From broken habits to new intentions: how COVID-19 expands our knowledge on post-adoptive use behaviour of digital communication and collaboration

Manfred Schoch, Henner Gimpel, Andreas Maier, Kathrin Neumeier

Angaben zur Veröffentlichung / Publication details:

Schoch, Manfred, Henner Gimpel, Andreas Maier, and Kathrin Neumeier. 2023. "From broken habits to new intentions: how COVID-19 expands our knowledge on post-adoptive use behaviour of digital communication and collaboration." *European Journal of Information Systems* 32 (6): 989–1010. https://doi.org/10.1080/0960085x.2022.2096489.

European Journal of Information Systems

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/tjis20

From broken habits to new intentions: how COVID-19 expands our knowledge on post-adoptive use behaviour of digital communication and collaboration

Manfred Schoch, Henner Gimpel, Andreas Maier & Kathrin Neumeier

To cite this article: Manfred Schoch, Henner Gimpel, Andreas Maier & Kathrin Neumeier (2023) From broken habits to new intentions: how COVID-19 expands our knowledge on post-adoptive use behaviour of digital communication and collaboration, European Journal of Information Systems, 32:6, 989-1010, DOI: 10.1080/0960085X.2022.2096489

To link to this article: https://doi.org/10.1080/0960085X.2022.2096489

EUROPEAN JOURNAL OF INFORMATION SYSTEMS
2023, VOL. 32, NO. 6, 989–1010
https://doi.org/10.1080/0960085X.2022.2096489

EMPIRICAL RESEARCH

OPEN ACCESS Check for updates

From broken habits to new intentions: how COVID-19 expands our knowledge on post-adoptive use behaviour of digital communication and collaboration

Manfred Schoch [a,b], Henner Gimpel [a,b,c,d], Andreas Maier[a,b] and Kathrin Neumeier[a,b]

[a]FIM Research Center, Augsburg, Germany; [b] University of Augsburg, Augsburg, Germany; [c]Digital Management, University of Hohenheim, Stuttgart, Germany; [d]Branch Business & Information Systems Engineering, Fraunhofer Institute for Applied Information Technology FIT, Augsburg, Germany

ABSTRACT

The COVID-19 pandemic has caused an unprecedented surge in digital communication and collaboration. While a rich body of knowledge exists on IS use, our understanding of changes in post-adoptive use behaviour regarding communication and collaboration is comparatively limited. Existing models assume decreasing growth rates over time and are not designed to capture spikes in use behaviour such as the one observed during the pandemic. In this mixed methods study, we propose a hybrid model of sensemaking and post-adoptive communication and collaboration use that explains changes in use behaviour and outlines the influence of external trigger events. Based on real-world data from MS Teams, we show that individual feature use varies over time, with an increasing growth rate triggered by COVID-19. To understand drivers for the heterogeneous changes, we further conduct qualitative interviews. We find habits were deliberately altered during COVID-19 and replaced with new intentions through sensemaking. We derive propositions that may encourage further research into the subject. Extended knowledge of post-adoptive behaviour and its triggers assists practitioners in adjusting to the new normal or reacting to new situations beyond COVID-19.

ARTICLE HISTORY
Received 28 September 2020
Accepted 22 June 2022

KEYWORDS
Post-adoption; sensemaking; IS use; communication and collaboration

1. Introduction

Around the world, the COVID-19 pandemic has urged companies to establish work-from-home policies. Studies found that more than 25% of the German workforce worked from home during the first height of the pandemic in March 2020 (Möhring et al., 2020). This development fast-tracked the rapid boom of digital collaboration and communication tools, such as Microsoft (MS) Teams or Zoom. MS Teams meetings surged exponentially with 2.7 billion minutes of meetings as of March 31 compared to 900 million on March 16 2020 (Spataro, 2020). Before, such tools had already been used to support globally distributed teams, mobile work, and flexible working hours. Yet, their relevance has increased and is likely to increase further as working from home will become the new normal for many in post-pandemic times (e.g., Kelly, 2020).

