b) how to communicate the added value of physical tools to potential customers. Even though the Dutch government imposed a strict lockdown at the beginning of December, working from home was not forced in the months preceding this decision (Veenstra, 2021). Therefore, office workers had the opportunity to work with both physical and virtual tools for collaboration.

While virtual collaboration tools were already being used for team collaboration in the past decade (Orellana, 2017), it appears that the pandemic fuelled this trend even more. Within a matter of weeks, virtual collaboration was enforced as physical collaboration was regarded as potentially dangerous (Waizenegger et al., 2020). Companies required that their office employees work and collaborate with each other from home. In fact, working from home (WFH), and therefore virtual collaboration, is to remain popular in the upcoming years (Barrero et al., 2021). The proposed shift from physical to virtual tools has been identified as temporary for now (Waizenegger et al., 2020), as researchers have not yet identified what is

going to be the standard workplace material for collaboration when working from home is not forced anymore.

Additionally, this topic is addressed from a marketing communications perspective. Marketing can be used to help organisations adapt after major events causing disruptions in an industry (Marketing Science Institute, 2020). In order to start creating a marketing strategy, companies aim to formulate the marketing message, this message explains what is going to be communicated (Tafesse & Wien, 2018). In fact, the development of the marketing message is called the message strategy, and it has been described as a key element to (re)connect with the potential customer (Taylor, 1999). In the past, companies have successfully incorporated and adjusted message strategies in uncertain times, such as during the financial crisis (Lee et al., 2011). Therefore, it can be useful to assess to what extent the marketing message can be used strategically by companies wanting to reposition their physical collaboration tools in the wake of COVID-19.

1.2 Research goal and questions

The research goal can be summarised as follows: To identify how companies offering physical collaboration tools can reposition their products using message strategies while taking into account the team collaboration developments within the Netherlands. Consequently, the following central research question has been formulated:

How can companies offering physical collaboration tools use the latest insights about post-pandemic team collaboration and marketing message strategies to reposition their products in the market?

To answer the central research question, the following sub-questions have been formulated: (1) What are office workers' views about using virtual and physical tools for team collaboration in the wake of COVID-19 within the Netherlands? (2) What is the current role of the home environment with regard to fulfilling team collaboration goals? (3) How can the marketing message be used strategically for repositioning products?

First of all, it is assessed what the current views of office workers are about using virtual and physical workplace materials for team collaboration now that people are not forced to work from home anymore. During the pandemic, office workers have switched from using physical workplace materials to virtual workplace materials for team collaboration (Waizenegger et al., 2020). There is also the expectation that office workers will continue to work from home, even when this is not enforced anymore (Barrero et al.,

2021).

Still, it is uncertain how the type of workplace material influences team collaboration at a time when working from home is not forced, namely in November 2021. With this study, it is investigated quantitatively to what extent office workers' appreciation of physical and virtual workplace materials influences the fulfilment of team collaboration goals. Even though office workers are not individually purchasing the collaboration materials, they are able to identify to what extent virtual tools and physical tools add value to the fulfilment of team collaboration goals within their organisation.

Additionally, the role of the home environment is investigated. In fact, Waizenegger et al., (2020), explained that office workers suddenly had to work from home when the pandemic was starting. This resulted in problems, such as poor home office equipment or distractions from other people in the house. Now that office workers have had some time to get used to working from home. As of November 2021, many companies allow office workers to work at the company's site again. From there, it is still possible to use virtual collaboration tools. Therefore, the question is whether the home environment still influences the fulfilment of team collaboration goals when collaborating virtually.

Consequently, it is researched how companies offering physical tools can reposition their products using the marketing message to convince potential customers of the value of physical collaboration. As mentioned before, developing the marketing message strategy is the first step in (re)connecting the brand with the specific needs of the potential customer (Tafesse & Wien, 2018). In the past two decades, academics and practitioners have been using the six-segment message strategy wheel created by Taylor (1999), to develop and identify the message strategy of organisations. Research has indicated that companies were able to adapt their message strategies in the past to deal with macro-developments affecting their industry, such as the financial crisis in the 21st century (Lee et al., 2011) or the rise of social media (Tafesse & Wien, 2018). Therefore, it can now be investigated to what extent companies offering physical tools can utilise the marketing message to reposition their products while accounting for the developments within the collaboration industry.

Finally, Company X is used as a case of a company looking for ways to reposition its physical tools within the market by (re)adjusting the firm's message strategy. Its strategy is analysed by assessing internal documents and by taking a look at the company's website and marketing channels. Existing studies are investigated to identify how the message strategy can be utilised strategically. Ultimately, it can be assessed to what extent Company X, and other companies offering physical collaboration tools, can reposition their products by

strategically adjusting the message strategy while accounting for the latest developments with regard to team collaboration in the wake of COVID-19.

1.3 Academic relevance

The COVID-19 pandemic is changing where we work and how we work (Barrero et al., 2021). It was suggested by Waizenegger et al., (2020), that there was a shift in the use of collaboration tools, specifically from physical to virtual materials. This shift took place at the start the of COVID-19 pandemic, in March 2020. During that time, employees were suddenly forced to work, and also collaborate with co-workers, from home. As physical collaboration was not possible anymore, many teams within organisations started to adopt virtual tools for discussing, brainstorming and planning. It was suggested by Barrero et al., (2021), and Waizenegger et al., (2020), that working from home and thus virtual collaboration will be the norm in the upcoming years.

With this research, it is investigated whether the shift from physical to virtual workplace materials is something temporary or whether it is to stay, as suggested, but not confirmed, by the existing studies. Therefore, it is identified what type of collaboration tool is most helpful to fulfil team collaboration goals. The theoretical model by Waizenegger et al., (2020), visible in Appendix A, was never tested quantitatively before. This research can thus be academically significant as it tests the developed theories and investigates the situation at the end of the pandemic. The context of the study is the situation where office workers are no longer forced to work from home, and therefore have the option to use both physical and virtual tools for team collaboration.

Furthermore, it is investigated what role the home environment plays regarding collaboration. At the start of the pandemic, many people had to WFH in environments that were not designed for work purposes, causing distractions which then led to negative attitudes toward digital collaboration (Waizenegger et al., 2020). It is assessed whether the role of the home environment is still an important factor for team collaboration at a later stage of the pandemic, namely in November 2021.

Next to that, it is studied to what extent marketing, and specifically message strategies as identified by Taylor (1999), can be used to reposition products within a changing market. This can add value to the recent research priorities in marketing, namely "How can marketing help organisations adapt after black swan events?" (Marketing Science Institute, 2020). The black swan event described is the COVID-19 pandemic. This study can thus be regarded as

academically relevant because it serves to identify to what extent companies can reposition their product, using the marketing message, in order to deal with the post-pandemic developments within the market.

1.4 Practical relevance

This research has practical relevance in the sense that it provides insights into the developments in team collaboration while also providing companies with advice on how to reposition their products as a result of a changing industry.

First, the thesis involves researching the appreciation of both physical and virtual tools for collaboration. It is also assessed what the role of the home environment is when collaborating within an organisation from home. Due to the COVID-19 pandemic, the way collaboration is done has perhaps fundamentally changed. Therefore, it is researched to what extent both types of collaboration influence the fulfilment of team collaboration goals. This can be helpful in identifying how team collaboration is going to be carried out in the upcoming years. The research is also useful for organisations that are unsure whether physical tools, virtual tools or a combination of both are most suitable for team collaboration.

Additionally, the second part of this research focuses on investigating the use of message strategies. This is of practical relevance for companies offering physical tools, as they are given advice on how to strategically reposition its product using message strategies, taking into account the changed working situation as a result of the pandemic. Specifically, this research benefits Company X. Specific recommendations are given related to promoting their physical collaboration products by (re)developing its marketing message while keeping in account the current developments related to collaboration.

1.5 Company background

The initial idea regarding the research was developed by Company X B.V, founded in 2014. The firm specialises in developing and selling physical collaboration tools to B2B customers in a wide range of countries around the globe. The company is located in Enschede, and they currently have five full-time employees.

With the use of Company X's tools, the company tries to enable teams to collaborate in a fun and effective way. Scrum boards and high-quality magnetic notes are examples of the products that they sell. In the past years, Company X managed to sell thousands of physical collaboration tools across several B2B markets around the globe, using platforms such as

Amazon and their own web shop. Its main target customers are decision-makers of organisations that might want to use helpful (physical) tools for team collaboration. The users of the products are office workers within these organisations.

Evidently, COVID-19 affected Company X greatly as the interest in physical collaboration drastically declined during the pandemic. For that reason, the company would like to know to what extent team collaboration has changed and in what way they can reposition their products within the market. One of the ways Company X would like to achieve this is by utilising marketing to convince the potential customer of the added value of safe physical collaboration (Company X, 2021). It is important that physical collaboration can be done in a safe manner as social distancing and other precautions can lead to decreased mortality rates during a pandemic (Greenstone & Nigam, 2020). With Company X's products, this is still possible.

Furthermore, the company is interested in knowing the current attitudes toward team collaboration, and how they can adjust their marketing message to keep in touch with the specific needs of the potential customer within the market. In this research, the attitudes of office workers are identified, as this makes it easier to gather data across a very large number of organisations. Although office workers are not the actual customer, they are the users of the virtual and physical collaboration tools, so they possess a lot of knowledge about how these tools can (or cannot) benefit team collaboration. Regarding message strategies, it can be identified how the marketing message can be crafted to suit (B2B) customers while taking the developments within the market into account.

1.6 Outline of thesis

The thesis has been structured in the following way so that the central research question can be answered in a precise manner. First, a literature review about (a) collaboration and (b) message strategies is carried out. Based on this systematic literature review, the research gaps can be identified, which serves as a basis for the methodology section. Consequently, a survey is created in order to test the existing model of Waizenegger et al., (2020) in the current context. Then the data collection and analysis are displayed. The latter consists of (a) descriptive information, (b) factor analysis, (c) testing of hypotheses and finally (d) multiple regression analysis. Consequently, it is identified how Company X, and other companies offering physical tools, can reposition their physical collaboration products in the market that has changed as a result of COVID-19.

2. Theory

The theoretical framework serves as a background for a research project. Without this framework, the research cannot be fully justified (Lederman & Lederman, 2015). Therefore, the main topics associated with this research are investigated by means of a systematic literature review. Based on the current context and the research gaps discovered in the review, three hypotheses have been formulated.

2.1 Systematic literature review

A systematic literature review has been carried out for this research. This type of literature review can be regarded as reliable, valid, and repeatable (Xiao & Watson, 2019). The review follows the guidelines of a systematic literature review as formulated by Templier and Paré (2015). The theory section covers two main themes, namely collaboration and message strategy. Both topics are relevant to the research question. The first part serves as a background for studying team collaboration developments. Next to that, the literature concerning message strategy has been analysed to identify the theoretical basis of this concept and to see in which contexts message strategies have been utilised in the past. For this literature review, the following inclusion and exclusion criteria have been applied: (a) only sources in English, (b) sources must be related to either collaboration or message strategy, and (c) theses and dissertations have been excluded. Scopus was the main search engine that has been used to gather the sources to write the literature review, while some additional sources were found using Google Scholar. The search syntax for collaboration is:

"(Collaboration AND concept AND analysis) OR (team AND collaboration) OR (Group AND work) OR (collaboration AND effectiveness) OR (virtual AND collaboration) OR (physical AND collaboration) OR (theoretical AND framework AND collaboration) AND NOT (collaboration AND inter-organizational OR inter-organisational)"

Then, for the developments in collaboration, the syntax was slightly adjusted to fit the topic:

"(Collaboration AND concept AND analysis) OR (team AND collaboration) OR (Group AND work) OR (collaboration AND effectiveness) OR (virtual AND collaboration) OR (physical AND collaboration) OR (theoretical AND framework AND collaboration) OR (collaboration AND developments) AND NOT (collaboration AND inter-organizational OR inter-organisational AND collaboration)" "(message AND strategy) OR (six-segment AND strategy AND wheel) OR (message AND strategy AND Taylor)"

Both topics, namely the message strategy wheel and collaboration, cover the following aspects: (1) introduction to the topic, (2) definition of the construct, (3) similar constructs, (4) the importance for organisations, (5) latest developments. In Figure 1, the systematic process has been displayed.

Figure 1

Systematic literature review for collaboration and message strategy wheel
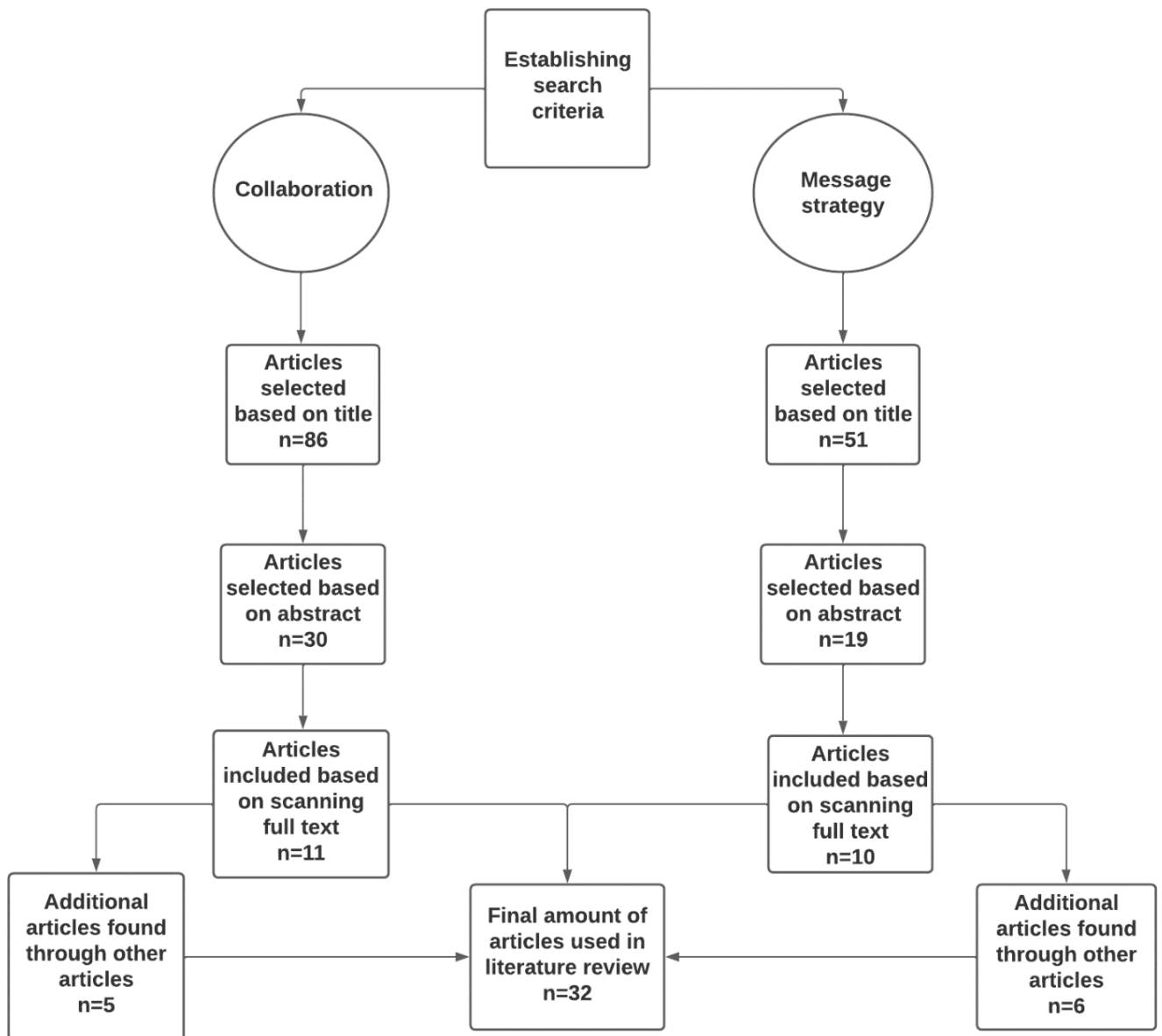
2.2 Collaboration

Collaboration is a crucial activity within organisations. Studies have shown that the collaboration between employees results in the fulfilment of organisational goals and the creation of competitive advantages (Bedwell et al., 2012, Tjosvold & Tsao, 1989). The aim of this section of the study is to cover the relevant literature regarding collaboration. First, the definition of collaboration is discussed. Then, similar constructs related are explained so that there can be a distinction between collaboration and these other constructs. Next, the literature related to the importance of the construct for organisations is described. The final section covers the latest developments regarding collaboration relative to the research scope of this thesis. Table 1 shows an overview of the most relevant sources for the literature review. The sources are sorted by author, title, theme, type of study, and sample size. The full table can be found in Appendix C. The literature is further discussed in the rest of Chapter 2.2, as these sources provide relevance for the research context.

