

The Experience of Collaboration in Remote Work

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ABSTRACT

Remote work, or working from locations other than an organization or company's main location is becoming increasingly common in the workplace today. The rapid development of communication and information technologies have only escalated the pervasiveness of remote work practices. Much about the experience of remote work from remote workers' perspective, however, has yet to be understood especially when workers collaborate with one another. The present research study aims to understand some of those experiences by asking: what and how technologies are employed in remote collaboration today, typical difficulties experienced, and strategies remote workers use for effective collaboration. Using diary studies and interviews, we collected qualitative data about remote workers' experiences and performed thematic analyses around our research questions. Findings show that remote workers primarily and regularly use video-conferencing tools. In line with existing literature, one of the greatest perceived difficulties still seems to be overcoming the social isolation although participants overall expressed a positive outlook towards their work. Finally, remote workers develop best practices for their work by independently and cautiously selecting which technologies to use. The results provide an introduction to what remote collaboration experiences are like and help identify key areas further research in this field can potentially pursue.

INTRODUCTION

Working remotely, working from home, or telecommuting has become an increasingly common practice, with a rise in the number of employed Americans reporting working from locations outside their company's office at least a few days a week [1]. Even with this increase, communication issues solved by proximity in an office setting are still difficult to adapt to when collaborating remotely [2]. Workers both on-site in offices and working remotely commonly cite these collaboration problems as one of the biggest constraints to producing quality work, as more frequent and close communication increases trust between coworkers [3].

This study aims to examine the experiences of collaboration among teams with remote workers from a phenomenological approach based in Husserl and Schutz [4]. In understanding these experiences, we explore the meanings derived from participants' thoughts and perceptions about, and participation in remote work. First, we establish what tools play a role in shaping those experiences and the relationships

remote workers have with technological tools. Second, we identify perceived difficulties in creating

collaborative work environments in teams with remote workers. Third, we uncover best practices in building collaboration in remote work. Through these research questions, we present a comprehensive understanding of collaborative experiences for individuals in remote teams.

BACKGROUND

Many organizations and employees across industries have adopted remote work practices in recent years because of various benefits they afford [5, 6]. In addition, work technologies today are capable of providing support for remote work, making it an increasingly popular choice for workers. Such remote work capabilities and flexible work methods have led to fundamental changes in work culture. This cultural shift has significant consequences particularly for collaborative work between employees as it removes the element of physical co-presence.

Strengths and Weaknesses of Remote Work

Existing literature in the field of organizational culture have extensively examined the potential benefits and drawbacks of telework or e-work, defined as work that takes place primarily through electronic mediums with minimal in-person interaction with an organization's main location or staff [5]. For organizations, some notable benefits of telework programs found include increased productivity, greater employee job satisfaction and therefore decreased absenteeism and turnover, as well as reduced costs for office space. Teleworkers, on the other hand, enjoy increased flexibility in work schedules, a better work-life balance, and report positive attitudes toward their work [6]. Some studies, however, show mixed results regarding these benefits, especially concerning job satisfaction. One study that explored the relationship between the availability of information technologies (IT) on job satisfaction among remote workers, but found weak support [3]. Another frequently cited disadvantages is social isolation, which refers to being detached from the traditional social atmosphere often present in job settings and interactions that occur with coworkers [5]. The largest and most relevant effect of this physical dispersion on remote collaboration is that creating a culture and set of shared values becomes more challenging, which is critical to building synergy for teams [7,8].

Information Communication Technologies (ICT) and Perceptions

The recent emergence and increasing adoption of information communication technologies (ICT) in the workforce have prompted studies to focus more on various implications of using these technologies on work. For terminology clarification, ICTs are broadly defined as tools that facilitate the exchange of information [9]; in an organizational context, ICTs can be used to either support communication processes between employees or provide greater access for information. Work on ICTs have primarily studied how and to what extent usage causes stress and impact employees' well-being as well as other outcomes pertaining to affect or

satisfaction [9, 10, 11]. Few to date, however, have explored ICT usage among remote workers. ICTs are particular tools essential for many remote workers today and heavily relied upon for how they afford greater connectivity and interaction [12]. One study by Kraut et al have identified ways to improve limitations of existing technologies in order to better support remote work productivity and efficiency [13], but do not discuss the experience from a subjective perspective and primarily assess effectiveness of tools in task completion. How these technologies shape other dimensions of the remote work experience as perceived by the employees remain relatively unknown.

Employees' affective states and perceptions of their remote collaboration experience are equally important as they may influence participants' overall attitudes toward their jobs and the way they approach tasks. In addition, it is worth in further examining how much of these experiences, if at all, can be explained by effects of using technology to overcome the physical constraints faced in remote work and identifying what other factors could possibly be explanatory variables. This study, therefore, hopes to better understand the subjective experiences of remote workers so that we might improve collaborative practices in this new age of remote work.

METHODS

This research study takes a phenomenological approach in that it aims to examine the experience of remote collaboration from the perspective of remote workers themselves. As such, we used both diary studies and follow-up interviews to examine the emotional experiences of participants in performing collaborative tasks with their coworkers remotely. We wanted to understand participants' experiences without using observational methods, as they could potentially disclose private and sensitive information about organizations. We aimed to reduce power dynamics between co-workers and bias in responses by asking participants about their perceptions towards interactions in a context where the co-workers were not present.