Efficient digital communication and collaboration is a priority and success factor for companies in such a work environment. Even though many commercially available tools provide many easy-to-use communication and collaboration features, companies depend on the willingness of their employees to use them. While organisations can promote the initial adoption, for example, through inclusive change management, this does not ensure the long-term use of the tool and its different features (Bagayogo et al., 2014). Jasperson et al. (2005, 525) state that "users employ quite narrow feature breadths, operate at low levels of feature use, and rarely initiate technology- or task-related extensions of the available features" in the post-adoption phase. Managers need to understand how post-adoptive user behaviour changes to steer and promote use over time.

Technology adoption and use have been highly researched in the Information Systems (IS) discipline, resulting in various models and theories that aim to predict technology adoption and acceptance (e.g., Davis, 1989; Moore & Benbasat, 1991; Venkatesh et al., 2003). Despite this large body of research, the collective understanding of post-adoptive behaviour is comparatively less mature (Jasperson et al., 2005). For example, researchers have long called for insights based on real-world data, longitudinal insights, and detailed post-adoption studies on a fine-grained feature level (Bagayogo et al., 2014; Jasperson et al., 2005).

So far, IS researchers argue that feature use varies between individuals based on the task and may change over time (Benlian, 2015; Kim & Malhotra, 2005). Benlian (2015) finds that feature use increases over time, but growth rates diminish. Yet, growth rates for communication and collaboration use have spiked in the case of COVID-19 due to an exogenous shock. A detailed understanding of how this happened is still evolving.

CONTACT Manfred Schoch manfred.schoch@fim-rc.de
Supplemental data for this article can be accessed online at https://doi.org/10.1080/0960085X.2022.2096489

COVID-19 provides a unique opportunity to study post-adoption of communication and collaboration tools. A major share of the workforce worked from home and used digital, rather than physical, means of communication. In the wake of this development, this study focuses on individual post-adoptive behaviours on a feature level. Our two objectives are to:

(1) *Analyse changes in post-adoptive use behaviour of digital communication and collaboration tools both in a phase of continuous gradual expansion of use and in a phase of abrupt adjustment in response to an external shock.*
(2) *Understand why and through which processes these changes in the individual post-adoptive use behaviour occurred.*

We are particularly interested in understanding substantial changes in response to the external shock prompted by the COVID-19 pandemic and the heterogeneity of these changes between individuals.

We use a mixed methods approach combining quantitative data analysis and qualitative interviews to address these objectives. The study aims to provide a comprehensive understanding of post-adoptive behaviours. We use real-world MS Teams data consisting of feature use counts of a communication and collaboration tool over nine months. We identify five distinct use patterns in the data and analyse them based on a rich conceptualisation covering system, task, and user (Burton-Jones & Straub, 2006). Our results indicate that individual post-adoptive use varies heterogeneously over time, with users switching from one behaviour to another. In times of COVID-19, many users changed their behaviours while others did not. We trace this back to different hierarchical positions in our quantitative strand. Our qualitative strand leverages interviews to identify habit-breaking technology sensemaking triggered by the novel situation that may cause drastic use behaviour changes during post-adoption. We propose a model of sensemaking and post-adoptive communication and collaboration use based on these findings. The model offers a theoretical lens to explain post-adoptive communication and collaboration behaviour changes. We further identify individual, network and organisational resources as factors that influence individual sensemaking and show how they were affected by COVID-19.

2. Theoretical background

2.1. Research on IS use

IS use is the most mature and well-researched field in the IS community (Hu et al., 1999; Venkatesh et al., 2003). Use is the most crucial determinant for success when implementing an IS (Sabherwal et al., 2006; Venkatesh et al., 2008). Burton-Jones and Gallivan (2007) define technology use as "a user's employment of a system to perform a task". For a holistic view and rich understanding of IS use, the user, the system, and the task need to be considered (Burton-Jones & Straub, 2006).

Technology use can be divided into three phases: adoption, initial use, and post-adoptive use (Jasperson et al., 2005; Venkatesh, Brown et al., 2016). Adoption "refers to the stage before and right after a target technology implementation/introduction", whereas "initial use refers to the stage when users begin to apply the technology to accomplish their work/life tasks" (Venkatesh, Thong et al., 2016, 345). Post-adoptive use refers to the time "after the application has been installed, made accessible to the user, and applied by the user in accomplishing his/her work activities" (Jasperson et al., 2005, 531). All three phases have been researched independently. Following the context of our research, we elaborate on IS use research regarding communication and collaboration technology.