Table 1

Overview of literature review: Collaboration, ordered by date of publication

Authors	Title	Theme	Research design and sample	Main findings	Limitations
(Bedwell et al., 2012)	Collaboration at work: an integrative multilevel conceptualisation	Defining collaboration	Integrative multilevel concept analysis by providing a synthesis of the literature	Differences and similarities between collaboration and related concepts are outlined so that conceptual confusion can be disregarded	The concepts are only explained theoretically, making it difficult for practitioners involved with collaboration to identify the added value
(Waizenegger et al., 2020)	An affordance perspective on team collaboration and enforced working from home during COVID-19	Developments in collaboration	Interviews and meetings with N=33 office workers, followed by abductive coding to form conclusions	The authors explained and illustrated the affordance shift from physical to virtual workplace materials for collaboration	The developed model was not empirically tested. Participants were also not used to working and collaborating from home, which might have influenced their perceptions

(Barrero et al., 2021)	Why working from home will stick	Developments in collaboration	A survey was conducted and filled in by N= 33,250 U.S office workers	The shift to working from home is welcomed by both employer and employees and will remain long after the pandemic ends	Survey was only conducted in the United States, therefore not certain whether the results apply to other countries
(Nguyen et al., 2021)	Staying connected while physically apart: digital communication when face-to-face interactions are limited	Developments in collaboration	A survey was conducted and filled in by N= 2,925 US adults. Consequently, the developed hypotheses were tested	Digital media negatively impact social connectedness, with the exception of voice and video calls	Measures of social presence were not included in the study. Also, the study was only carried out in the United States

2.2.1 Defining collaboration

Before diving into the literature regarding topics such as collaboration for organisations or the latest trends with regard to the construct, it would be important to first look at how the construct has been defined in the literature. One of the definitions is that collaboration is "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible" (Wood & Gray, 1991, p.4). It has also been defined as "the process by which two or more persons engage in a joint activity to achieve a shared goal" (Bedwell et al., 2012, p.135). However, there has not been a joint agreement on the definition of collaboration. As Henneman et al., (1995), explain, the lack of clarity of the definition has led to the false usage of the word, often in combination with other terms like cooperation, teamwork, and coordination.

2.2.2 Similar constructs related to collaboration

In order to clearly describe the definition of collaboration, it is thus important to distinguish it from similar constructs. Bedwell et al., (2012), identified 4 similar constructs by developing an integrative multilevel conceptualisation. First, there is the construct of cooperation. It has been defined as the extent to which entities care about the common objective rather than the individual objective (Salas et al., 2005). Roschelle and Teasley (1995), describe that there is a clear distinction between cooperation and collaboration. The latter is a mutual engagement of participants, while cooperation refers to dividing tasks among these participants.

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The authors thus regard cooperation as a way to collaborate. Additionally, collaboration involves negotiating, discussing, and accommodating with other people. So, it requires interaction among all participating individuals, while this is not necessary with cooperation (Kozar, 2010).

Next to that, there is the widely used construct of teamwork. Teamwork has been described as "interdependent team activities that orchestrate taskwork in employee's pursuit of goals" (Marks et al., 2001). Both collaboration and teamwork are very similar but there is a small, but there are differences. First, teamwork does not necessarily require the same common goals for each team member. Additionally, teamwork only involves the combination of individuals within one team, while collaboration can be done across teams and organisations (Bedwell et al., 2012).

Finally, the construct of coordination is also strongly related to collaboration. It has been described as "orchestrating the sequence and timing of interdependent actions" (Marks et al., 2001, p.363). The key difference between collaboration is that coordination does not necessarily relate to social entities (Salas et al., 2000). For example, there can also be coordination between resources (Salas et al., 2000).

In conclusion, the construct of collaboration is similar, but not identical to the constructs of teamwork, cooperation, and coordination. While there is a fair share of overlap between the constructs, there are enough differences so that they can be distinguished. Table 2 shows which studies have discussed the construct of collaboration or similar constructs. For the sake of clarity, the term team collaboration is used in the rest of this thesis. It involves working together with other team members toward a common goal.

Table 2

Distinguishing Collaboration and Similar Constructs

Topic	Author(s)
Definition of collaboration	(Bedwell et al., 2012; Wood & Gray, 1991)
Issues with previous definitions	(Henneman et al., 1995)
Cooperation	(Bedwell et a., 2012; Kozar, 2010; Roschelle & Teasley, 1995; Salas et al., 2005)
Teamwork	(Bedwell et al., 2012; Marks et al., 2001)
Coordination	(Bedwell et al., 2012; Marks et al., 2001; Salas et al., 2000)

2.2.3 The importance of collaboration within organisations

To have a functional organisation without any forms of collaboration seems very unlikely. Many researchers have claimed that collaboration is vital for the success of organisations. Tjosvold and Tsao (1989), concluded that collaboration is affected by numerous factors, such as shared vision and cooperative interaction. All these factors can lead to more organisational commitment. Furthermore, collaboration alone is often not enough for successful organisational performance. The quality of the collaborative process is also important. For instance, Boughzala and De Vreede (2015), argued that the quality of an organisation's outcome is directly influenced by the quality of collaboration within a team. Finally, effective collaboration can help companies to obtain and keep a competitive advantage (Bedwell et al., 2012). It can thus be concluded that collaboration within organisations can be beneficial for several reasons.

2.2.4 Developments in collaboration

Consequences of COVID-19: Working from home and the rise of virtual collaboration
Due to the COVID-19 pandemic, working from home was advised or even enforced by many governments and organisations. Evidently, this has had a large impact on team collaboration as physical meetings were, in many cases, not a possibility anymore (Waizenegger et al., 2020). Because of that, many employees got accustomed to working from home (Barrero et al., 2021). There are several possible reasons why this trend, and also collaboration from home, will stick in the upcoming years. These include positive experiences with working from home, investments that benefit from working from home, reduced stigma, negative attitudes toward crowds and the risk of a virus spreading, and finally new technology innovations. (Barrero et al., 2021). Still, working from home does not bring advantages only. In the past, remote e-workers reported feelings of isolation, alienation and worry in the past for virtual collaboration (Collins, 2005). However, a lot of technological advancements have been made in recent years, making it easier to connect with co-workers by (video)calling or social media (Nguyen, 2021). Therefore, the negative aspects associated with remote working may not be applicable to the current working conditions. Nevertheless, the way we work has changed massively in a short time span. People are now working from home, and therefore also collaborating from home with their team.

Recent global developments may actually spark more interest in virtual and physical collaboration. In fact, a new study focused on the shift from physical to digital workplace materials for team collaboration (Waizenegger et al., 2020). Based on the author's findings,

they developed a model, which can be found in Figure 2. In the study, it was concluded that there was an affordance shift with regard to the type of workplace materials for collaboration during the pandemic. Affordances are the possibilities of action that animals or humans have within their environment. The authors suggested that during the pandemic, there was a shift from environmental affordances, like meeting rooms and physical tools, to technological affordances, like Zoom or a virtual planning tool for collaboration (Waizenegger et al., 2020). Next to that, the authors concluded that the effectiveness of team collaboration is heavily affected by the home environment. Distractions at home or bad technological resources to work affect both productivity and team collaboration negatively (Waizenegger et al., 2020).

Figure 2

The affordance shift from physical workplace materials to virtual workplace material as a result of enforced working home due to COVID-19
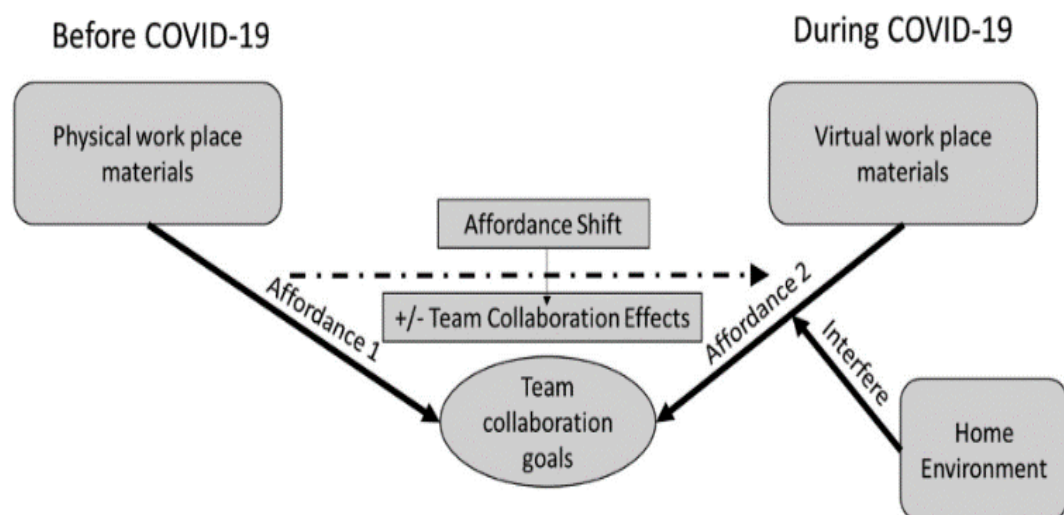
Note. Reprinted from (Waizenegger et al., 2020) An affordance perspective of team collaboration and enforced working from home during COVID-19. European Journal of Information Systems, 29(4), 429–442.

Furthermore, it has been concluded that collaboration is improved in open work environments, in which people are aware of what is taking place (Mishra et al., 2012). The authors also found that a physical communal discussion space benefits collaboration. On the contrary, it was not researched whether virtual forms of collaboration can mimic the physical ambience of an office. As the COVID-19 pandemic affected the possibilities of face-to-face communication and physical collaboration, a relevant topic was the effectiveness of the different types of virtual collaboration. A recent study by Nguyen et al., (2021) showed that certain types of virtual communication, such as email and social media, negatively impact

social connectedness. However, this does not apply to voice or video calls. This suggests virtual collaboration can still provide social connectedness, as long as voice and video calls are being used when collaborating with a team. Still, this study only focused on virtual communication, and not on collaboration.

Workplace materials for collaboration

Collaboration is an activity that can be enhanced with the use of workplace materials. These workplace materials can be either physical or virtual. In the past, physical methods like a whiteboard, sticky notes, and related tangible products were the standard. Later in the 21st century, online collaboration tools were also developed. Examples of virtual tools are meeting software programs such as Zoom or Microsoft Teams. Other tools have been used to enhance virtual agile working. Specifically, software companies, and to some extent engineering firms, started using software programs like Jira or Trello to improve productivity, creativity and to increase the value for customers (Hobbs & Petit, 2017). According to Orellana (2017), virtual collaboration tools were likely to be the initial step in the process of digitising collaboration. As a consequence of the pandemic, this process just took place much faster than expected. Nonetheless, it is unsure whether these virtual workplace materials are also going to be the standard when the pandemic is over. On another note, there has not been a lot of attention yet given to the difference in the effectiveness of using virtual tools versus physical tools during the pandemic. The latest technological developments as a result of the changing working situation may have had a large impact on the effectiveness of virtual tools. Therefore, it would be important to identify to what extent the current virtual tools can be beneficial for team collaboration.

2.3 Message strategy

Collaboration is not the only main construct that is investigated for this research. It may be necessary for companies offering physical workplace tools to take action in order to deal with the recent developments with regard to team collaboration. The interest of the potential customer may have changed, therefore creating a lot of uncertainty. Fortunately, marketing can be used to deal with changing customer attitudes (Webster, 1993). Due to the massive number of topics related to marketing, while also taking into account time and resource limitations for this research, the focus lies on message strategy. Specifically, the formulation of the marketing message is the first step when it comes to reaching out to the potential customer. Therefore, adopting a message strategy is a useful way of taking action by

(re)connecting the brand with the specific needs of the potential customer (Tafesse & Wien, 2018). The added benefit of the research scope is that it may also lead to the formulation of practical recommendations for organisations that are looking for effective ways to (re)adjust their message strategy, specifically for companies offering physical collaboration tools.

The message would be formulated with the goal of convincing decision-makers in companies of the value that physical tools have for collaboration. Nevertheless, companies such as Company X also target office workers in general to increase brand awareness and word-of-mouth communication between those office workers and decision-makers.

One key model related to message strategy is Taylor's six-segment message strategy wheel (Taylor, 1999). It has been widely used in the past decades to analyse the message strategy of organisations. The goal of this section is to identify how academics define message strategy, and how Taylor's message strategy wheel is related to this construct. Moreover, similar constructs, the importance of the message strategies, and the latest developments are discussed.

Ultimately, researching the literature regarding message strategy and Taylor's message strategy wheel can serve to describe how companies can optimize their promotional efforts in the context of this research. In Table 3 an overview of the main sources is shown, while the full table is viewable in Appendix D. Consequently, the papers are discussed in the other sections of Chapter 2.3.

Table 3

Overview literature review: Message strategy

Authors	Title	Theme(s)	Research design and sample	Main findings	Limitations
(Taylor, 1999)	A six-segment message strategy wheel	Defining message strategy; The importance of the message strategy for organisations	The literature is revisited by the author and a message strategy model that is more comprehensive than the previous one is developed	Message strategies can be classified into two main approaches, namely transmission and ritual based. Additionally, there are 3 sub-strategies for each approach	The developed model was based on traditional advertisement formats. Therefore, it is not certain whether the identification of message strategies using the model is applicable to internet-based advertisements and channels

(Lee et al., 2011)	Changes in advertising strategies during an economic crisis: an application of Taylor's six-segment message strategy wheel	The importance of the message strategy wheel for organisations	Content analysis of N= 1,195 Financial service magazine ads from 2005 to 2009	The financial crisis resulted in fewer ritual advertisements and more transmissional advertisements	The study was limited to financial magazines. A different target audience may have resulted in different outcomes
(Ahn et al., 2013)	Communication strategies in cosmetic surgery websites: An application of Taylor's six-segment message strategy wheel	Concepts related to message strategy	Content analysis of N= 100 cosmetic surgeon websites	Taylor's six-segment strategy wheel is a useful analysis tool, not limited to traditional advertising formats. It can also be utilised for internet marketing and corporate websites	Content analysis focused on cosmetic surgeon's perspectives only
(Deng et al., 2020)	Global COVID-19: use of informational, transformational, and narrative advertising strategies	Developments with regard to the use of the message strategy wheel	Content analysis of N= 354 video advertisements from 49 countries	Advertisers are more likely to adopt a ritual message strategy for video advertisements, followed by combining both ritual and transmission elements	Only video advertisements were analysed. Also, the effects of the pandemic on the use of specific message strategy for video advertisements are unknown because the study was cross-sectional

2.3.1 Defining message strategy

In the past, message strategy used to be a term that was synonymous with creative strategy. However, message strategy relates more to "what to say", while creative strategies relate to both "what to say" and "how to say it". So, in contrast to the message strategy, the creative strategy also relates to the execution style of the message (Laskey et al., 1989; Lee et al., 2011). Taylor's definition of message strategy emphasises this concept and describes the construct as: "a guiding approach to a company's institution's promotional communication efforts for its products, services or itself (Taylor, 1999, p.7)". The author described that many advertising-related activities, such as public relations and sales promotion, require strategic communication planning. The message strategy can help to communicate the message to the customer in a strategic way. Most academics agree that it can be classified into two

approaches, namely the ritual and the transmission approach (Liebermann & Flint-Goor, 1996; Ray, 1982; Shimp, 1990). The emotional approach is related to linking the advertisement with psychographic needs, whereas the transmission approach is associated with communicating facts, figures and details (Liebermann & Flint-Goor, 1996).

The six-segment message strategy wheel

While the dichotomy of the message strategy can help to identify the main approach of a company, it is still not very specific. Because of that reason (Taylor, 1999), developed a model called the six-segment message strategy wheel. Figure 3 shows the physical representation of this wheel. In the model, the two different main strategies can be distinguished. Specifically, Taylor introduced a total of six segments, three for each approach so that the message strategy could be classified in more detail. The six-segment message strategy wheel has been widely used to examine advertising message strategy and has been utilised in many traditional and non-traditional formats (Ahn et al., 2013; Deng et al., 2020; Hwang et al., 2003; Lee et al., 2011).

Figure 3

The six-segment message strategy wheel developed by Taylor
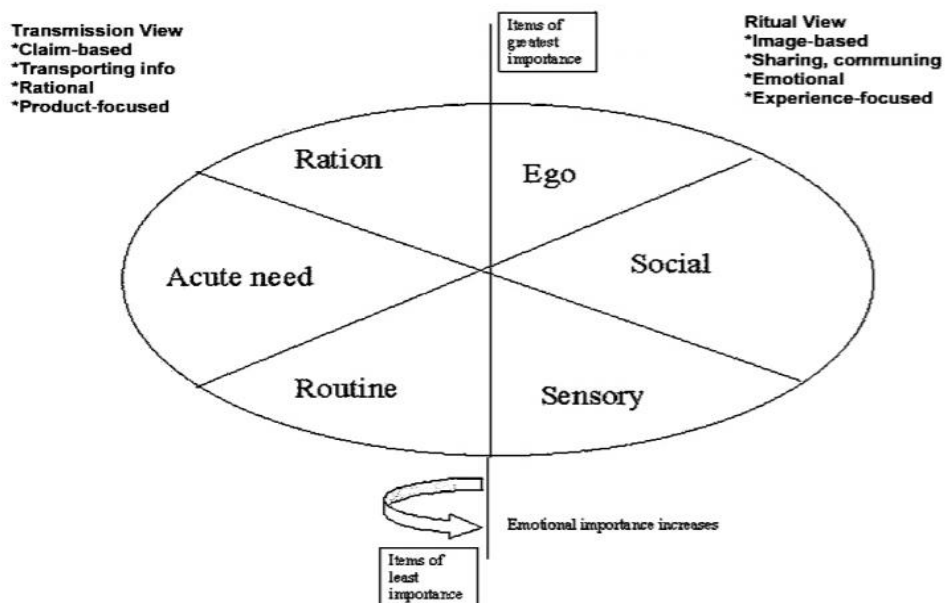
Reprinted from (James, 2011). *The Appeals of Luxury Advertising: An application of Taylor's Six-Segment Message Strategy Wheel.*

The transmission and ritual approaches are also divided into a total of 6 segments. These segments are described and classified in Table 4.