Recruitment and Participants

We recruited a total of five participants from a sampling frame consisting of remote workers or those who work on teams with remote workers. Participants were intentionally selected to represent a diverse range of industry backgrounds and organizational roles to observe how their experiences would differ across these dimensions. Industries ranged from automobile to technology and job titles from analysts to roles in software engineering and design. Workplace location and participants' ages were not included in the criteria for eligibility as we aimed to maximize variety. All participants were recruited using convenience sampling, through personal connections of researchers and social media.

Diary Study

Our data collection procedure consisted of a short, week-long diary study followed by another week of conducting interviews. Participants were asked to keep a diary of their collaborative work experience by filling out a short, structured online form highlighting their remote interactions each day of their work week, totaling five diary entries. Interactions could be between any of their coworkers - members of their team, manager, or more distant employees. The form consisted of short-answer questions that asked about the contextual details (i.e. 5W1H) of the interactions as well as post-interaction feelings and thoughts. Participants were encouraged to fill out the form as soon as possible after the interaction as feelings are best captured and described immediately after the event occurs.

Interviews

Following the week-long period of diary studies, participants were asked to partake in individual interviews held remotely. These follow-up interviews aimed to learn more about the participants' daily tasks and responsibilities at work in order to better understand their responses in context.

Analysis

To begin our analysis, our team first reviewed our research questions and transcribed interviews.

Following a substantive approach, three team members reviewed and open-coded data from the diary studies, interview videos and transcriptions, and notes from the interview facilitator(s) or observer(s) from one participant each. One team member reviewed and coded the same qualitative raw data from two participants.

Descriptive codes were used to cross-analyze participant data for thematic concepts, which were collected from raw data *in vivo* and organized by participant. Nine emergent themes were then identified from the collected and coded data. Each piece of data was indexed for these themes and then sorted by thematic references (Figure 1). The initial nine themes were discussed and similar concepts were consolidated. These themes are outlined in our findings.

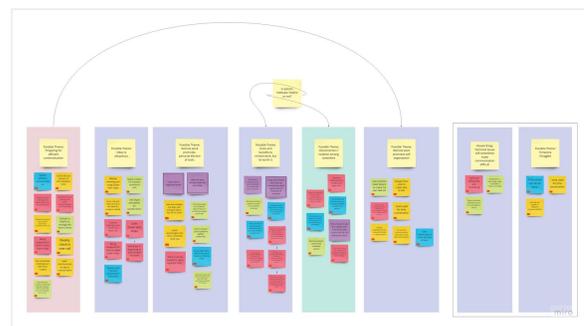


Figure 1: Thematic analysis using Miro, aka Realtimebord.

FINDINGS

Overall we found that remote work is very different from standard in-office practices. It is a unique, and individualized experience with a few common overarching themes. With remote work becoming a more common business practice, there is a need to understand these experiences and how they can best fit into the higher level business structure.

Preparation and Organization: A Remote Worker's Toolkit

We found that remote workers generally develop personalized methods and tools for better organization as they generally have low management oversight and counterbalance this with high self-sufficiency.

Remote workers have a high level of technology adoption as their communication is primarily online. The technical difficulties of this environment often seem to push remote workers to put additional time into planning for meetings and organizing structure. Preparing for a meeting helped users troubleshoot when necessary and allowed for more clear communication in meetings that could be disrupted or side tracked by technical difficulties.

Many remote workers have absolute control of their time and prioritization. With less management oversight, remote workers often create unique ways of maintaining self organization in a more ambiguous work setting.

“I started to organize my day by bucketing my tasks into my three main goals. If it doesn't get a bucket it is deprioritized. Each bucket has a set amount of hours per day”.

- Participant 5

Not only did we find a higher level of personal organization tactics, we also discovered remote work promotes personal election of tools. Depending on the environment or type of collaboration, our participants had different reasoning behind what tools work best for each interaction. They selected tools based on efficiency, type of collaboration, and how well each option aligned with the overall company ethos.

Collaboration tool(s)	Type of tool
Zoom, Google Meet, Skype	Video conferencing, Screen sharing
Slack, IRC, Jabber, Whatsapp	Group chat

Email	Messaging with clients
Teleconsole	Screen sharing (specific to Terminal)
Notion	Project management, documentation
Every Time Zone	Meeting scheduling
Github	Code collaboration

Table 1: Collaboration tools used by participants



The Ubiquity of Video

In discussing tools, it is important to mention video conferencing software. No matter what tools remote workers relied upon, video-conferencing was a major part of culture and dialogue. Video conferencing had surprising effects on culture and rule-making within collaborative events.

A major discovery was that no matter what field our participants were in or what frequency their collaborations took place at, video-conferencing tools were used by everyone. Despite multiple complaints regarding technological breakdowns, video was used by all participants and more for longer more complex meetings or collaborative events.