2.2. Use of communication and collaboration tools

Communication and collaboration technology enables teams to communicate and collaborate digitally and, thus, brings the subject of teamwork to the IS research agenda (Dennis et al., 2008). Several research contributions at the overlap between IS use in general and communication and collaboration technology offer technology-specific antecedents (Brown et al., 2010; Lou et al., 2000; Van Slyke et al., 2007). In that regard, models from collaboration research (i.e., social presence theory, channel expansion theory and the task closure model) have been associated with IS use research. For example, mediated through UTAUT, collaboration-related constructs influence the intentional use of collaboration tools (Brown et al., 2010). Other studies identify network effects and critical mass as additional explanatory factors for the intention to use collaboration systems (Lou et al., 2000; Van Slyke et al., 2007). Further, different types of ties within the user's social network have been shown to influence the use of collaboration tools. This points to the collective nature of these tools (Sykes & Venkatesh, 2017). While these studies provide important insights on intentional use, longitudinal studies investigating substantial changes in communication and collaboration software user behaviour in the post-adoption phase are scarce. We thus turn our attention to research on the post-adoptive phase of IS use.

2.3. Post-adoptive use behaviour

Research on post-adoptive IS use is generally concerned with investigating why people continue to use IS, the role of automatic IS use or habits, and a better

understanding of how individuals use IS in practice (Bagayogo et al., 2014). While there is an ongoing debate on categorising post-adoptive use, Jasperson et al. (2005, 531) differentiate between "feature adoption decisions, feature use behaviours, and feature extension behaviours". Such features are the building blocks or components of the technology (Griffith, 1999; Griffith & Northcraft, 1994; Jasperson et al., 2005).

Previous research has found that feature use is not constant and changes over time (DeSanctis & Poole, 1994; Goodhue, 1995; Goodhue & Thompson, 1995; Griffith, 1999). However, research also suggests that post-adoptive feature use of word processing technology increases in a non-linear way with diminishing growth rates. A study concludes that this is because users establish routines and habits (Benlian, 2015). Thus, habitual rather than deliberate use becomes dominant in the post-adoptive phase. Users start to form habits based on their previous use behaviour, which do not necessarily change unless users reflect on their use (Jasperson et al., 2005). Conceptual work suggests that feature use of an IS may indeed change when users break such habits (Jasperson et al., 2005). Theory further suggests that technology sensemaking, caused by trigger events, has to take place for users to re-evaluate and change their use behaviour in the post-adoptive phase (Sun, 2012).

Knowledge of the technology sensemaking processes is limited for lack of research on post-adoptive behaviour. For example, there is a lack of insights on questions like what triggers technology sensemaking in the post-adoptive phase. An exception is a study based on survey data of users that had previously changed their use behaviour of MS Office tools (Sun, 2012). It provides evidence that trigger events like novel situations (such as new tasks, discrepancies between expectancies and reality) or deliberate initiatives may cause such adaptation of post-adoptive feature use (Sun, 2012).

2.4. Sensemaking in organizations

Substantive research exists on sensemaking and technology sensemaking. "Sensemaking is the process through which people work to understand issues or events that are novel, ambiguous, confusing, or in some other way violate expectations" (Maitlis & Christianson, 2014, 57). Circumstances are turned "into a situation that is comprehended explicitly in words and that serves as a springboard to action" (Taylor & van Every, 1999, 40 as cited in Weick et al., 2005). This definition emphasises the role of sensemaking in influencing behaviour.

The sensemaking perspective was first introduced in an organisational context (Weick, 1995) and has since heavily influenced organisational research (Maitlis & Christianson, 2014). Underlying is a view of organisations as "an outcome of an evolutionary process of organising" (Sandberg & Tsoukas, 2015, 8), where individuals interactively undertake action. Individuals are considered organised when their cause maps converge (Sandberg & Tsoukas, 2015 based on Weick, 1979). For that, sense is necessary, which arises from interpreting experiences that are mentally labelled and connected (Sandberg & Tsoukas, 2015). As individuals interact, this sense and the resulting behaviours may converge. Thus, sensemaking is seen as a social process (Gephart, 2004).