Table 4

Message strategy segments (Taylor, 1999)

Segment	Approach	What is communicated?
Ration	Transmission	Product and its benefits
Acute need	Transmission	Special needs, the potential customer does not have a lot of time to decide
Routine	Transmission	Advantages of routine purchases
Ego	Ritual	Service or product is specifically for the viewer
Social	Ritual	Taking care of others
Sensory	Ritual	Five senses and associated treats and rewards

2.3.2 Concepts related to message strategy

To understand the message strategy and the relevance of the six-segment message strategy wheel, it would also be of use to discuss similar and related concepts. First of all, Taylor's strategy wheel was inspired by the transmission (informational) and ritual (emotional) approaches of communication, developed by Vaughn (1980). It was then adopted in the advertising sector. More authors also researched the same contrast. Puto and Wells, (1984), described that the transmission approach aims at communicating factual, relevant brand data. Moreover, customers should be able to perceive the advertisement as informational too. On the other hand, the ritual approach aims at communicating an experience that is associated with using the brand. Hence, it is often attempted to get an emotional connection with the customer by using the ritual approach for advertisements (Puto & Wells, 1984). Other sources have also covered this dichotomy between transmissional and ritual messages, such as thinking vs feeling (Vaughn, 1980) or utilitarian versus value expressive (Johar & Sirgy, 1991).

As described before, message strategies are actually a part of creative strategies, namely what is said in an advertisement (Laskey et al., 1989). The author also described that the detailed typology of Frazer (1983), serves to identify creative strategies. Frazer's typology contains six different approaches that a company can use for its creative strategies.

The negative aspect of analysing creative strategies is the fact that they are hard to identify as both the message and the execution style must be analysed. In comparison, authors such as Hwang et al., (2003) and Ahn et al., (2013) demonstrated that a company's message strategy can be identified through coding and by using pre-determined criteria.

2.3.3 The importance of the message strategies for organisations

Since the development of Taylor's message wheel, it has been utilised by many researchers and organisations to identify ad preferences within a certain industry, advertising effectiveness and trends. Moreover, the message strategy wheel can be applied to many cases. In a study by Lee et al., (2011), the effects of the economic crisis on advertising strategies of financial services were analysed using Taylor's six-segment message strategy wheel. They noticed a shift toward transmissional advertisements during and after the crisis. Apparently, people started relying more on factual information instead of vagueness or false promises. Furthermore, the message wheel was used to identify the message strategy for corporate websites (Hwang et al., 2003). On these websites, transmissional messages were mostly used. Additionally, the share of websites with purely a ritual strategy was very low (Hwang et al., 2003). In conclusion, the studies show that Taylor's six-segment strategy wheel can be applied to an extensive range of contexts, such as specific industries, television advertisements, or corporate websites.

In addition, some of these studies also focused on the difference in effectiveness and consumer behavioural engagement between the two main approaches. First of all, Tafesse and Wien (2018), concluded that the ritual is superior to the transmission approach in stimulating consumer behavioural engagement. The authors claimed that in a social media context, ritual engagement is vital. For corporate websites, Hwang et al., (2003), described that there is a great deal of flexibility in determining what strategies to use. They did conclude that a routine is often not a solid message strategy as it is too basic and lacks creativity. Moreover, a distinction has also been made between B2B and B2C companies. Findings suggest that B2B companies should focus more on rational appeals and fewer emotions, while B2C firms should take the ritual approach (Zhang & Du, 2020). This study also confirmed the fact that informativeness and interactivity affect customer perceived value more for B2B campaigns. It has also been claimed by the authors that social media is an effective platform for the utilisation of ritual message strategies.

Based on the analysed literature, it seems that the message strategy wheel is mostly useful for the identification of which type of message strategy has been adopted by

organisations. Therefore, it would be important for firms to first identify their current strategy based on Taylor's six-segment wheel. Consequently, they can adopt or retain their strategy based on the market (B2C vs B2B), industry and platform (website or social media). Still, this is based on different types of studies. So far, there has not been any publication of an integrated framework that makes it possible to develop the most suitable message strategy based on the firm, market and platform specifics.

2.3.4 Developments with regard to the use of the message strategy wheel

Taylor's six-segment message wheel model was developed at the beginning of the 90s. Since then, as described in the previous chapter, it has been applied to many different cases. Still, in the past years, advertising has changed fundamentally because of the internet (Deng et al, 2020). Nowadays, companies have more options to connect with potential customers. Advertisements are not only to be read in newspapers, to be heard on the radio, or to be seen in a magazine. Virtual advertisements are now shown on digital media, such as television, computers, or mobile phones. In fact, the type of marketing channel is also a relevant factor for the message strategy. Specifically, a study to determine the effectiveness of consumer behavioural engagement in social media advertisement found that the ritual approach is most effective (Tafesse & Wien, 2018). The authors recommended that marketers make use of emotional messages or promote the brand image so that an emotional connection with the potential customer can be established.   Finally, the pandemic might also influence the message strategy of companies. Evidently, there is not a lot of literature available regarding the effects of the pandemic on message strategies. Still, a recent study did show that advertisements during the pandemic mostly used the ritual approach, with ego and social segments being most popular (Deng et al., 2020). To summarize the developments over the past years, it can be concluded that the ritual approach is most widely used for image and video advertisements. So far, it seems like the pandemic does not influence this.

2.4 Research gaps

In order to add academic relevance to this thesis, the study aims to close a number of research gaps related to collaboration and message strategies, while also connecting both themes.

First, it is researched whether the fulfilment of team collaboration goals is influenced by the type of collaboration tools (virtual vs physical) used in the wake of COVID-19. Waizenegger et al., (2020), did highlight the advantages and disadvantages of each type of material for team collaboration. However, they did not quantify the relationship between the type of workplace material and the fulfilment of team collaboration goals. Therefore, the first research gap relates to quantifying the relationship between the independent, dependent and moderator variables of the model of Waizenegger et al., (2020) quantitatively.

Secondly, the study of Waizenegger et al., (2020) researched the opinions of office workers who had limited, very limited, or no experience working from home and adjusting to virtual tools during the data collection. Therefore, the authors argued that "future research can include participants from the broader demo- graphics and who have experience in working from home to understand better how affordances have changed (Waizenegger et al., 2020, p439)". For that reason, the views of office workers are now assessed again, but instead at a time when the pandemic does not pose a threat to physical team collaboration anymore when office workers are able to go back to the office again. This study aims to close the gap with regard to identifying whether virtual and physical workplace materials are beneficial for team collaboration now that they have had time to adjust and when working from home is not forced anymore. It is also investigated to what extent the home environment still plays a role in the relationship between the appreciation of virtual workplace materials and team collaboration.

Finally, it has been highlighted that marketing can be used to deal with changing customer demands. Now that team collaboration within organisations is evolving, how should companies that offer physical tools position its product within the market? For this, adjusting the message strategy is a form of taking action by (re)connecting the brand with the specific needs of the potential customer (Tafesse & Wien, 2018). In the past, there was no need to adjust the message strategy as physical collaboration materials were the standard. Because of the current situation, it is relevant to research to what extent optimising the message strategy can serve to help companies offering physical tools deal with changing customer demands in the context of team collaboration. The connection between both themes is further explained in sub-chapter 2.5.

2.5 Conceptual Model

Based on the literature review and the research gaps, it has been decided to test the model of Waizenegger et al., (2020) quantitatively. The initial model of Figure 2 has been illustrated by reflecting the associated independent, dependent and moderator variables in a conceptual model suitable for hypothesis testing.

With the use of hypotheses, it is investigated what the effect of office workers' appreciation of virtual workplace materials and physical workplace materials is on the fulfilment of team collaboration goals. In addition, a moderator variable (home environment) is included for the relationship between virtual workplace materials and team collaboration. In the upcoming section, the relations between the variables, and thus the hypotheses are explained in more detail.

There are some clear differences between the study of Waizenegger et al., (2020) and this research. Specifically, the developed model of Figure 2 was created when the pandemic was just starting, namely in March 2020. During that time, employees were forced to work from home. The use of virtual workplace materials for collaboration was the only possibility, which explains the proposed shift from physical to virtual workplace materials (Figure 2). Some time has passed since that research, now the pandemic is ending, and employees are partially getting back to the office again (Barrero et al., 2021). Therefore, the question is what type of materials is most beneficial for office workers for the fulfilment of team collaboration goals. Investigating this can benefit in predicting which type of collaboration material is going to be the standard when COVID-19 does not pose a threat to working at the office anymore. It is investigated to what extent virtual workplace materials and physical workplace materials affect the fulfilment of team collaboration goals. This is done by testing two separate hypotheses. Also, this research investigates whether a bad quality of the home environment negatively moderates the appreciation of virtual workplace materials for the fulfilment of team collaboration goals now that working from home is not forced anymore.

In short, there are some key differences between this study and the research of Waizenegger et al., (2021). First, the model has not been tested quantitatively before. Secondly, the contributions of virtual tools and physical tools for the fulfilment of team collaboration goals are compared in the wake of COVID-19, as office workers are now able to use both types of materials again. Thirdly, the model is tested in a time when working from home is not forced anymore, thus making it possible to identify whether the home environment still plays a role in the fulfilment of team collaboration goals.

Figure 4

A conceptual model based on the literature review and research gaps
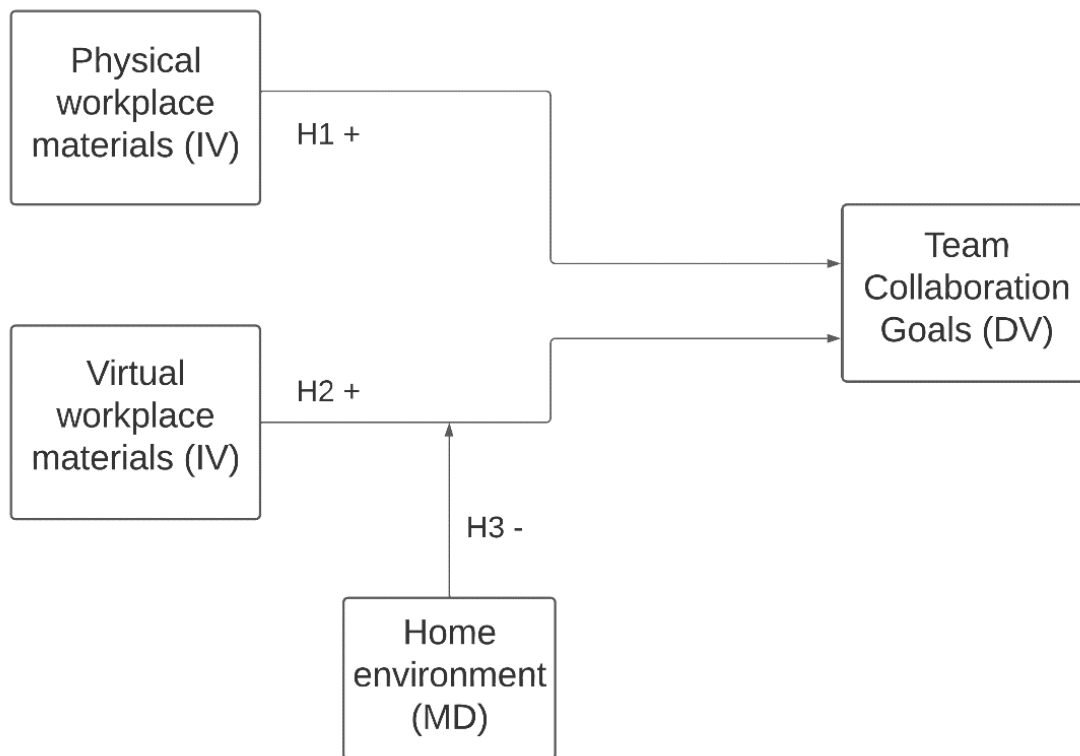
Note. Adapted from Waizenegger et al., (2020) *An affordance perspective of team collaboration and enforced working from home during COVID-19.*

Hypothesis 1

Before the COVID-19 pandemic started, many teams within organisations used physical tools such as scrum boars and sticky notes for activities such as planning and brainstorming. Waizenegger et al., (2020), suggest that environmental affordances (physical workplace materials) and technological affordances (virtual workplace materials) both serve for the achievement of team collaboration goals. Evidently, physical collaboration and materials that support this type of collaboration come with their own benefits and drawbacks, as described by Waizenegger et al., (2020). In fact, the authors concluded that physical collaboration materials can be beneficial for team collaboration as it enhances face-to-face communication and ad-hoc information exchange. Next to that, physical tools are often easy to use as they require no technological knowledge, but common sense instead (Waizenegger et al., 2020).

On the other hand, the drawbacks of physical collaboration were instantly noticeable from the start of the pandemic. Concretely, every member engaging in joint physical sessions have to be present in person, which increases the contagion risk of viruses (Barrero et al., 2021). For that reason, physical tools such as scrum boards, sticky notes and meeting rooms

were barely being used anymore at the start of the pandemic. However, in November 2021 the situation has changed. While the Dutch government recommended office workers to work from home, it was not obligatory. In November 2021, the official government advice for office workers was to "work from home at least half of the time" (Veenstra, 2021). Therefore, office workers still had the opportunity to collaborate with co-workers physically and virtually, depending on the company's policies.

The question that arises is whether office workers still regard the use of physical workplace materials as beneficial for team collaboration in the wake of COVID-19, and therefore the following hypothesis has been formulated: (H1) The appreciation of physical workplace materials has a positive impact on the fulfilment of team collaboration goals

Hypothesis 2

At the start of the pandemic, there was a clear shift from the use of physical tools to the use of virtual tools for collaboration (Waizenegger et al., 2020). It was not possible anymore for office workers to collaborate face-to-face. Therefore, virtual alternatives were adopted for team collaboration.

Virtual tools provide benefits such as increased flexibility and reduced distractions (Waizenegger et al., 2020). Next to that, Orellana (2017), concluded that virtual tools also help teams to be more creative and productive. On the other hand, there are disadvantages to using virtual tools while working from home. First of all, they require a technological understanding of the software programs used (Waizenegger et al., 2020). Moreover, remote e-workers reported feelings of isolation, alienation and worry in the past for virtual collaboration (Collins, 2005). Still, the latest technologies seem to disregard this issue as phone and video conversations do not have a negative impact on social connectedness (Nguyen et al., 2021).

It has never been investigated quantitatively whether the appreciation of virtual workplace materials actually increases the fulfilment of team collaboration goals. These tools do offer several advantages as described by Waizenegger et al., (2020). Office workers are using these tools because they are working from home, and these tools offer advantages, but it has not been confirmed whether using virtual tools is beneficial for team collaboration now that the pandemic is ending. This can be investigated by assessing whether office workers with a high appreciation of virtual workplace materials actually report higher levels of fulfilling team collaboration goals. On the other hand, if office workers do not appreciate these virtual workplace materials but are still able to fulfil the team collaboration goals, then

the effectiveness of these tools can be questioned. Hypothesis 2 addresses this topic and has been formulated as follows: (H2) The appreciation of virtual workplace materials has a positive impact on the fulfilment of team collaboration goals

Hypothesis 3

At the start of the pandemic, virtual workplace materials became the standard for team collaboration. Office workers were required to work from home and therefore also collaborate from home with their team (Barrero et al, 2021; Waizenegger et al., 2020). Due to technological developments in virtual tools, this remote form of collaboration was made possible. Still, the switch from working in an office to working from home happened quickly. Office workers had to grab their equipment and set everything up at their own place. This was not ideal as adequate remote working requires things like a room to work in, a stable internet connection, a desk and a chair. The infrastructure and equipment were not always desirable, despite additional company investments (Barrero et al., 2021).