In addition, we found that video-conferencing comes with its own culture and set of rules. Companies tend to either use video or voice only while collaborating online, and the host tends to set the expectation for video or audio as the call begins. Remote workers tend to be more comfortable with the use of video online.

Perceived Difficulties in Remote Work

Remote work has its own particular set of difficulties, but our participants overall had a positive outlook on their experience of work. Issues were not surprising and mostly centered around isolation and technical difficulties.

Not working face-to-face with members of their organization led to some feelings of isolation among the group. Remote workers are often unable to attend the cultural events within the company and feel disconnected. However, just being present is not enough. One participant was sent to visit the onsite workspace, but did not feel any deeper level of connection as he was not engaged in team collaboration during this trip. Another participant was grateful that he had worked onsite for years before taking the remote position and understood the overall culture and where he fit in before going remote. Isolation and disconnection from culture were closely related in respondents discussions.

“I still sometimes feel like I work in a bubble and feel isolated from people.”

- **Participant 4**

Almost every participant admitted that working remotely can be challenging at times, but the benefits outweigh the costs. The most commonly cited reason was that the freedom of remote work tends to outweigh the costs of miscommunication or isolation.

“It sometimes feels weird to not need to talk to anyone, but overall it’s more productive”.

- **Participant 4**

DISCUSSION

Although remote work is growing, especially in IT companies, most of the research has been centered around effects on individuals or benefits to companies overall and not collaboration between coworkers. While we confirmed increased feelings of isolation, flexibility, and perceived individual productivity among our participants, we specifically analyzed our data for team collaboration. Table 2

(below) highlights what is already known from background research on remote workers and collaboration as well as what our study adds to this domain.

What is known	What this study adds
<ul style="list-style-type: none"> • Technical issues and failures lead to communication difficulties for remote workers. • Social isolation is a common theme in research on remote workers and was also exhibited by participants in this study. [5] • Creating a set of shared values for companies with remote workers promote building team synergy. [7,8] 	<ul style="list-style-type: none"> • Creates a basis for individual perceptions and motivation surrounding remote collaboration. • Confirms that remote work is changing the landscape of communication through non-text mediums. • Reveals varied choices of communication tools, with no one tool filling remote needs.

Table 2: What is known and what this study adds

While our study did not monitor participant’s actual communication due to privacy concerns, emoji-driven communication common with teams using Slack was also present with one of our participants using Whatsapp to communicate with international clients [14]. Emoji-driven communication could help to transcend communication barriers more than text alone, as it has also been effective in social communication via texting [15]. We found this to also be true when applied to video conferencing, as it was crucial to participants’ team communication.

Communication difficulties were also noted by all participants either through inefficient preparation or technological limitations. While all participants created their own techniques from self-elected tool usage to counteract these difficulties, there was only one participant who revealed an ICT change from on-site coworkers resulting in better communication: upgrading video and sound equipment in conference rooms to accommodate

remote participants. On-site employees could do more to increase remote worker inclusion in developing company culture and best practices to overcome proximity-facilitated collaboration [13]. Additionally, on-site employees could adapt efficient communication strategies developed by remote workers to enhance organization cohesion.

LIMITATIONS

Our study had a few limitations. The study was done remotely, so we were only able to interview our participants online and gather responses verbally. While that was suitable for the purposes of this study, we were unable to understand as much as we would have if interviews were conducted in-person. For example, face-to-face interviews would have allowed us to perhaps probe deeper for participants' responses to questions, thereby providing richer data. In addition, we had less control over the participants' environment, which made it more challenging to ensure that the participants gave their undivided attention during the interviews.

Our goal was to recruit participants from diverse industry backgrounds. However, the majority of our participants hold positions in the technology industry. This limited the diversity of our data set and is therefore by no means representative of the remote worker population. The nature of work and types of tasks could vary widely across industries.

The diary study also had a few limitations. Due to time constraints, we only captured 5 days worth of data. If we had conducted the study over a longer time frame, we would have had a richer dataset, with a deeper understanding of the emotional experience of teamwork and collaboration in remote working. Some of the participants also started the diary study in the middle of their projects, so we might have not been able to understand their emotional experiences at different stages of the projects. Lastly, we noticed that some participants' responses were less descriptive and verbose than others. This prevented us from capturing contextual details from each remote collaboration occurrence that we sought for understanding the participants' experience. Providing a training session for answering diary

entries or forming more detailed questions are some strategies that could be used to mitigate these shortcomings.

FUTURE DIRECTIONS

Our study shows that video conferencing and screen-sharing technologies are widely used for remote workers. These technologies are, however, not without their limitations for special circumstances in remote work. For example, one of the participants heavily used emoticons when communicating with overseas distributors to overcome language barriers. Such issues demonstrate how existing technologies still can be improved by creating other means of communication beyond text-based messaging to help create a more inclusive experience for remote workers.

Finally, our current study uses qualitative research methods to examine experiences of teamwork and collaboration among remote workers and identify what factors might play a role in shaping those experiences. Future studies could use different approaches, such as quantitative research methods to further examine the relationship between various variables identified such as ability to self-select technologies, perceived difficulties, usage of video-conferencing tools with the overall quality of remote interaction experienced.

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