Sensemaking generally occurs in episodes triggered by some event that interrupts the way individuals have been organising (Sandberg & Tsoukas, 2015). It tends to happen "when the current state of the world is perceived to be different from the expected state of the world, or when there is no obvious way to engage the world" (Weick et al., 2005, 409). Typically, this is "when routine activities are interrupted" (Sandberg & Tsoukas, 2015, 17). In their efforts to restore sense and resume action, individuals turn to institutional constraints and expectations, social norms, or their own experiences (Weick et al., 2005).

Once triggered, the sensemaking process comprises a loop of individual cognition and enactment. Cognition encompasses the *creation* of an initial sense of the situation and *interpretation* where a more complete sense is developed. *Enactment* refers to actions taken to restore the interrupted organising activity and may involve negotiation with others (Sandberg & Tsoukas, 2015). A locally plausible narrative of the situation is required to restore sense (rather than an accurate one). What is considered plausible for one group might not be for another (Weick et al., 2005). Thus, there is no universal or deterministic outcome of a sensemaking process. Instead, individuals have different resources and experiences to draw from that may result in differing plausible interpretations as long as they do not conflict with the social norms of their group (Mesgari & Okoli, 2019).

Outside the realm of IS, trigger events for sensemaking have been categorised broadly into major and minor planned and unplanned events. IS researchers have, for example, previously investigated novel situations, discrepancies and deliberate initiatives as triggers for changes in use behaviour (e.g., Sun, 2012). Novel situations are when individuals "encounter things that are unfamiliar or unknown", such as new tasks (Sun, 2012, 459). In the paper at hand, we are particularly interested in the condition of novelty, which has been attributed to other organisational and group phenomena before, such as mergers and acquisitions or organisational birth (Louis & Sutton, 1991).

The sensemaking perspective was later adapted to the context of technology features (Griffith, 1999) – primarily related to introducing new or adapted features. Technology sensemaking thus follows the question of "how users initially understand a technology" (Griffith, 1999, 484). In other words, how technology itself may trigger sensemaking.

A study summarising contributions to digital communication at work emphasises that "use must also be understood in terms of organisational context" (Gephart, 2004, 487). Yet, congruent with research on technology sensemaking, the authors proceed that users form most senses attributed to technology at its introduction. After that, routines, norms, and habits often emerge that limit the impact of intention (c.f., Limayem et al., 2007). Yet, the study acknowledges that reassessments and new interpretations may occur at later stages in response to exogenous triggers (Gephart, 2004 with reference to Orlikowski et al., 1995).

Since then, numerous contributions to the body of (technology) sensemaking literature relevant to IS research have been made. Mesgari and Okoli (2019) provide a comprehensive literature review on the subject. They point out examples where different senses attributed to technology have led users to use IS differently. They further emphasise that technology artefacts and organisational elements are essential to understanding sensemaking. Yet, empirical investigations of sensemaking in the post-adoptive phase are scarce. This may be because "methodologically, it is difficult to find people in the act of coping with disconfirmations that catch them unawares" (Weick et al., 2005, 415).

We summarise that a comprehensive and detailed picture of the adoption and use behaviour of an IS exists. The mature body of knowledge includes insights regarding acceptance and adoption decisions of communication and collaboration tools and several contributions to general IS usage behaviour in post-adoption phases. Existing research models and contributions on communication and collaboration behaviour appear to be limited in explaining radical changes. This paper thus uses a sensemaking perspective to extend existing knowledge on post-adoptive use behaviour of communication and collaboration technology by investigating the effects of an exogenous shock, such as the one brought about by COVID-19, based on longitudinal trace data and corresponding interview data.

3. Research approach

3.1. Mixed methods

We conduct a mixed methods study combining quantitative and qualitative research methods in the same research inquiry to get rich insights into the phenomenon of interest (Venkatesh et al., 2013; Venkatesh, Brown et al., 2016). We follow a sequential mixed methods design to reach complementarity, one of seven purposes suggested by Venkatesh et al. (2013). We combine a quantitative exploration of user behaviours with a qualitative analysis of drivers based on user interviews to understand and explain the quantitative findings.