Next to that, employees often had to deal with distractions from roommates, children, parents or neighbours (Waizenegger et al., 2020). Many home office workers did not have a private room to carry out their work, often resulting in having to work from the kitchen or living room. Thus, not every employee had an ideal home environment to carry out their job. It is no surprise that distractions and bad home office equipment negatively impacted team collaboration. The original benefits of working from home, such as increased productivity and fewer distractions from co-workers were, in many cases, outweighed by the disadvantages (Waizenegger et al., 2020). Evidently, this did not apply to everyone working from home, as some people were not distracted and possessed adequate equipment. Therefore, the quality of the home environment was developed as a moderator in the model of Waizenegger et al., (2020). The authors suggested that a bad home environment negatively moderates the relationship between the appreciation of virtual workplace materials and fulfilling team collaboration goals.

Additionally, the study of Waizenegger et al. (2020), was conducted during a time when employees did not have a lot of time to set up their optimal place to work and collaborate with their team from home. It might be possible that during November 2021, the perceptions of employees have changed with regard to the home environment for collaboration. People have had time to adjust their home environment so that they can work and collaborate more effectively. Also, a large share of employees in the Netherlands have been gradually able to work in the office again in 2021 (Veenstra, 2021). Within the office,

people can still carry out virtual collaboration. Therefore, it is investigated to what extent the home environment still plays a major role in November 2021, a time during which office workers have the option to work both in the office and from home. The hypothesis is formulated as follows: (H3) The home environment negatively moderates the relationship between the appreciation of virtual workplace materials and team collaboration goals

The involvement of the marketing message

The main topics related to this thesis are team collaboration and message strategies. As visible in Figure 4, the conceptual model does not specifically involve message strategies. Still, the (temporary) shift from physical to virtual collaboration tools majorly affects firms that operate within this segment. During the pandemic, the views on virtual and physical tools may have changed. Companies like Company X, which offer physical collaboration products, benefit from knowing how to reposition their products within the market in order to communicate the added value of physical tools. Utilising marketing can be helpful in times of crisis to deal with changing consumer demands (He & Harris, 2020; Webster, 1992). Specifically, a strategically developed marketing message strategy can help to reposition the physical tools while taking into account the developments within the market.

First, it should be known how virtual and physical tools relate to each other. For example, can they be used complementary or do people who like one type dislike the other type of workplace material? Companies already know what they want to communicate to the potential customer, namely the added value of physical collaboration. In this case, the target audience is known, which are decision-makers of B2B companies acquiring collaboration tools. In fact, the only unidentified aspect is how to communicate the marketing message and that is where the message strategy becomes relevant. Should companies communicate the added value of physical tools informatively, or should they appeal to the emotional side of the potential customer? That question is addressed with this research by investigating the literature (Chapter 2.2), and by using a company as a case for identifying its marketing message (Chapter 4.2). Based on this, specific recommendations can be given on how the company should utilise the message strategy to reposition its physical collaboration products.

The use of the message strategy can be regarded as a helpful way of taking action to (re)connect the brand with the specific needs of the potential customer (Tafesse & Wien, 2018). In the past two decades, academics and practitioners have been using the six-segment message strategy wheel created by Taylor (1999), to develop and identify the message strategy of organisations. Specifically, companies have been able to adapt their message

strategies in the past to deal with macro-developments affecting their industry and marketing practices, such as the financial crisis in the 21st century (Lee et al., 2011) or the rising popularity of social media (Tafesse & Wien, 2018). Now, it is assessed what value (re)adjusting the marketing message with the use of message strategy has in the context of team collaboration in the wake of COVID-19. Ultimately, companies can then reposition their products within the market, while academics benefit from insights about team collaboration in the wake of COVID-19.

3. Methodology

The methodology section aims to clarify the decisions made for the research design, development of the survey, measurement instruments, data selection, and finally the data analysis. Based on this section, the reader should be able to understand the methodology and other researchers should be able to repeat the same research process.

3.1 Research design

The central research question is: "How can Dutch companies offering physical collaboration tools use the latest insights about post-pandemic team collaboration and marketing message strategies to reposition their products within the market?"

First, the current attitudes toward collaboration are investigated by means of a survey. This is done so that the conceptual model (Figure 4), can be empirically tested. The use of a survey has been chosen as part of the method as Lefever et al., (2007), claim that web surveys are inexpensive and that they allow for quick data collection. The survey and the following data analysis aim to answer the first sub-question, namely "What are office workers' views about using virtual and physical tools for team collaboration in the wake of COVID-19 within the Netherlands?". Moreover, office workers are asked to share their views on the quality of their home office. Consequently, it can be confirmed whether the relationships of the theoretical model are statistically significant. The survey can be found in Appendix E.

Moreover, desk research is carried out so that it can be identified how message strategies have been utilised in the past, while also assessing how these strategies can be used strategically in the current context. Finally, Company X has been used as a case company so that there is a practical example of a company offering physical tools for collaboration that is looking for a way to (re)position its products with the help of message strategies. Their marketing strategy is identified by researching internal documents. Consequently, specific message strategy recommendations can be given based on Company X's current approach to positioning its products within the market.

3.2 Development of survey

The development of the survey has been carried out with the help of existing studies. The survey items have been gathered from the studies of Barrero et al., (2021) and Waizenegger et al., (2020). Some of the questions have been adjusted to fit the context of this research. Specifically, office workers' appreciation of physical and virtual tools is assessed as this can be measured by means of a survey. Consequently, they are asked how they perceive the fulfilment of team collaboration goals. Next to that, the role of the home environment is also examined quantitatively.

In Appendix F, a table is shown displaying the categories, items, measurement levels, and sources regarding the survey constructs and items. First, the survey participants are introduced to socio-demographic questions related to variables such as age, gender, income level, education, living situation and place of work. The survey items for this are based on the questionnaire of Barrero et al., (2021). The measurement levels are either ordinal or nominal, depending on the variable measured.

Next, the participants are informed about what workplace materials are and what the difference is with regard to physical and virtual workplace materials. Then, it is time for the main part of the survey, in which a participant's view of a variable is assessed. The variables to be measured are (1) Virtual workplace materials appreciation (VMA), (2) physical workplace materials appreciation (PMA), (3) the fulfilment of team collaboration goals (TCG), and (4) the quality of the home environment (HE).

As described in Chapter 2.5, these constructs are based on the study of Waizenegger et al., (2020). For each construct, participants are expected to share their views on five different statements, based on a Likert-scale format, ranging from fully disagree to fully agree. The same format was also applied in the study of Barrero et al., (2021). An overview of the measurement level and source can be found in Appendix F.

3.2.1 Reliability of the measures

The reliability of research depends on two factors, namely stability and consistency (Heale & Twycross, 2015). First of all, reliability relates to the consistency of a measure (Heale & Twycross, 2015). Therefore, each construct is measured by asking the participant five similar questions per construct. The consistency of each individual survey item with regard to the construct is identified by Cronbach's alpha and factor analysis. Chapter 3.6 covers this in more detail.

For stability, the results of each survey participant should be similar research when an instrument is measured over time (Heale & Twycross, 2015). Due to the limited resources of the researcher, in combination with the sample size of 192, it was not possible to make the participants fill in the survey again so that stability could be tested.

3.2.2 Validity of the measures

Validity refers to the extent to which a concept is accurately measured (Heale & Twycross, 2015). The first type of validity is construct validity, proving the extent a research instrument measures the intended construct. As the measurement instruments are based on the theoretical model of Waizenegger et al., (2020) and the survey of Barrero et al., (2020), it is likely that there is a high degree of construct validity.

Next, content validity researchers the extent to which a research instrument accurately measures all aspects of a construct. Existing studies about team collaboration indicate that there are many potential variables that influence the construct (Bedwell et al., 2012; Tjosvold & Tsao, 1989). As only two independent variables and one moderator variable are included for the measurement of the construct, there is a high likelihood that other potential variables are not accounted for.

The third type of validity is criterion validity, which relates to the extent to which a research instrument is related to other instruments that measure the same variables (Heale & Twycross, 2015). There is no gold standard for the measurement of fulfilling team collaboration goals, which does not help in obtaining a high degree of criterion validity. Nevertheless, questionnaires containing Likert-scale questions do help with the measurement of constructs in general (Boone & Boone, 2012), and this type of questionnaire has also been used for measuring the attitudes of office workers with regard to working from home (Barrero et al., 2012).

3.3 Participant recruitment

As the research involves assessing the attitudes toward the use of workplace materials for collaboration, it would be useful to exclude people that have no experience or association with using these materials. For the studies aimed at researching the attitudes toward working from home (Barrero et al., 2021) or collaboration in the wake of COVID-19 (Waizenegger et al., 2020), only office workers that have experience with working and/or collaborating from home were selected. An office worker can be regarded as an employee that carries out his/her work in an office or office-like environment (Barrero et al., 2021). As a result of the

pandemic, people working from home and collaborating virtually with their co-workers are still considered office workers (Waizenegger et al., 2020). Based on these studies and the current research context, the following inclusion criteria have been developed for the selection of the participants: (a) office workers, (b) experience with physical and/or virtual workplace materials for team collaboration, (c) experience with working from home during the COVID-19 pandemic, (d) all genders and non-genders, (e) working in the Netherlands.

The survey participants were recruited using social media, specifically LinkedIn, Facebook and WhatsApp. Convenience sampling has been chosen as this sampling method allows for obtaining a relatively large number of respondents within a short time frame. It is considered to be a suitable sampling method when resources, time, and workforce are limited (Etikan et al., 2016). The scope has been limited to the Netherlands because the researcher's network is based here, as well as Company X, the company that has been selected for the case study. For this research, the resources of the researcher are scarce, and the time given to carry out the entire research has been limited to one semester in total. The implications of using this non-probability sampling method are discussed in the limitations.

3.4 Procedure

First, the survey serves as the measurement instrument for analysing the variables and relations displayed in Figure 4. The survey is created using Qualtrics, which is a type of online survey software. The participants have been able to access and fill in the survey through a link that is created by the Qualtrics website. The data has been collected in the month of November 2021. The survey (Appendix E) consists of the following outline: (1) "background check" to confirm whether the participant has experience with both physical and virtual collaboration and fulfils the other inclusion criteria. (2) personal characteristics of the participant (age, gender, occupation, place of residence). (3) appreciation of virtual collaboration materials. (4) perceived quality of the participant's home office. (5) fulfilment of team collaboration goals. (6) appreciation of physical workplace materials.

The participants are informed about how these constructs are defined with the use of examples so that they can share their views while understanding the subject matter. The way in which this is displayed can be seen in Appendix E. Before the survey is answered, the participant must agree to the terms and conditions with regard to privacy and data analyses. Participating is completely voluntary and confidentiality is protected. Next to that, the participant is informed about the nature of the research beforehand so that he/she can make

an informed decision regarding whether to participate or not. Moreover, the researcher has asked for ethical approval at the university so that the following can be guaranteed (*Code of Ethics for Research in the Social and Behavioural Sciences Involving Human Participants*, 2018): (a) avoidance of exploitation, (b) just distribution of benefits and burden, (c) respect for persons, (d) respect for human dignity, (e) scientific validity, (f) scientific, societal, and/or educational relevance, (g) safeguarding the confidentiality and respecting privacy matters.

Next to that, the marketing message of Company X is assessed by exploring internal documents and by viewing the website of the firm. In short, the data gathered are gathered from existing theory (desk research), a survey regarding customer attitudes, and an analysis of Company X's marketing message. It can then be identified how companies offering physical tools can reposition their products strategically using message strategies while accounting for the (changed) working situation in the wake of COVID-19.

3.5 Sample characteristics

The data collection for the study took place in November 2021. Around 300 persons filled in the survey, but a large chunk of them had to be excluded because of the following reasons: (a) They were not employed in the past 12 months, (b) they did not work from home in the past 12 months, (c) they did not have any experience working with physical and/or virtual workplace materials for collaboration, (d) they were/are not employed within the Netherlands. In total, 192 valid survey responses were recorded.

The socio-demographic information of the sample can be found in Table 5. Based on the characteristics of the sample, it can be concluded that office workers from a wide range of gender types, age groups, industries, and living situations were represented. The latter is relevant as the quality of the home environment for collaboration is investigated. The full table, which includes income levels, educational levels, and specific industries can be found in Appendix G.

Table 5

Socio-demographic characteristics of the sample population

Variable		Frequency	Percentage
Total (Overall)		192	100%
Gender			
	Male	92	47.9%
	Female	98	51.0%
	Other/Prefer not to say	2	1.0%
Age			
	<18	1	0.5%
	18-24	70	36.5%
	25-34	47	24.5%
	35-44	27	14.2%
	45-54	23	12.0%
	55-64	23	12.0%
	65-74	1	0.5%
Industry			
	Public	54	28.1%
	Non-Public	114	59.4%
	Other	24	12.5%
Living Situation			
	With Parents or caregivers	37	19.3%
	With Roommates	28	14.6%
	Individual	33	17.2%
	With Partner	45	23.4%
	With Children	3	1.6%
	With Partner and Children	46	24.0%
Hours worked per week on average			
	<10 hours	14	7.3%
	11-15 hours	14	7.3%
	16 – 20 hours	13	6.8%
	21 – 25 hours	10	5.2%
	26 – 30 hours	10	5.2%
	31 – 35 hours	22	11.5%
	36 – 40 hours	81	42.2%
	41 – 45 hours	21	10.9%
	More than 45 hours	7	3.6%

3.6 Data analysis

3.6.1 Descriptive statistics

The data analysis is carried out through SPSS. Following the initial screening, where missing and invalid cases are excluded, the descriptive statistics are collected by means of analysis. The descriptive statistics include: (a) age distribution, (b) gender ratios, (c) information about the educational level, (d) information about nationalities, (e) information about income, (f) living situation of the respondents, (g) hours worked per week. After displaying the descriptive information and differences between groups, it is assessed whether a factor analysis can be carried out.

3.6.2 Factor analysis

Before the factor analysis can take place, it should be assessed whether the data of the survey is reliable and adequate, and therefore suitable for factor analysis. If the KMO test, Bartlett's test, and Cronbach's alpha all show significant and favourable results, then a factor analysis can be carried out. It is recommended that the KMO values should be above 0.5, and Bartlett's test of sphericity should be significant with a p-value lower than 0.05 (Yong & Pearce, 2013). Furthermore, the internal consistency is assessed with Cronbach's alpha, the values above 0.7 are deemed acceptable for internal consistency (Tavakol & Dennick, 2011).

The factor analysis serves to identify the correlations and interrelationships among a large number of factors to find out more about possible underlying dimensions, also called factors (Costello & Osborne, 2005). Specifically, an exploratory factor analysis is carried out using principal axis factoring with direct oblimin rotation. It is the recommended method when certain instruments have never been tested before, and some authors suggest that it is preferable to principal component analysis (Costello & Osborne, 2005). This applies to this research, as some of the variables have not been measured quantitatively before.

After the data screening, the factor analysis can be carried out. First, the factor loadings are identified, and it is recommended that a factor contains at least 3 items with a loading of 0.5 or better. (Costello & Osborne, 2005). Then, the communalities are assessed. It has been suggested that an item has a communality of less than 0.4, it may not be related to other items (Costello & Osborne, 2005). Items with a lower factor loading or communality should thus be deleted as they do not contribute to measuring the construct. Moreover, the eigenvalue of each factor is identified by looking at scores from the total variance explained and the scree plot. The value should be at least 1.0 for it to explain more variance than a

single observed variable (Costello & Osborne, 2005). Based on this information, the total amount of factors influencing the variability in the data can be determined.

3.6.3 Testing the hypotheses

Finally, the hypotheses are tested. According to Boone and Boone (2012), analysing associations using Likert-scale data can best be done using Pearson's r, as long as composite scales are used. In this case, the data can be used as an interval because the composite scale is calculated from the four or five Likert-scale items used per variable. The individual item scores per construct are added up and divided by the number of items. Then, Pearson's r, and is used to test the hypotheses. As the variables have not been tested quantitatively before, two-tailed tests are carried out so that the possibility for a reverse relation, e.g., negative instead of positive, is not ruled out. Furthermore, the PROCESS tool, specifically developed for SPSS, can be used to test mediating and moderating effects (Field, 2009).

In this case, the PROCESS tool is used to test the moderating effect of the home environment in the relationship between the appreciation of virtual workplace materials and team collaboration goals. Therefore, there should first be a significant relationship between the independent variable and the dependent variable. Additionally, there should be a significant interaction effect that moderates the initial relationship between the independent and dependent variables (Field, 2009). In the case of this research, the quality of the home environment is hypothesised to moderate the initial relationship between the appreciation of virtual tools and the fulfilment of team collaboration goals.

3.6.4 Multiple regression analysis

As a final step, the appropriateness of the full model is tested by means of a multiple regression analysis. Evidently, the data should be suitable for it. If Cronbach's alpha and factor analysis show intercorrelations within the constructs, then parametric tests can be utilised for both correlations and linear regression (Sullivan et al., 2013). It has been shown that Likert-scale data does not need a normal distribution or equal variances in order to come up with the right conclusions (Norman, 2010).

The developed model contains two independent variables, one moderating variable and finally one dependent variable. Therefore, the relative contribution of the independent variable and the moderating variable can be assessed with regard to the fulfilment of team collaboration goals. The multiple regression analysis is carried out by testing for linear regression with the use of SPSS. According to Field (2009), all independent variables should have a p-value lower than 0.05 to be significant. The strength of each variable can also be

assessed with multiple regression. With the use of the PROCESS tool, the moderator variable could potentially be incorporated into the analysis, which makes it possible to test the entire model.

3.7 Analysis of Company X's message strategy

By carrying out this research, it is investigated to what extent team collaboration has changed in the wake of COVID-19. Based on existing theories, it is expected that working from home and virtual team collaboration is to be the standard in the upcoming years (Barrero et al., 2021; Waizenegger et al., 2020). Companies offering physical tools may have to reposition their products to be able to deal with the current situation in the market.

For that reason, it is investigated to what extent marketing, and specifically the marketing message strategy, can be adjusted so that the potential customer can be convinced of the value of physical tools. In order to do this, a company from Enschede, namely Company X, has been chosen as a case company. The internal documents regarding Company X's marketing strategy, as well as the website and social media pages, are assessed to see whether the strategy can be identified according to the relevant literature. Consequently, the company can be advised on how they can reposition the physical collaboration tools in their market by adjusting the marketing message strategy based on previous studies, taking into consideration the developments regarding team collaboration as a result of COVID-19.

4. Results

In this chapter, the results of the data collection are discussed. Chapter 4.1 covers the outcomes from the data analysis of the survey. Specifically, the views of office workers about using physical and virtual tools for team collaboration, and the role of the home environment are analysed. In Chapter 4.2, the message strategy of Company X is identified based on assessing internal documents and the firm's website.

4.1 Results survey

First, the descriptive statistics are reported. Then, it is assessed whether the data is reliable by carrying out statistical tests such as Cronbach's alpha, KMO and Bartlett's test of sphericity. Furthermore, the hypothetical relations discussed in the model of Chapter 2.5 are tested. Based on this, it can be discussed to what extent the fulfilment of team collaboration goals is influenced by the type of workplace material used. Next to that, the role of the home environment is also investigated quantitatively.

4.1.1 Descriptive results

Even though the aim of the data analysis was too to test the model and the associated hypotheses, some of the descriptive results can also be of relevance. Specifically, knowing more about the general appreciation of physical and virtual workplace materials is quite relevant for answering the first sub-question: What are office workers' views about using virtual and physical tools for team collaboration in the wake of COVID-19 within the Netherlands? First, the Likert-scale scores of every item in a scale are summed up and later divided by five so that an average score per scale can be calculated. Then, it can be considered whether there are differences in the variables when comparing groups based on gender, age, living situation, and industry.

The fulfilment of team collaboration goals

The dependent variable in this research is the fulfilment of team collaboration goals. Most office workers in the Netherlands believe that the team collaboration goals are generally being fulfilled when collaborating with team members (Mean score=3.71, SD=0.58, N=192). In Appendix G, the mean score and standard deviation of each sub-group are displayed. At first glance, there are no notable differences in the fulfilment of team collaboration goals based on gender, income and hours worked. The results do suggest that a higher age leads to a decrease in fulfilling team collaboration goals. Moreover, industry and educational level

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seem to have a minor impact on team collaboration as well. However, due to the low sample size in some sub-groups, generalisations cannot be made.
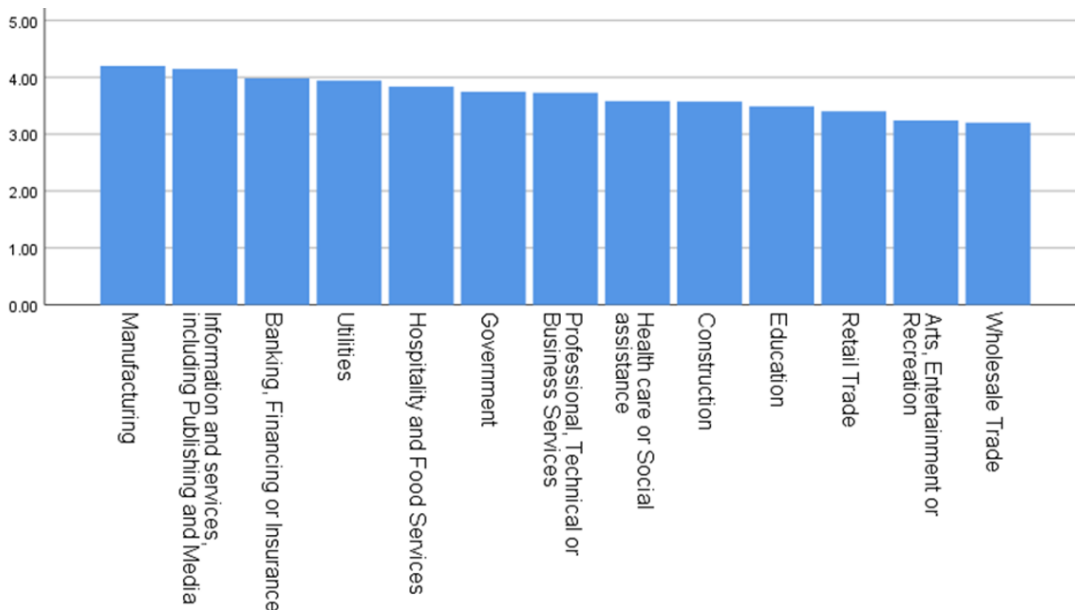
The appreciation of virtual workplace materials

The second construct is the appreciation of virtual workplace materials within organisations. The average Likert-scale score across all sub-groups is 3.726 (N=192, SD=0.80). The results show that there most respondents believe that virtual workplace materials are useful within their organisation (Appendix G).

There are no major differences visible when comparing by gender, age group and hours worked. Nevertheless, women do tend to appreciate virtual workplace materials a little bit more than men. Also, people in the age group of 55-64 are relatively the least fond of virtual workplace materials. Next to that, the appreciation of virtual workplace materials is the highest for people working more than 36 hours compared to the rest of the office workers. Moreover, the differences in the appreciation of virtual workplace materials per job sector have been compared. As Figure 5 shows, there are no large differences between the sectors. Office workers in manufacturing report the highest appreciation of virtual workplace materials. The lowest use is visible in the wholesale trade sector. Still, the mean score is still higher than 3.0, which indicates that most office workers across all sectors appreciate virtual tools within their organisation.

Figure 5

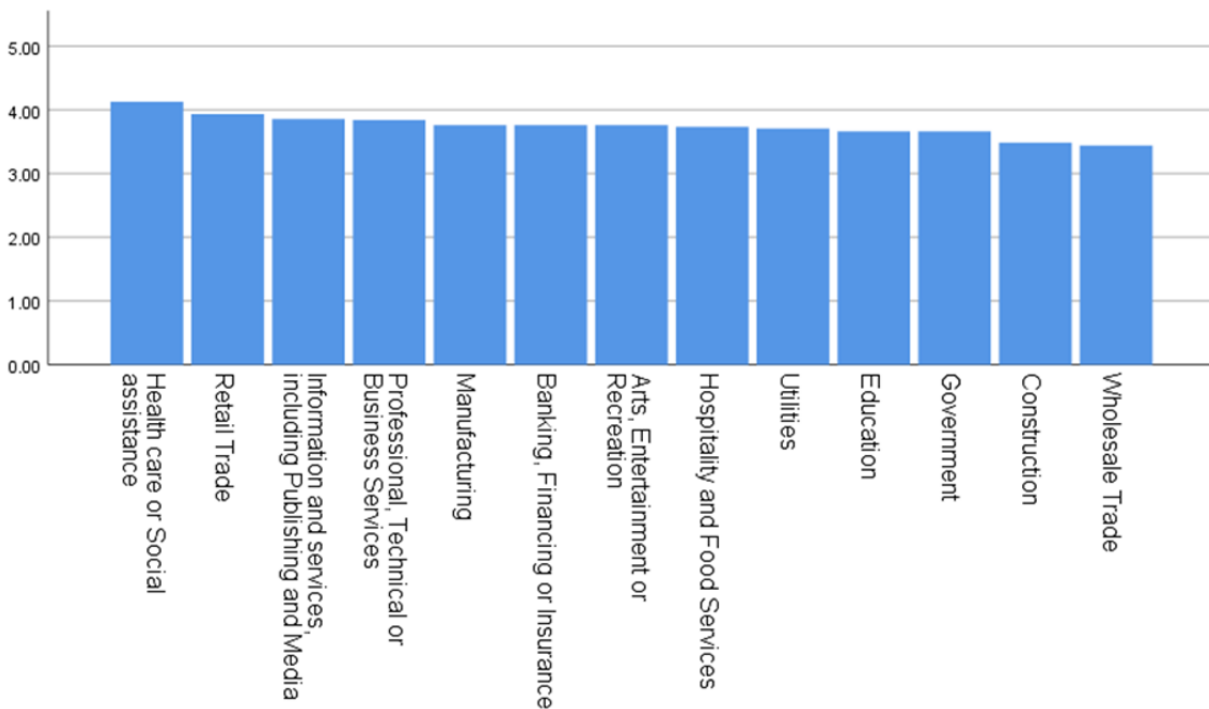*The appreciation of virtual workplace materials per sector*

Note. These are average scores based on Likert-scale data (1-5). Sectors with less than n=5 respondents have been excluded from the graph

Appreciation of physical workplace materials

The next construct to be investigated in the descriptive analysis is the interest in physical collaboration tools. The results of this study concluded that many office workers appreciate physical workplace materials (Mean=3.76, SD=0.75, N=192). In Appendix G, the differences based on sample characteristics are compared. When it comes to gender, there are no differences between males and females. The next socio-demographic variable is age. There is a high degree of appreciation for physical workplace materials across all other age groups, with office workers of the age group of 34-44 showing the most interest, and office workers with the age of 55-64 the least (Appendix G). In Figure 6, the sectors are ranked based on the Likert-scale mean score of the construct. In all sectors, office workers mostly agree to statements related to being interested in using physical workplace materials. The interest is the highest in the Health Care or Social assistance sector and the lowest in the wholesale trade sector.

Figure 6

Appreciation for physical workplace tools per sector

Note. These are average scores based on Likert-scale data (1-5). Sectors with less than n=5 respondents have been excluded from the graph

Quality of the home environment

The final construct is the quality of the home environment (HE) for working from home. At the beginning of the pandemic, a badly perceived home environment impacted the fulfilment of team collaboration goals (Weizenegger et al., 2020). In November 2021, the quality of the home environment was generally perceived as adequate by most office workers (Mean=3.42, SD=0.88, N=192). When comparing the quality of the home environment by the living situation, it seems like people living on their own or with children only report the highest quality of the home environment for working (Appendix H). . Office workers that still live with their parents are the least satisfied.

4.1.3 Factor analysis

Before the model and the associated hypotheses can be tested, it would be important to first check the reliability of the data. Therefore, factor analysis is carried out. As described before, principal axis factoring with oblimin rotation has been used as the approach. First of all, the internal consistency of each construct was assessed using Cronbach's Alpha. The internal consistency relates to the interrelatedness of a sample of test items. An acceptable value of the alpha ranges from 0.7 to 0.95 (Tavakol & Dennick, 2011). As shown in Table 6 all constructs of the survey are within this range. It can thus be concluded that the internal consistency is sufficient. Assessing the Cronbach's Alpha of all items combined would not be applicable because the goal of the analysis is to identify the internal consistency within each construct as items across the constructs might not be related. It turns out that all constructs of the survey show a KMO value higher than 0.75, and a significant result on Bartlett's test. This reflects a high degree of sample adequacy and correlation between the variables of the sample. Therefore, the data is suitable for factor analysis.

Table 6

Statistical tests of each construct for assessing the reliability and suitability for factor analysis

Construct	Items	KMO	Bartlett's Test of Sphericity	Cronbach's Alpha
Virtual Workplace Materials Appreciation (VMA)	5	0.853	<0.001	0.856
Physical Workplace Materials Appreciation (PMA)	5	0.854	<0.001	0.885
Fulfilment of team collaboration goals (TCG)	5	0.847	<0.001	0.819
Quality of home environment (HE)	4	0.754	<0.001	0.767
All items combined	19	0.801	<0.001	Not Applicable

Table 7 reflects the mean, standard deviation, communalities, and factor scores of each item. It shows that all items, with the exclusion of item HE1, have a factor loading of at least 0.5, and a communality score of at least 0.4 Therefore, item HE1 is excluded for the rest of the analysis as it does not contribute to the construct.

Table 7

Mean, standard deviation, communalities, and factor scores of each survey item

Construct	Statements	Mean N=192	SD	Communalities	Factors loadings
Virtual Workplace Material Appreciation (VMA) (Waizenegger et al., 2021)	VMA1	3.78	1.02	0.53	0.73
	VMA2	3.50	1.05	0.66	0.83
	VMA3	3.92	0.90	0.57	0.76
	VMA4	3.65	1.01	0.47	0.69
	VMA5	3.78	1.00	0.54	0.71

Physical Workplace Materials Appreciation (PMA) (Waizenegger et al., 2021)	PMA1	3.94	0.77	0.54	0.73
	PMA2	3.68	0.84	0.73	0.85
	PMA3	4.01	0.74	0.53	0.68
	PMA4	3.62	0.91	0.62	0.78
	PMA5	3.58	0.95	0.76	0.87
Fulfilment of team collaboration goals (TCG) (Weizenegger et al., 2021)	TCG1	3.80	0.83	0.51	0.71
	TCG2	3.76	0.69	0.42	0.63
	TCG3	3.80	0.76	0.54	0.74
	TCG4	3.77	0.74	0.48	0.68
	TCG5	3.53	0.75	0.48	0.70
Quality of home environment (HE) (Barrero et al., 2021; Waizenegger et al., 2020)	HE1	3.93	0.92	0.34	0.51
	HE2	3.91	1.00	0.52	0.72
	HE3	3.61	1.25	0.41	0.65
	HE4	2.73	1.17	0.53	0.69
	HE5	3.42	1.17	0.41	0.64

Based on the conceptual model and survey, it was expected that there would be 4 factors that could explain the total variance. This is confirmed by the data of the exploratory factor analysis displayed in Table 8 as factor number 1 until number 4 shows eigenvalues above 1.00. The scree plot (Appendix J) also shows that there are 4 factors with a value of 1.00 or above. Moreover, it can be viewed in Table 11 that 63.74% of the variability in the data accounts for the variability of the total variance when 4 factors are selected.

Table 8

Eigenvalues scores based on factors and the total variance explained

Factor	Eigenvalue's score	% of variance	Cumulative %
1	4.21	21.19	21.19
2	3.74	19.68	40.87
3	2.28	11.98	52.85
4	2.07	10.89	63.74
5	0.79	04.05	67.79

Note. The factors following factor number 5 have not been displayed as they do not provide additional insights

4.1.4 Correlations between variables

Now that it has been confirmed by factor analysis that there are four relevant factors, the correlations between the variables can be determined. As one item of the HE1 dimension had been removed, the average score of each factor is calculated. In order to test for correlation, it is first necessary to check whether the assumptions are fulfilled. These scores are then compared by calculating the correlations between the variables, as demonstrated in Table 9. Based on the analysis, it can be confirmed that there are several significant correlations. In the next sub-chapter, the hypotheses are tested.

Table 9

Correlations between dependent, independent and moderator variables

Variable	1	2	3	4
1. Physical workplace materials appreciation (PMA)	1	-0.134*	0.121*	-0.016
2. Virtual workplace materials appreciation (VMA)	-0.134*	1	0.209**	0.143*
3. Fulfilment of team collaboration goals (TCG)	0.121*	0.209**	1	0.185*
4. Quality of home environment (HE)	-0.016	0.143*	0.185*	1

Note. * = Significance at 0.05   N=192
         **= Significance at 0.01

4.1.5 Hypothesis testing

The first hypothesis was related to testing the effect that physical workplace materials have on the fulfilment of team collaboration. It was hypothesized that the appreciation of physical workplace materials positively impacts the fulfilment of team collaboration goals. The results do indeed show that this is the case, $r(191) = .121$, $p = .032$. Therefore, H1 is supported by

the results at α=0.05.

The second hypothesis, similar to the first, was related to the effect of virtual workplace materials on team collaboration. It was expected that the appreciation of virtual workplace materials also positively impacted the fulfilment of team collaboration goals, as suggested by Waizenegger et al., (2020). The results of the research support H2 as well, r (191) = .209, $p < .001$. As evidenced by the results, the effect of virtual workplace materials is stronger than was the case for physical workplace materials, while the level of significance is also higher.

The third hypothesis emphasized the moderating effect of the home environment on the relation between the virtual workplace materials and the fulfilment of team collaboration goals. It was expected that a home environment of bad quality had a negative impact on this relationship. This could not be tested by means of a Pearson's R correlation alone. In fact, the interaction effect had to be measured in order to identify whether there was a case of a significant mediator. For this, the PROCESS tool was utilised. The interaction term, the home environment, was added to the relationship between the appreciation of virtual workplace materials and the fulfilment of team collaboration goals. The results show that there is no significant interaction effect, $r = .267$, F (3,188) = 4.824, $b = .049$, $p = .437$. Therefore, H3 cannot be confirmed based on the results at α=0.05.