Our study is based on trace data and interview data from a German organisation that has implemented the communication and collaboration tool MS Teams. The organisation provides knowledge-intensive services in an educational and consulting context to corporate, public, and individual customers. It has multiple specialised client-facing departments responsible for providing the organisation's external service offerings, and support functions that provide internal shared services across departments, such as Finance or Human Resources. Each full-time operational employee is a member of exactly one department and one or multiple support functions, which resembles a matrix organisational structure. As part of their work in departments, operational employees provide the organisation's services to external customers accounting for most of their workload. Their operational work thus involves consulting, instructing, and facilitation of workshops. The heads of departments are heavily involved in client relationships, client-related work, and internal management. Their assistants primarily have a role in the internal management of the department. The heads of support functions have an internal management role. However, the same individuals also support the departments in operational client-facing work, yet to a lesser extent than the operational employees. Full-time administrative employees are concerned with providing support functions that are primarily internal and have external interfaces. For example, secretaries have client contact via phone calls and email, and the finance department is in contact with clients and vendors. Part-time employees have almost exclusively internal roles without client contact. They support operational and administrative tasks and have variable working hours (at least 10 hours per week). Before COVID-19, communication and collaboration external to the organisation were primarily conducted face to face, via phone calls, emails, and documents attached to emails. MS Teams was not used externally.

With work-from-home during COVID-19 and a substantial increase in video conferences in the business world, employees started using MS Teams video-conferences with some clients and external partners. This was primarily feasible for scheduled audio and video conferences because, for technical reasons, most other features require guest accounts. Use cases for

virtual meetings were vast and included sales pitches and need assessments, first-round job interviews, and other correspondence related to project and consulting work. Service provision was partially made through MS Teams, including conducting workshops, individual counselling, and giving talks. However, because of data privacy concerns on the client-side, Zoom was also used for service provision in some instances.

The organisation has two geographically-separated locations, and many teams consist of members from both locations. Over the period of our analysis (9 months), the organisation had between 158 (first phase of our investigation) and 181 active employees (last phase). This change is due to the strategic and long-term growth of the organisation and includes normal fluctuation. Twenty-four employees joined the organisation during the observation period, and one employee left the organisation. All changes occurred in the groups of part-time employees and operational employees.

There is undoubtedly some seasonality in the provision of the organisation's services, with dips during the summer holidays (between August and September) and Christmas holidays (from Christmas to January 7). Yet, the overall order situation of the organisation was at full capacity before, during, and after the entire 9-month period. The reason is that the company was constantly growing and hiring during the COVID-19 disruption to meet the demand. Most educational and consulting contracts ran at least multiple months and were not immediately affected by COVID-19. The COVID-19 shock caused some contracts not to be concluded, which allowed the organisation to catch up with delays on other obligations. Statements of employees suggest no major change in workload over the observation period.

The existing IT landscape is relatively mature and supports knowledge-intense digital work in distributed teams. Regarding devices, the organisation offers desktop PCs to the part-time employees and administrative employees and laptops to all other employees. Also, employees are provided with non-digital communication devices, such as landline telephones. Smartphones are only provided to employees upon justified request. The organisation encourages and supports a bring-your-own-device policy. The use of private communication tools, such as WhatsApp, is not encouraged but tolerated. The organisation further uses multiple applications from the MS Office 365 suite, including the MS Exchange service, email capabilities, and MS SharePoint for document management, file sharing, and knowledge management. The organisation introduced MS Teams in June 2019. It provides four core communication and collaboration features: Team Channel, Chat, Call, and Meeting. In addition, MS Teams provides "Apps & Services" that integrate features from the Office 365 family into MS Teams, such as Outlook Calendars, OneNote notebooks, or the MS Planner (Microsoft, 2021).

The organisation used different MS systems for many years, especially the Windows operating system and the office suite – most recently Office 365. It introduced MS Teams to replace Skype for Business. MS recommended this change for its Office 365 customers, and new customers directly received MS Teams instead of Skype for Business starting in September 2019. The organisation had previously used Skype for Business primarily for internal communication across locations (mainly videoconferencing and partly chatting). Its IT department thus evaluated MS Teams for those purposes and decided that it was a good tool that may enhance these types of communication because it provides broader and better functionalities. At the time, the introduction of MS Teams did not aspire to other use cases, like replacing systems besides Skype for Business, replacing in-person communication (before COVID-19), or augmenting collaboration and communication possibilities. However, being up to date with digital tools and offering new features and capabilities is part of the IT department's philosophy and is supported by the organisation's management.

The COVID-19 pandemic rapidly reached Germany in February 2020 and started impacting daily work. The organisation strongly recommended work-from-home on March 7. All employees were ordered to work from home on March 16. In the respective policy, the organisation informed employees that "digital tools, such as e-mail and MS Teams, should generally be the first choice of communication". They further provided general advice on how to use these tools, which involved: maintaining intensive communication, leaving no newcomers behind, using check-ins, and activating cameras in video calls.

3.2. Quantitative strand

Quantitative data were collected for 9 months, from July 2019 to April 2020. It was separated into four different phases, which capture post-adoptive use (T1 from July 23 to October 21 2019–158 employees), continued post-adoptive use (T2 until January 19 2020–174 employees), a further period of continued post-adoptive use (T3 until March 14 2020–181 employees), and the influence of COVID-19 (T4 until April 18 2020–181 employees) which resulted in a general work-from-home (WFH)-policy.

We were provided with each employee's use counts of the four MS Teams features for the respective periods. DeSanctis and Poole (1994) suggest that features should be viewed in parsimonious bundles to achieve

consistent and meaningful empirical results. We used data regarding the breadth (Burton-Jones & Straub, 2006; Saga & Zmud, 1993) and depth (Lucas & Spitler, 1999) of use. Breadth measures the number of features used, and depth measures the intensity of use. Our study uses counts that represent: 1) sending a message in an MS Teams channel (Channel). Channels are virtual spaces dedicated to communication on specific topics or projects. Individuals need to join channels to see their content, and subchannels may only be visible to certain individuals. 2) Sending a chat message in a private conversation with one or multiple individuals (Chat), similarly to instant messaging tools, such as WhatsApp. 3) Conducting peer-to-peer audio or video calls which are ad-hoc and not scheduled (Call). 4) Scheduled audio or video meetings (Meeting). The difference between meetings and calls is that meetings are planned and set up in advance. The quantitative data was pseudonymised by the organisation's system administrator to address privacy concerns (e.g., Herzog et al., 2015; Pawlowski et al., 2014). This ensures the identification of user behaviours but prevents the researchers from knowing the content of the messages or identifying individual employees (Van Alstyne & Zhang, 2003). Additionally, the organisation provided meta-data regarding the organisational hierarchy (distinguishing between the seven positions). Each position has at least six employees, which ensures anonymity is maintained.

We used clustering to capture different types of user behaviours across all features. After discussion with the organisation's HR team and to account for the reduced work hours of part-time employees, we corrected their use counts by a factor of three. This equates to 13.3 work hours per week compared to the 40 hours per week of full-time employees. We normalised our data concerning the maximum and minimum use counts individually for each feature and time period to make feature counts comparable and equally weighted. To eliminate outliers, the data was winsorised (98% quantile) and logarithmised. We used agglomerative hierarchical clustering with the Ward.D2 minimum variance criterion and Euclidian distances. Hierarchical clustering has been used in such contexts (Füller et al., 2014), is reproducible, and does not need the desired number of clusters as an input parameter. Also, users added to one cluster remain in that cluster unless the cluster is split into two, which helps determine adequate cluster size. Cluster size was determined subjectively based on the interpretability of the clusters (e.g., Frank et al., 2017). We considered solutions where the breadth and depth of feature use differed substantially between clusters. The 5-cluster solution showed the best split regarding breadth and depth. The gap statistic was additionally computed and indicated an optimal clustering solution of 5 (Tibshirani et al., 2001). Thus, we computed a k-means clustering for the 5-cluster solution in T1 to refine our results. E used the means of our hierarchical clustering solution as initial centroids for k-means (Füller et al., 2014). The k-means centroids from the previous period were used to initiate clustering for the subsequent periods. This procedure assures the comparability of the clusters across periods. We report the results of the k-means clustering in the following.

3.3. Qualitative strand

We aim to elaborate on our quantitative results with an analysis of qualitative data (Venkatesh et al., 2013). To do that, we conducted semi-structured (virtual) interviews with employees of the organisation within the month of June 2020. In September 2021, we conducted an additional interview with a prior interviewee to validate our understanding of his data. We selected interviewees through theoretical sampling informed by our prior findings (Anderson, 2010; Glaser & Strauss, 2009). For privacy reasons, no inferences from a cluster to the users it contains are possible. We found some hierarchical positions to occupy certain clusters predominantly and selected appropriate interview partners based on this information. Participation was voluntary, and interviewees provided informed consent. We conducted ten interviews representing different groups with one head of department, three heads of support functions, one assistant to the head of a department, one operational employee, one administrative employee, and three part-time employees. Additional interviews were not possible due to the organisation's high general workload and occupation adapting to the new work settings and personal changes due to COVID-19. While the diversity of interviewees is a strength, we cannot claim the interviewees to be truly representative of larger groups.