4.1.6   Multiple regression

First of all, the appropriateness of the model illustrated in Figure 2 is tested with the use of multiple regression. The initial expectation was that both independent (predictor) variables had a significant effect on the dependent variable, while there was also a moderation effect. Therefore, a multiple regression analysis is carried out. First, the model is tested without the interaction effect, as indicated in Table 10. The results show that both VMA and PMA contribute significantly to the fulfilment of team collaboration goals. It also turns out that the moderator variable home environment influences the fulfilment of team collaboration goals when added as a predictor variable (model 2). However, when the interaction effect is tested (model 3), it turns out that the home environment is not a significant moderator.

Table 10

Effect of predictor variables, and the moderator on the fulfilment of team collaboration goals

		Unstandardised coefficients		Standardised coefficients		
		B	Std. Error	Beta	t	p-value
Model 1	Constant	2.63	0.31	-	8.43	<0.01
	VMA	0.17	0.05	0.23	3.24	<0.01
	PMA	0.12	0.06	0.15	2.13	0.034
Model 2	Constant	2.34	0.33	-	7.00	<0.01
	VMA	0.15	0.05	0.21	2.92	0.004
	PMA	0.12	0.06	0.15	2.15	0.034
	HE	0.10	0.05	0.16	2.24	0.026
Model 3	Constant	2.99	0.88	-	3.42	<0.01
	VMA	-0.02	0.22	-0.03	-0.10	0.921
	PMA	0.12	0.06	0.15	2.15	0.033
	HE	-0.09	0.25	-0.14	-0.38	0.711
	VMAxHE	0.05	0.06	0.41	0.81	0.422

Note. VMA= Virtual workplace material appreciation, PMA= physical workplace material appreciation, HE= quality of the home environment

Finally, the general statistics about the multiple regression are outlined per model in Table 11. All the tested models are statistically significant for predicting the fulfilment of team collaboration goals. The initial predictor variables (VMA & PMA) show that 5.6% of the variability of the dependent variable can be explained by the variability of the predictor variables. When the home environment is included as an independent predictor, the adjusted R^2 increases to 7.6%. This does reflect that 92.4% of the model cannot be explained by the predictor variables. In the third model, the R^2 increases, but when accounting for all variables by assessing the adjusted R^2, there is a slight decrease visible. Therefore, the home environment cannot be regarded as a moderator based on the results. Model 2 is most appropriate, compared to the other models, for explaining the variability of the fulfilment of team collaboration goals.

Table 11

Summary of multiple regression analysis

Model	R	R²	Adjusted R²	F	df1	df2	Sig
1	0.257	0.066	0.056	6.707	2	189	0.002
2	0.301	0.091	0.076	6.257	3	188	<0.001
3	0.306	0.094	0.075	4.846	4	187	<0.001

4.2 Current marketing strategy Company X B.V.

In section 4.2 of the thesis, a case company has been selected for the analysis of the message strategy. As described before, companies offering physical collaboration tools want to know (a) how virtual and physical tools are each valuable for team collaboration in the wake of COVID-19 and (b) how to communicate the added value of physical tools to potential customers.

He and Harris (2020), described that due to COVID-19, the needs and wants of customers have changed in certain sectors and industries. The virtualisation of workplace materials for collaboration was already suggested by Waizenegger et al., (2020) as a consequence of more frequent working from home (Barrero et al., 2021). The results of this study also suggest that an increase in the use of virtual workplace materials is associated with a decrease in the interest in physical workplace materials, at least in the Netherlands. As Tafesse and Wien (2018), mentioned, the message strategy is a way of (re)connecting the brand with the specific needs of the potential customer. Specifically, the message strategy of Company X, an example of a company offering physical workplace materials for collaboration, is analysed. This is done by analysing internal documents and by taking a look at the company's website and social media channels. Consequently, it can be assessed, based on the previous studies regarding message strategies, whether adjusting the message strategy can be beneficial in the current developments with regard to collaboration. Therefore, the third sub-question was formulated: "How can marketing message strategies be used for repositioning products?

As described in the literature review, there are two types of message strategies. First, the transmission approach aims at communicating factual, relevant brand information. On the contrary, the ritual is used to communicate an experience that is associated with using the brand, in order to get an emotional connection with the customer (Puto & Wells, 1984; Taylor, 1999). Now, the overall marketing strategy of the case company, Company X B.V., was developed and put into writing in 2019 by an external marketing agency called Onze

Kapel. The main slogan of Company X is "activates agility", as they offer physical collaboration tools that are used for the agile method of working (Onze Kapel, 2019). The company mainly focuses on addressing the B2B market as team collaboration materials are mostly acquired by organisations instead of individuals. The aim of Company X's current strategy is to communicate the core value of the brand, which are: (1) ambitious, (2) fun, (3) inspirational, (4) engaged, and (5) quality.

These values are mainly communicated to the target group with the use of short teaser messages. For example, the firm describes in its marketing strategy report that "We want to use our elements playfully to create teaser messages with the goal to stir our target audience and make them curious" (p. 12). These teaser messages are displayed on images and often include short quotes like "turn your ideas into shared solutions" or even single words such as "verify", "done", or "doing" (Onze Kapel, 2019).

The firm uses several marketing channels to reach its target audience. These channels include their own website, social media, online stores, and search engine advertisements. They want to convince the target group that their physical workplace materials increase team engagement, communication, and job satisfaction (Onze Kapel, 2019). On the one hand, Company X tries to communicate factual information to convince the viewer of the benefits of its physical workplace materials. An example of this can be found in Figure 8.

Figure 8

Snapshot of the information displayed on the homepage of Company X.com

On the other hand, relatively unambiguous quotes are utilised to create a connection between the viewer and the core values of the brand. An example of these images can be found directly on the homepage of Company X, also shown in Figure 9.

Figure 9

Snapshot of Company X's homepage
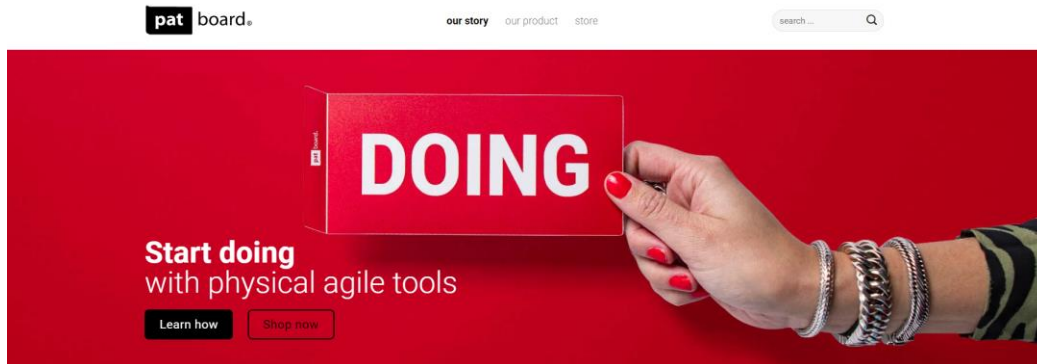
The firm also uses these quotes on its social media channels, such as Instagram, Facebook and Pinterest. On social media, the firm tries to show how office workers are using Company X's products for team collaboration (Figure 10). This is mostly associated with the ritual approach, as this approach aims at communicating an experience that is associated with using the brand (Tafesse & Wien, 2018).

Figure 10

Example of a post on Company X's Instagram channel

Based on assessing the internal documents, the website and social media channels, it appears that the firm incorporates elements of both transmission and ritual approaches. This is not uncommon though. For instance, 30.5% of all advertisements analysed in a study by Deng et al., (2020), combined both elements for their strategy.

5. Discussion and conclusion

5.1 Discussion

This research has explored how companies offering physical collaboration tools can use the latest insights regarding team collaboration and message strategies to reposition their products in the wake of COVID-19. In the discussion section, the theoretical expectations are compared with the results of the study.

Based on previous research, it was expected that virtual workplace materials would replace physical materials for team collaboration. This shift from physical to virtual tools for team collaboration was already conceptualised by Waizenegger et al., (2020), although it was still defined as a temporary shift due to the uncertainty of the pandemic. Additionally, the increasing technological developments of virtual tools (Orellana, 2017), and the expectation that working from home will remain popular post-COVID-19 (Barrero et al., 2021), suggest that virtual workplace materials will replace the physical alternatives.

The results of this study show that the appreciation of both physical and virtual tools leads to a higher fulfilment of team collaboration goals. However, it should be noted that the type of workplace material only slightly affects this fulfilment. This is not really a surprise, as previous studies suggested that there are many factors influencing the fulfilment of team collaboration goals (Bedwell et al., 2012, Tjosvold & Tsao, 1989). The scope of this study was simply focused on the shift from physical to virtual workplace materials in the wake of COVID-19.

The data analysis showed that the fulfilment of team collaboration goals (TCG) is slightly more dependent on the appreciation of virtual tools (VMA) instead of physical tools (PMA). On the other hand, the expectation that virtual tools would be replacing physical tools is thus not supported by this study, even though it was suggested by Waizenegger et al., (2020). In fact, both types of workplace material for collaboration remain popular, while the appreciation for physical tools is even slightly higher (Mean VMA=3.67, Mean PMA=3.76).

However, the fact that physical tools are almost exclusively used when all team members are physically present is a clear disadvantage considering the fact that working from home is expected to remain popular after the pandemic (Barrero et al., 2021). The results of this study do indicate a high appreciation of physical tools, but it is likely that virtual tools will be the standard due to their technological advantages and the current office work developments (Orellana, 2017; Barrero et al., 2021).

Nevertheless, physical tools may still be utilised by organisations due to their own beneficial characteristics such as face-to-face contact and increasing ad hoc information exchange (Waizenegger et al., 2020). This study does indicate that office workers still appreciate physical tools for the fulfilment of team collaboration goals. As both types of materials are beneficial for team collaboration, physical tools can be suitable for alternative or complementary use.

Next to that, this study indicates that office workers in the Netherlands consider the home environment to be a factor that influences the fulfilment of team collaboration goals when collaborating virtually. It turns out that a higher quality of the home environment leads to more fulfilment of team collaboration goals. However, the home environment cannot be regarded as a moderator in the relationship between virtual workplace materials and the fulfilment of team collaboration goals, as in the study of Waizenegger et al., (2020).

When collaborating virtually, it is thus not important what the quality of the home environment is for fulfilling team collaboration goals. This may be explained by the fact that office workers were not required to work from home during and before the data collection took place (Veenstra, 2021). Therefore, they were still able to use virtual tools when working from the office. Nevertheless, when working from home, it does turn out that the quality of the home environment is a factor of relevance for fulfilling team collaboration goals.

Based on the existing research and the results of this study, there is a clear indication that virtual tools are to be the standard in the upcoming years. Nevertheless, companies offering physical tools still have a market to sell their products, as physical tools continue to be popular, and contribute to the fulfilment of team collaboration goals. Therefore, it has been investigated how the marketing message can be utilised by companies offering physical tools to reposition their products within the market.

This research shows that both virtual and physical are beneficial for team collaboration. Therefore, firms offering physical tools, like Company X, can communicate the added value of using physical materials alongside virtual tools. For instance, blogs can be written about how to maximise the potential of using both materials for team collaboration. Additionally, they can recommend teams use physical tools to schedule one workday a week for physical collaboration, for benefits such as enhanced face-to-face communication and ad hoc information exchange (Waizenegger et al., 2020). Next to that, it would be important to communicate how to use physical materials in a safe manner, in order to reduce the potential COVID-19 contagion risks (Barrero et al., 2021).

Moreover, the added value of using physical products can be communicated

strategically, and message strategies have shown their value for strategic communication in the past (Ahn et al., 2013; Deng et al., 2020; Hwang et al., 2003; Lee et al., 2011; Tafesse & Wien, 2018; Zhang & Du, 2020). In general, companies can opt for transmissional (informative) or ritual (emotional) messages in their marketing practices (Taylor, 1999). Based on assessing Company X's internal documents, website and social media channels, they currently use elements of both a transmissional and ritual approach.

In the current market of collaboration tools, there is still a lot of uncertainty about where and how office workers are going to collaborate with their team, especially with the risk of COVID-19 contagion (Barrero et al., 2021; Waizenegger et al., 2021). In previous times of uncertainty, companies provided reliable information in a factual way, to provide assurance to the potential customer (Lee et al., 2001). Companies like Company X can apply this now by communicating informatively about how safe physical collaboration is still possible and beneficial. Moreover, companies offering physical tools sell their products to organisations in a B2B environment. In this environment, it is recommendable to focus on delivering an informative message (transmission-approach) to increase the perceived B2B customer's value (Zhang & Du, 2020) Therefore, it would be recommendable to convince organisations interested in using physical tools by informing them factually about the added value of physical tools.

Additionally, another important element is the type of channel on which the marketing message is communicated. Existing studies indicate that the ritual approach is more effective for social media (Tafesse & Wien, 2018) and digital video advertisements (Ahn et al., 2020). Hence, companies offering physical tools should carefully consider the type of customer (B2B vs B2C), and type of channel when developing the marketing message.

Limitations

This study has its limitations that should be addressed. First, the sample population contains a relatively high proportion of young office workers, due to convenience sampling. This sampling method also makes it difficult to draw inferences about the population (Etikan et al., 2015). Therefore, the results might not be entirely applicable to the population of all office workers within the Netherlands. Moreover, due to time constraints, it was not possible to gather more than 192 responses. This may also affect the generalizability of the research and the statistical significance when testing hypotheses. As a result of the limited scope of this research, differences between groups, such as age, gender, work hours, or industry, were only

examined descriptively and not statistically.

Secondly, the model that is being tested measures office workers' appreciation of virtual and physical tools with regard to the fulfilment of team collaboration goals. It thus relates to the perceptions of office workers. Therefore, it is not possible to form conclusions about whether a type of workplace material is actually more effective for fulfilling team collaboration goals, as only the perception is measured. Additionally, the appreciation of physical and virtual workplace materials is measured slightly differently. Specifically, it was not possible to measure to what extent office workers were using physical workplace materials as some employers restricted working at the office and using these tools. Therefore, the statements are formulated in a different way.

Thirdly, the predictor variables, namely the appreciation of physical and virtual tools, turned out to only have a small, albeit significant, effect on the fulfilment of team collaboration goals. Due to time constraints, only the pre-defined variables of Waizenegger et al., (2020), were tested. Other potential control variables have not been included in this study.

Finally, the part about investigating how to reposition physical tools using message strategies as a result of the developments in collaboration is rather brief. Only a single company was selected for the analysis of its strategy. The number of companies benefiting from this research is also rather limited, as there are not many companies offering physical collaboration products in the Netherlands. Furthermore, the value of potential sub-strategies of the message strategy was not discussed extensively, as the focus was on the main approaches of the marketing message, namely the transmission and ritual approach.

Future research
For future research, there are several aspects that would be valuable to investigate. First of all, this research showed how appreciating physical and virtual tools, as well as the quality of the home environment, affect the fulfilment of team collaboration goals. The results showed that these independent variables only contributed a small margin to the variability in the fulfilment of team collaboration goals. Therefore, future studies could research what other variables influence team collaboration, and how important these variables are compared to the type of workplace tool being utilised. For example, what is the role of the type of company, industry and team characteristics when it comes to fulfilling team collaboration goals? Moreover, the effect of sample characteristics such as gender, age, work hours and industry can also be measured when a larger and more representative sample size is being used. Also, the post-pandemic role of the home environment for team collaboration can also

be investigated more extensively, as this was not regarded as a predictor variable in previous studies.

Secondly, this study assessed quantitatively what office workers' views are of using physical and virtual tools for collaboration in the wake of COVID-19. As office work has changed fundamentally over the past few years (Barrero et al., 2021; Waizenegger et al., 2020), qualitative studies can add value by investigating in what ways office work has changed post-pandemic, besides looking at physical and virtual collaboration materials only.

Thirdly, it can also be assessed whether developed countries have similar tendencies when it comes to team collaboration and working from home. This study only focused on the perceptions of office workers within the Netherlands, and the theoretical model was based on the situation in Western countries only (Waizenegger et al., 2020).

Finally, future studies could focus on how companies can best utilise message strategies. There are existing studies on how to (re)position products and services with the use of the marketing message. However, there is no integrated framework that takes multiple factors, such as marketing channels, industry and the type of customer into account for strategically developing the marketing message.

5.2 Conclusion

The aim of this study was to identify how companies offering physical collaboration tools can reposition their products using message strategies while taking into account the team collaboration developments within the Netherlands. First, the developed model of Waizenegger et al., (2020), regarding the temporary shift from physical to virtual workplace materials was tested quantitatively in the wake of COVID-19, now that office workers are no longer forced to work from home anymore. It was assessed how physical tools, virtual tools and the home environment contribute to the fulfilment of team collaboration goals. Therefore, the responses of 192 office workers within the Netherlands were recorded and analysed by means of a survey.