We first introduced the research project in each interview and explained that we treated the recordings and data anonymously and securely. To ensure that interviewees are familiar with MS Teams, we provided a short description. We used a semi-structured protocol allowing interviewees to narrate based on their experiences with MS Teams while ensuring that they addressed our questions (Myers & Newman, 2007). We followed an ethnographic style (Leech, 2002). We started by asking the interviewees about their use of individual features to identify their use behaviour's breadth and depth and allocate them to the cluster they occupy. We refrained from showing them the clustering results to prevent biases. Our protocol included questions regarding reasons that influence

post-adoptive behaviour for the time horizons before and during COVID-19. Each interviewee reported multiple incidents where they had changed their use of MS Teams features. We further asked interviewees whether they had observed changes in their peers' use behaviours.

The interviews were conducted in German, the native language of the employees and took between 30 and 90 minutes. We discussed initial interview results within the team regarding necessary adjustments to the interview protocol. After we completed all interviews, we transcribed them. Two authors independently coded the qualitative data iteratively before discussing and consolidating the codes to identify the relevant drivers and recurring factors that influence individual post-adoptive use behaviour of communication and collaboration technology. We followed the coding guidelines of Grounded Theory and started with inductive open codes that we then aggregated into categories through axial coding (Strauss & Corbin, 1990). After every iteration of our coding process, we discussed results within the entire group of authors. Triangulation was reached by comparison of the responses across interviewees. We found multiple similarities between our inductive coding categories and existing constructs from different established models of IS use literature. This underscores explanation quality (Califf et al., 2020). Thus, these existing categories guided us in the later iterations of the coding process, which resembles more of a deductive coding approach. The complementary mix of inductive and deductive coding allowed us to combine multiple aspects of existing research into a holistic view. After these deliberations, we relabelled the relevant concepts in consensus within the team. Thus, and congruent with other exploratory studies, no intercoder-reliability was assessed (e.g., Califf et al., 2020). We provide example quotes in Appendix A to demonstrate plausibility and provide evidence for the identified concepts from our sample. The authors translated selected direct quotes into English for the reporting in this paper. An ethics committee concluded that the nature of the study does not affect the physical or psychological integrity of the participants and thus waived the requirement for further ethics approval.

4. Quantitative results

4.1. Descriptive statistics

First, we provide descriptive statistics of the feature counts over the four periods. The visual representation of our longitudinal data and trigger events, which relate to the introduction of MS Teams, the introduction of a new feature, and the new WFH-policy are shown in Figure 1. Please note that this data is only available on an organisational level and includes all accounts, not just active employees (e.g., system accounts or accounts of externals). Further, organisational-level data counts every meeting and call only once, while individual-level use data counts them for every participant. Thus, these numbers may deviate from the descriptive statistics provided in Table 1. The organisational data shows a steady increase in activity, particularly regarding Chat. After the introduction of sub-team Channels, the use of the Channels experienced a noticeable spike. Lastly, introducing a new WFH-policy has prompted a sharp increase in the use of all features. This surge is likely a result of the increased need for digital communication. Yet, some downward correction is apparent after the first three weeks of work-from-home, which coincides with the Easter holidays (April 6 2020, to April 18 2020).