The results show that office workers' appreciation of both physical and virtual materials contributes to the fulfilment of team collaboration goals. This was only partly in line with the literary sources, as it was expected that virtual tools would replace the physical alternatives as a consequence of working from home and technological developments (Barrero et al., 2021; Orellana, 2017; Waizenegger et al., 2020). Even though virtual tools are likely to be the norm in the upcoming years, office workers also still consider physical tools

as suitable materials for team collaboration. Additionally, the home environment cannot be regarded as a moderator, but it does contribute to the fulfilment of team collaboration goals independently. A potential reason for this is that working from home is not forced anymore, and virtual tools can also be used when working in the office, although this should be investigated more thoroughly in future studies. Still, it should be noted that the fulfilment of team collaboration goals is only slightly influenced by the predictor variables. It is very likely that there are other factors influencing team collaboration and the fulfilment of team collaboration goals.

Furthermore, it was investigated how companies like Company X could reposition their physical tools using message strategy, now that virtual tools are widely adopted by organisations. First, it can be helpful to communicate the potential of safe physical collaboration in an informative manner. This transmission approach can help to reassure companies that physical tools can still be beneficial for team collaboration, in the way that ad viewers were also reassured in the wake of the financial crisis (Lee et al., 2011). Using a transmissional message strategy has also shown to benefit firms targeting B2B customers in the past (Zhang & Du, 2020), which is why firms offering physical tools to organisations can benefit from a transmissional approach. Additionally, attention should also be given to the type of marketing channel used for the marketing message (Tafesse & Wien, 2018). On social media, companies offering physical tools should use ritual-based advertisements to drive consumer engagement. This can be done by using images or videos to communicate an experience that is associated with the products of the brand. Meanwhile, the website can be used to factually inform the potential customer about the added value of physical tools.

All things considered, this study has provided academics and practitioners with insights regarding how team collaboration is influenced by using virtual and physical workplace materials in the wake of COVID-19, while the role of the home environment is also investigated. Additionally, advice has been given on how companies offering physical tools can benefit from (re)developing the message strategy to reposition its products in the market while taking team collaboration and office work developments into account.

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Appendices

Appendix A: Affordance shift and associated effects on team collaboration
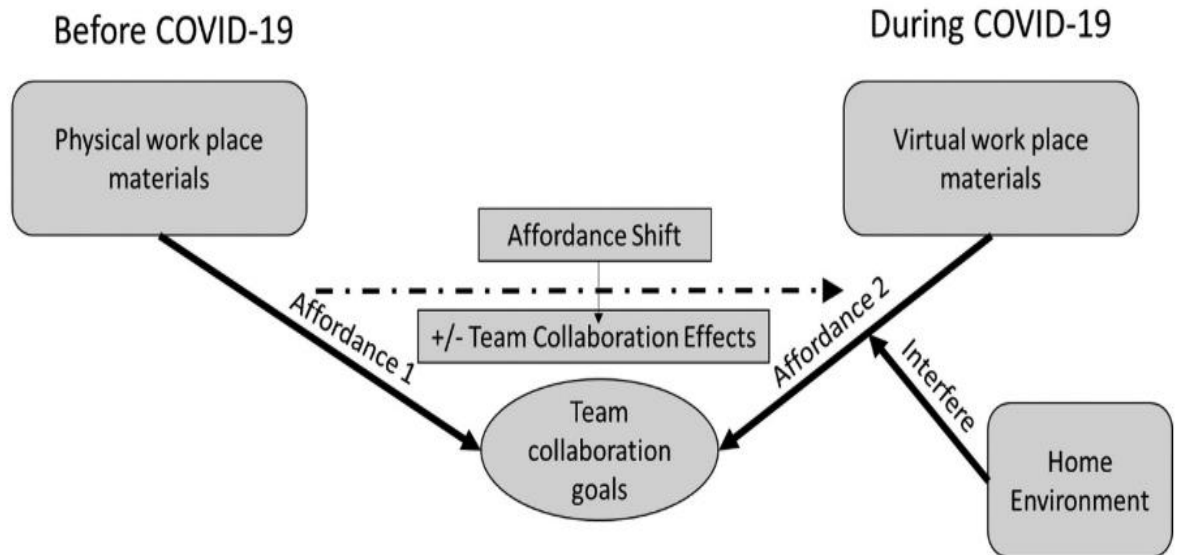
Note. Reprinted from (Waizenegger et al., 2020) *An affordance perspective of team collaboration and enforced working from home during COVID-19.* European Journal of Information Systems, 29(4), 429–442.

Appendix B: Taylor's Six-Segment Message Strategy Wheel
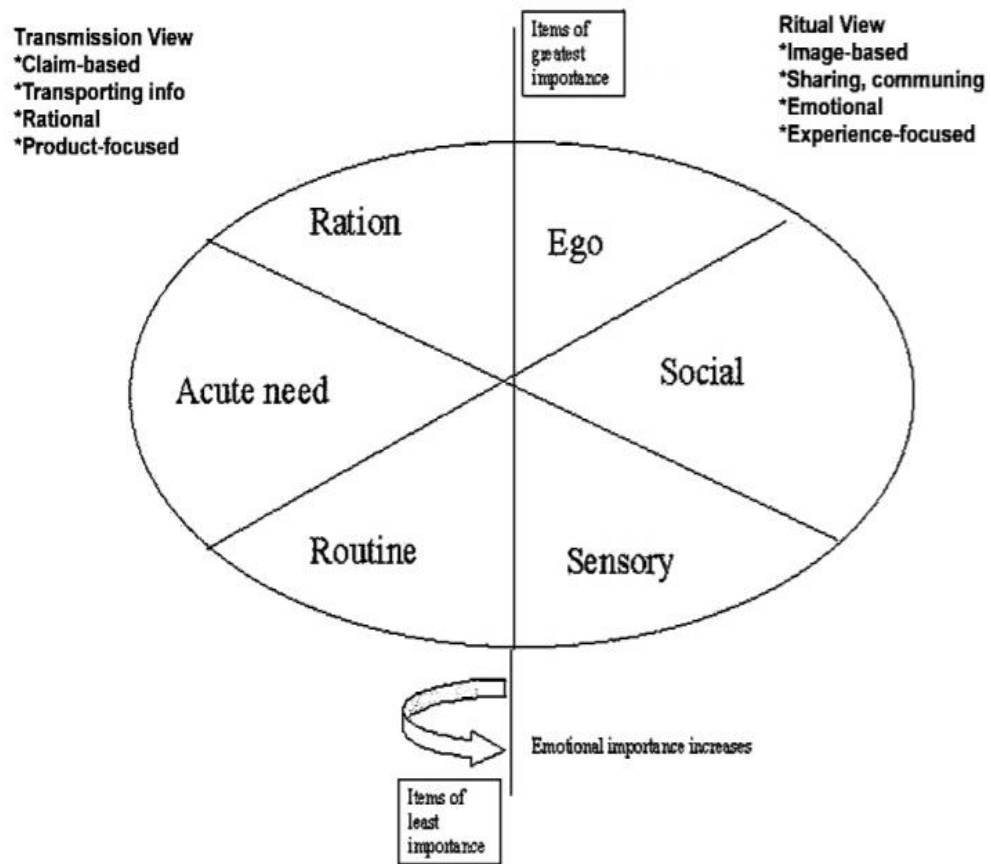
Reprinted from (James, 2011). *The Appeals of Luxury Advertising: An application of Taylor's Six-Segment Message Strategy Wheel.*

Appendix C: Overview of literature regarding collaboration

Author(s)	Title	Theme	Research design and sample	Main findings	Limitations
(Tjosvold & Tsao, 1989)	Productive Organizational collaboration: The role of values and cooperation	The importance of collaboration within organisations	Quantitative study N= 351 employees from 4 different organisations.	Effective collaboration depends on shared vision, mission and interaction among employees.	Sample limited to 4 companies, only located in Asian countries.
(Wood & Gray, 1991)	Toward a comprehensive theory of collaboration	Defining collaboration	Summarisation of case research to propose six theoretical perspectives on collaboration.	Authors came up with an overview of the theoretical perspectives as a basis for a general theory of collaboration.	When the analysed articles are considered collectively, they provoke questions that must be addressed before a general theory of collaboration is constructed.
(Henneman et al., 1995)	Collaboration: a concept analysis	Defining collaboration	Concept analysis of literature to provide a clearer definition of the concept that is collaboration.	The authors clearly defined what the concept of collaboration entails.	The study examined the concept in the context of nursing, so it may not be applicable to all contexts surrounding collaboration.
(Roschelle & Teasley, 1995)	The construction of shared knowledge in collaborative problem solving	Similar topics related to collaboration	Case study on how collaborative learning is carried out by students.	It was concluded that the process of collaborative learning is not homogeneous or predictable.	The collaborative learning process was only carried out by two students and not by employees in organisations.
(Salas et al., 2000)	Teamwork: emerging principles	Similar topics related to collaboration	Concept analysis of literature to explain the emerging principals related to teamwork.	The authors identified several 7 emerging principles associated with teamwork.	The recommended guidelines for utilising the emerging principles have never been tested within organisations.

(Marks et al., 2001)	A temporally based framework and taxonomy of team processes	Similar topics related to collaboration	Concept analysis of team process along four major themes.	The study resulted in the development of a conceptual framework related to team processes.	Framework was temporally developed and needs further optimisation.
(Salas et al., 2005)	Is there a "big five" in teamwork	Similar topics related to collaboration	Concept analysis regarding the "big five" in teamwork.	The authors provided a theoretical model of the interrelations among the "Big Five" dimensions.	Other variables that may affect team performance and team effectiveness, besides the big five, were considered in the study.
(Kozar, 2010)	Towards better group work: seeing the difference between cooperation and collaboration	Similar topics related to collaboration	Experiment involving collaborative activities in a classroom.	The difference between cooperation and collaboration is highlighted and demonstrated by an experiment.	The sample population is limited to students, therefore it is not clear whether the results are applicable to collaboration in organisations.
(Bedwell et al., 2012)	Collaboration at work: an integrative multilevel conceptualisation	Defining collaboration	Integrative multilevel concept analysis by providing a synthesis of the literature.	Differences and similarities between collaboration and related concepts are outlined so that conceptual confusion can be disregarded.	The concepts are only explained theoretically, making it difficult for practitioners involved with collaboration to identify the added value.
(Mishra et al., 2012)	Impact of physical ambiance on communication, collaboration and coordination in agile software development: an empirical evaluation	Developments in collaboration	A survey was conducted among N=66 software developers, alongside observations and interviews.	Physically open environments appear to improve communication, coordination and collaboration.	Only employees of a single software company participated.

Orellana (2017)	Digitalizing collaboration	Developments in collaboration	Analysis of recent publications and developments regarding virtual collaboration tools.	Virtual collaboration tools help teams to be more creative and productive, recent technological developments have enhanced these tools.	Only a few papers were discussed. There was no actual study, only results of previous studies were described.
(Patel et al., 2012)	Factors of collaborative working: A framework for a collaboration model	Developments in collaboration	Examination of literature and new empirical work of companies in aerospace, automotive and construction sectors.	The authors developed a model based on the theories related to collaborative working.	There may be factors related to collaborative working that are not included in the theoretical model. Also, the model is not tested empirically.
(Boughzala & De Vreede, 2015)	Evaluating team collaboration quality: the development and field application of a collaboration maturity model	Developments in collaboration	Development of Collaboration Maturity Model in cooperation with focus group consisting of N=15 Chief Knowledge Officers. The model was applied in a field study.	The quality of collaboration has a direct impact on the quality of an organization's outcomes and performance. The authors also developed a collaboration maturity model (Col-MM).	Only one focus group was used for the development of the model. Empirical evidence is limited to a field study involving a small number of teams in a single organisation.
(Hobbs & Petit, 2017)	Agile methods on large projects in large organisations	Developments in collaboration	Case study with N=9 employees and a survey filled in by N=48 employees.	Agile methods and are increasingly being adopted and the improve collaboration between development teams.	The study population was limited to employees working in software development.
(Waizenegger et al., 2020)	An affordance perspective on team collaboration and enforced working from home during COVID-19	Developments in collaboration	Interviews and meetings with N=33 office workers, followed by abductive coding to form conclusions.	The authors developed a model, highlighting the affordance shift from physical to virtual workplace materials for collaboration.	The developed model was not empirically tested. Participants were also not used to working and collaborating from home, which might influence their perceptions.

(Barrero et al., 2021)	Why working from home will stick	Developments in collaboration	A survey was conducted and filled in by N= 33,250 U.S office workers.	The shift to working from home is welcomed by both employer's end employees and will stick long after the pandemic ends.	Survey was only conducted in the United States, therefore not certain whether the results apply to other countries.
(Nguyen et al., 2021)	Staying connected while physically apart: digital communication when face-to-face interactions are limited	Developments in collaboration	A survey was conducted and filled in by N= 2,925 US adults. Consequently, the developed hypotheses were tested.	Digital media negatively impact social connectedness, with the exception of voice and video calls.	Measures of social presence were not included in the study. Also, the study was only carried out in the United States.

Note. Sources are ordered by date of publication.

Appendix D: Overview of literature regarding message strategy

Authors	Title	Theme(s)	Research design and sample	Main findings	Limitations
(Vaughn, 1980)	How advertising works: a planning model	Concepts related to message strategy	Development of a model based on advertising theories.	Advertising strategies can be characterized based on a thinking or a feeling approach.	The model is not empirically tested and the data is from USA advertisements only.
(Frazer, 1983)	Creative strategy: a management perspective	Concepts related to message strategy	Concept analysis of creative strategies form a management perspective.	There are six approaches to creative strategies. All these approaches have their own suitable conditions and competitive implications.	The development of the six approaches was based on 6 references only. It is uncertain whether the strategies are still applicable in 2021.
(Puto & Wells, 1984)	Informational and transformational advertising: The differential effects of time	Concepts related to message strategy	Scales for measuring the transmissional and ritual content of ads are proposed and empirically validated by N=130 subjects.	Advertisements can be placed in a two-dimensional space according to their information and ritual content.	Only marginal evidence in support of the theory. Further research is essential to confirm the conclusions.
(Laskey et al., 1989)	Typology of main message strategies for television commercials	Defining message strategy	Development and testing of typology of message strategies. Involved coding of N=900 television commercials.	The authors proposed sub-categories for transmissional and ritual advertisement approaches. They also concluded that both main approaches are not mutually exclusive and exhaustive.	The typology was only tested for television commercials, and not for other types of advertisements.
(Johar & Sirgy, 1991)	Value-expressive versus utilitarian advertising appeals: when and why to use which appeal	Concepts related to message strategy	Comparison of value-expressive versus utilitarian advertising appeals through investigation of concepts.	Value-expressive advertising appeals are more effective than utilitarian appeals when the product is perceived to be value-expressive. Utilitarian appeals are more effective when the product is	The main findings lack empirical evidence. The proposed hypotheses are not tested.

				regarded as utilitarian.	
(Taylor, 1999)	A six-segment message strategy wheel	Defining message strategy; The importance of the message strategy for organisations	The literature is revisited by the author and a message strategy model that is more comprehensive than the previous one is developed.	Message strategies can be classified into two main approaches, namely transmission and ritual Additionally, there are 3 sub-strategies for each approach.	The model was based on traditional advertisement formats. Therefore, it is not certain whether the identification of message strategies using the model is applicable to internet-based advertisements and channels.
(Hwang et al., 2003)	Corporate web sites as advertising: an analysis of function, audience and message strategy	The importance of the message strategy wheel for organisations	Quantitative study N= 160 corporate websites using content analysis.	Corporate websites can be considered to be a form of advertising. It fulfils many of the purposes of corporate advertising and allows the marketer to address multiple audiences.	The developed guidelines used for the evaluation of the website are not very sophisticated.
(Lee et al., 2011)	Changes in advertising strategies during an economic crisis: an application of Taylor's six-segment message strategy wheel	The importance of the message strategy wheel for organisations	Content analysis of N= 1,195 Financial service magazine ads from 2005 to 2009.	The financial crisis resulted in fewer ritual advertisements and more transmission advertisements.	The study was limited financial magazines, studying magazines with a different target may have resulted in different outcomes.
(Ahn et al., 2013)	Communication strategies in cosmetic surgery websites: An application of Taylor's six-segment message strategy wheel	Concepts related to message strategy	Content analysis of N= 100 cosmetic surgeon websites.	Taylor's six-segment strategy wheel is a useful analysis tool, not limited to traditional advertising formats. It can also be utilised for internet marketing.	Content analysis focused on cosmetic surgeon's perspectives

(Tafesse & Wien, 2018)	Using message strategy to drive consumer behavioral engagement on social media	Developments with regard to the use of the message strategy wheel	Content analysis of N=290 brand posts on Facebook.	The ritual message strategy is more effect to both a transmission and a combined strategy in stimulating consumer behavioural engagement.	Only the behavioural engagement was measured. The effect of message strategy on factors such as sales leads, website traffic and brand sentiment was not explored.
(Deng et al., 2020)	Global COVID-19: use of informational, transformational, and narrative advertising strategies	Developments with regard to the use of the message strategy wheel	Content analysis of N= 354 video advertisements from 49 countries.	Advertisers are more likely to adopt a ritual message strategy for video advertisements, followed by combining both ritual and transmissional elements.	Only video advertisements were analysed. Also, the effect of the pandemic the use of specific message strategy for video advertisements is unknown because the study was cross-sectional.

Note. Sources are sorted by date of publication

Appendix E: Survey

General information

Hereby, I would like to ask you if you are willing to contribute to a graduation research project by filling in a short survey.

This is a study regarding the attitudes of office workers towards appreciating of physical and virtual tools for team collaboration as a result of COVID-19. Your feedback will greatly contribute to the completion of a student's master's thesis, and will also benefit scientific research.

You are not required to disclose your name and the data from the survey will be used for academic purposes only. Upon publication, your answers will be processed anonymously.

For each question, please tick the box that is most suitable for you and try to answer all questions as accurately as possible. There are no wrong or right answers, so you are requested to make an independent judgment on each of the questions.

The survey should take no more than 5 minutes of your time. Thank you in advance for taking the time and effort to complete the survey. Your feedback is much appreciated and appreciated.

If you have any questions or feedback, you can contact me via the following email address: (s.h.g.westerhof@student.utwente.nl)

Yours sincerely,
Sybe Westerhof

Screening questions

Q1. Do you have work (full-time, part-time or internship) that you perform primarily in an office or from home?

- Yes
- Yes, as self-employed or freelance worker [end of survey]
- Not right now, but I did have this type of work in the past 12 months
- No [end of survey]

Q2. During the COVID-19 pandemic have you at any point worked from home, for example, due to lockdowns or because it was unsafe or otherwise not possible to work on business premises?

- Yes
- No [end of survey]

Q3. Please read the following paragraphs carefully:

Virtual workplace materials (also called tools) are non-tangible applications that can be used through pc's, phones, tablets or other digital means. Usually they require an internet connection.

Examples are Miro, Ideaboardz, Google Docx, Jira, Microsoft Teams and Zoom.
Example:

Source: https://miro.com/online-brainstorm-tool/
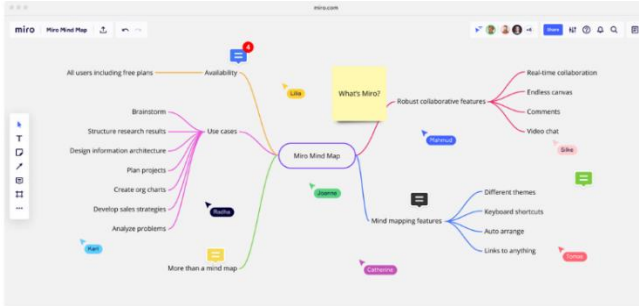
Examples of physical workplace materials are whiteboards, sticky notes, scrum boards, tv screens and beamers in office spaces.

Example physical material/tool:

Source: Company X.com

In the past 12 months, have you used virtual tools or physical tools at least once to collaborate with your colleagues?

- Yes, both virtual and physical tools
- Yes, but only virtual tools
- Yes, but only physical tools
- No [end of survey]

Section 1. The fulfilment of Team Collaboration Goals (TCG)

The following section relates to the fulfilment of team collaboration goals at your organisation. Collaboration involves the process by which two or more persons engage in a joint activity to achieve a shared goal. Examples of team collaboration goals are coming up with new ideas, sharing thoughts, brainstorming and visualizing a process. The collaboration sessions can take place online and offline.

2.1 For each of the questions below, please tick the box that best characterizes how you feel about the statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It is easy for our team to collaborate efficiently during team collaboration sessions					
At the end of our team collaboration sessions, we normally manage to reach the objectives of the session					
I consider our team collaboration sessions to be effective					
It is easy to work together with other team members during team collaboration sessions					
The productivity of our team is usually high during team collaboration sessions					

Section 2. Virtual workplace materials appreciation (VMA)

Examples of virtual workplace materials are Miro, IdeaBoardz, Google Drive, Jira, Trello, Zoom and Microsoft Teams.

For each of the questions below, please tick the box that best characterizes how you feel about the statement.

	Strongly Disagree	Disagree	Neither Agree nor disagree	Agree	Strongly Agree
At my organization, virtual workplace materials are mostly used for team collaboration right now					
Virtual workplace materials are the standard type of workplace materials at my company for team collaboration					
My employer is planning to keep using virtual workplace materials for team collaboration					
In the upcoming years, using virtual workplace materials for team collaboration will be the norm at my organization					
When collaborating with my co-workers, we normally make use of virtual workplace materials					

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Section 3. Physical workplace materials appreciation (PMA)

The aim of this section is to analyse your interest toward physical workplace materials. Examples include sticky notes, scrum boards, whiteboards and tv screens in meeting rooms. For each of the questions below, please tick the box that best characterizes how you feel about the statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
In my opinion, the use of physical workplace materials is effective for team collaboration					
I like to use physical workplace materials for team collaboration					
Physical workplace materials are great for team collaboration					
I would recommend my employer to purchase physical workplace materials for team collaboration					
My interests in the use of physical workplace materials for team collaboration is high					

Section 4. The Quality of Home-office Environment (HE)

This section relates to the current quality of your environment and equipment when engaging in team collaboration using virtual workplace materials from home. For each of the questions below, please tick the box that best characterizes how you feel about the statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My internet connection is reliable					
I have adequate equipment to work from home					
I always have my own room to work in					
My home environment is distracting					
I am frequently interrupted by other people when working from home					

Section 5. Socio-demographic questions

Q5.1 Nationality

In what country are you (or were you previously) employed?

- Netherlands
- Germany
- Belgium
- Other, please specify

Q5.2 How many hours do you work per week (on average)?

- <10 hours
- 11-15 hours
- 16 – 20 hours
- 21 – 25 hours

- 26 – 30 hours
- 31 – 35 hours
- 36 – 40 hours
- 41 – 45 hours
- More than 45 hour

Q5.3 What is your current living situation?

- I live with my parents/caregivers
- I live together with roommates (for example in student housing)
- I live on my own
- I live together with a partner
- I live together with one or multiple children
- I live together with a partner and one or multiple children

Q5.4. What is the current (or most recent industry) that you work in or have worked in? (multiple answers possible)

- Agriculture, Forestry, Fishing and Hunting
- Arts, Entertainment or Recreation
- Banking, Financing or Insurance
- Construction
- Education
- Health care or Social assistance
- Hospitality and Food services
- Information services, including Media and Publishing
- Manufacturing
- Mining, Quarrying or Oil and Gas extraction
- Professional, technical or business services
- Real estate or Rental and leasing services
- Retail trade
- Transportation or Warehousing
- Utilities
- Wholesale trade
- Government
- NGO
- Other, please specify

Q5.4 Please indicate your highest achieved educational degree

- Primary education
- Secondary education
- Community college degree
- University of applied sciences degree
- University degree (BSc or MSc)
- PhD

Q5.5 What is your yearly income (please calculate to euros if you receive your income in a different currency)

- Until 15000 euros
- 15001 euros – 30000 euros
- 30001 euros – 450000 euros
- 45000 euros – 600000 euros
- 60001 euros – 750000 euros
- More than 75000 euros
- Prefer not to say / I do not know

Q5.6 What is your gender?

- Male
- Female
- Other / Prefer not to say

Q5.7 What is your age?

- Younger than 18
- Between 18 and 24 years old
- Between 25 and 34 years old
- Between 35 and 44 years old
- Between 45 and 54 years old
- Between 55 and 64 years old
- Between 65 and 74 years old
- Older than 74

Appendix F - Constructs and associated survey items, measurement levels, and sources

Category	Measurement level	Source	Survey item
Socio-demographic questions	Nominal, Ordinal	(Barrero et al., 2021'	Age, gender, income level, education, living situation, place of work, hours of work per week
Appreciation of virtual workplace materials (VMA)	Likert scale (5 points)	(Barrero et al., 2021; Waizenegger et al., 2020)	VMA 1 "At my organisation, virtual workplace materials are mostly used for team collaboration"
			VMA 2 "Virtual workplace materials have replaced physical workplace materials at my company for team collaboration"
			VMA 3 "My employer is planning to keep using virtual workplace materials for team collaboration"
			VMA 4 "In the upcoming years, using virtual workplace materials for team collaboration will be the norm
			VMA 5 "When collaborating with my co-workers, we normally make use of virtual workplace materials"
Appreciation of physical workplace materials (PMA)	Likert scale (5 points)	(Barrero et al., 2021; Waizenegger et al., 2020)	PMA 1 "In my opinion, the use of physical workplace materials is effective for team collaboration"
			PMA 2 I like to use physical workplace materials for team collaboration"
			PMA 3 "Physical workplace materials are great for team collaboration"
			PMA 4 "I would recommend my employer

			to purchase physical workplace materials for team collaboration"
			PMA 5 "My interests in the use of physical workplace materials for team collaboration is high"
Home environment (HE) (moderator)	Likert scale (5 points)	(Barrero et al., 2021)	HE 1 "My internet connection is reliable"
			HE 2 "I have adequate equipment to work from home
			HE3 "I have always have my own room to work in"
			HE4 "My home environment is distracting
			HE5 "I am frequently interrupted by other people at home when working from home"
Team collaboration goals (TCG)	Likert scale (5 points)	(Barrero et al., 2021, Waizenegger et al., 2020)	TCG 1 "It is easy for our team to collaborate efficiently during team collaboration sessions"
			TCG 2 "At the end of our team collaboration sessions, we normally manage to reach the objectives of the session"
			TCG 3 "I consider our team meetings team sessions to be effective"
			TCG 4 "It is easy to work together with other team members during team collaboration sessions"

TCG 5
"The productivity of our team is
usually high during team
collaboration sessions"

TCG 5
"The productivity of our team is
usually high during team
collaboration sessions"

Appendix G: The frequencies, percentages, mean and SD of each sub-group for the variables fulfilment of team collaboration goals (TCG), virtual workplace materials appreciation (VMA) and physical workplace materials appreciation (PMA)

Variable	Sub-group	Frequency	%	TCG Mean (SD)	VMA Mean (SD)	PMA Mean (SD)
Gender						
	Male	92	47.9%	3.69 (0.66)	3.67 (0.71)	3.76 (0.75)
	Female	98	51.0%	3.71 (0.48)	3.76 (0.88)	3.76 (0.75)
	Other/prefer not to say	2	1.0%	3.00 (0.00)	4.30 (0.42)	3.70 (1.27)
Age						
	<18	1	0.5%	2.00 (-)	2.20 (-)	2.60 (-)
	18-24	70	36.5%	3.82 (0.52)	3.75 (0.63)	3.75 (0.66)
	25-34	47	24.5%	3.72 (0.54)	3.80 (1.00)	3.81 (0.77)
	35-44	27	14.1%	3.71 (0.74)	3.77 (0.98)	3.84 (0.67)
	45-54	23	12.0%	3.68 (0.53)	3.75 (0.49)	3.79 (0.66)
	55-64	23	12.0%	3.52 (0.52)	3.50 (0.77)	3.62 (0.77)
	65-74	1	0.5%	3.00 (-)	3.80 (-)	4.00 (-)
Industry						
	Agriculture, Forestry, Fishing and Hunting	1	0.5%	4.00 (-)	5.00 (-)	2.20 (-)
	Arts, Entertainment and recreation	5	2.6%	3.96 (0.22)	3.24 (0.52)	3.76 (0.26)
	Banking, Financing or Insurance	10	5.2%	3.88 (0.22)	3.98 (0.91)	3.76 (0.76)
	Construction	7	3.6%	3.89 (0.22)	3.57 (1.12)	3.49 (0.66)
	Education	16	8.3%	3.54 (0.38)	3.49 (0.76)	3.66 (0.60)
	Health care and Social Assistance	11	5.7%	3.45 (0.75)	3.58 (0.79)	4.10 (0.55)
	Hospitality and Food Services	6	3.1%	3.67 (0.37)	3.83 (0.46)	3.73 (0.30)
	Information and Services, including Publishing and Media	11	5.7%	3.80 (0.31)	4.15 (0.62)	3.85 (0.57)
	Manufacturing	5	2.6%	3.84 (0.38)	4.20 (0.49)	3.76 (0.33)
	Professional, Technical or Business Services	5	2.6%	3.91 (0.56)	3.73 (0.92)	3.84 (0.62)
	Real Estate or Rental and Leasing Services	1	0.5%	4.80 (-)	5.00 (-)	2.60 (-)
	Retail Trade	9	4.7%	3.58 (0.41)	3.40 (0.93)	3.93 (0.66)
	Transportation or Warehousing	2	1.0%	3.70 (0.42)	4.00 (0.28)	3.60 (0.28)
	Utilities	17	8.9%	3.25 (0.69)	3.94 (0.67)	3.71 (0.85)
	Wholesale Trade	5	2.6%	3.44 (1.09)	3.20 (0.96)	3.44 (0.77)
	Government	26	13.5%	3.67 (0.53)	3.75 (0.56)	3.66 (0.85)
	NGO	1	0.5%	3.80 (0.00)	4.00 (-)	3.20 (-)
	Other	4	2.1%	3.20 (0.54)	3.45 (1.12)	3.20 (0.54)

Living Situation						
	With Parents or caregivers	37	19.3%	3.64 (0.52)	3.78 (0.97)	3.95 (0.71)
	With Roommates	28	14.6%	3.83 (0.52)	3.59 (0.89)	3.86 (0.62)
	Individual	33	17.2%	3.72 (0.60)	3.88 (0.65)	3.45 (0.75)
	With Partner	45	23.4%	3.71 (0.75)	3.66 (0.74)	3.91 (0.54)
	With Children	3	1.6%	3.20 (0.40)	4.20 (0.20)	3.80 (0.87)
	With Partner and Children	46	24.0%	3.73 (0.40)	3.69 (0.77)	3.63 (0.76)
Working hours per week on average						
	<10 hours	14	7.3%	3.74 (0.61)	3.99 (0.81)	3.50 (0.78)
	11-15 hours	14	7.3%	3.42 (0.69)	3.70 (0.53)	3.73 (0.67)
	16 – 20 hours	14	7.3%	3.74 (0.30)	3.20 (0.90)	3.64 (0.73)
	21 – 25 hours	9	4.7%	3.82 (0.64)	3.87 (0.59)	3.56 (0.38)
	26 – 30 hours	10	5.2%	3.72 (0.53)	3.42 (0.91)	3.98 (0.68)
	31 – 35 hours	22	11.5%	3.61 (0.43)	3.61 (1.05)	3.85 (0.54)
	36 – 40 hours	81	42.2%	3.73 (0.63)	3.74 (0.74)	3.80 (0.78)
	41 – 45 hours	21	10.9%	3.79 (0.50)	4.00 (0.74)	3.70 (0.63)
	More than 45 hours	7	3.6%	3.89 (0.62)	4.00 (0.69)	4.11 (0.62)
Yearly Income	Until €15000	49	25.5%	3.65 (0.58)	3.62 (0.80)	3.70 (0.81)
	€15001 - €30000	16	8.3%	3.89 (0.54)	3.67 (1.00)	3.52 (0.61)
	€30001- €45000	40	20.8%	3.69 (0.53)	3.81 (0.78)	3.93 (0.63)
	€45001 - €60000	38	19.8%	3.64 (0.67)	3.73 (0.79)	3.75 (0.76)
	€60001- €75000	12	6.3%	3.78 (0.32)	3.71 (0.78)	3.60 (0.45)
	More than €75000	7	3.6%	3.89 (0.61)	3.83 (0.45)	4.34 (0.41)
	No education/ Primary School	0	0.0%	-	-	-
	Secondary School	16	8.3%	3.43 (0.92)	3.81 (0.67)	3.48 (0.97)
	Community College (MBO)	19	9.9%	3.66 (0.61)	3.65 (0.77)	3.67 (0.87)
	University of Applied Sciences (HBO)	85	44.4%	3.72 (0.52)	3.67 (0.83)	3.76 (0.66)
	Research University (WO)	70	36.5%	3.79 (0.53)	3.79 (0.81)	3.85 (0.66)
	PhD	2	1.0%	3.40 (0.00)	3.80 (0.57)	4.00 (0.00)
Total (Overall)	-	192	100%	3.71 (0.58)	3.73 (0.80)	3.76 (0.70)

Note. Mean and SD scores are based on (five-point) Likert-scale data.

Appendix H – Quality of home environment by living situation

Living situation	Frequency	Percentage	Mean (SD) of HE
Individual	33	17.2%	3.67 (0.79)
With roommates	28	14.6%	3.43 (1.01)
With parents or caregivers	37	19.3%	3.29 (0.94)
With a partner	45	23.4%	3.34 (0.81)
With children	3	1.6%	3.91 (0.38)
With partner and children	46	24.0%	3.41 (0.88)
Total (Overall)	192	100%	3.42 (0.88)

Note. HE= Quality of home environment for work. Mean and SD scores are based on (five-point) Likert-scale data.

Appendix J: Factor analysis

Scree Plot