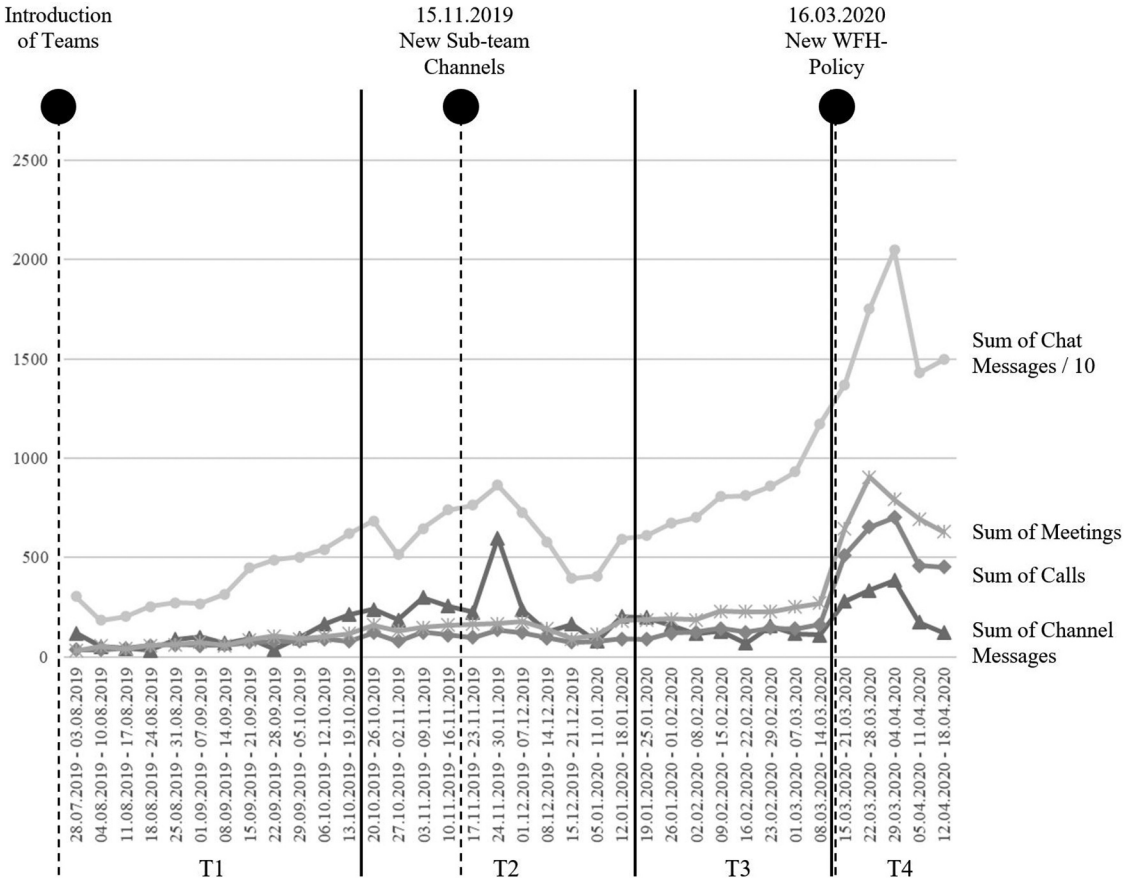
We further report the mean, median and maximum of MS Teams use over each time period (minimum omitted as it is always zero). The results presented in Table 1 further emphasise that MS Teams use has increased drastically during COVID-19 for three features. The data in the cells refer to use counts per employee that we linearly transformed into 30-day periods.

4.2. Individual behaviour over time

Based on prior literature and our descriptive statistics, we investigate whether individual feature use varies between individuals and over time in response to triggering conditions for (technology) sensemaking. Table 2 presents our clustering results. The clusters are sorted by increasing breadth of use across the four features. The cluster names (C0 to C4) reflect the number of features primarily used by its users. A cluster is considered "superior" if more features are used.

We found five distinct clusters showing different levels of feature use, which are consistent over time. Considering that we used normalised data for the clustering, the clusters follow the outlined organisational trend and show an increasing actual use intensity. At the same time, clusters remain comparatively stable over time relative to one another. Yet, the data shows some changes in feature use within the clusters over time. For example, among low-intensity clusters (particularly C0), the use of Meetings has increased during COVID-19 (T4).

Our longitudinal design allows us to analyse changes over time. We find changes in cluster size between the time periods. Clusters C0 (27 users in T1, 19 users in T4) and C1 (18 users in T1, 5 users in T4) decrease in size. Conversely, clusters C2 (25 in T1, 41 in T4) and C3 (46 in T1, 74 in T4) increase. Lastly, C4 peaked in T3 (67) after showing an increase in T2 (61) and decreased during T4



Organisational use of the four features over time.

Descriptive statistics of MS teams feature use (rounded, per 30-day period).

	Chat				Meeting				Call				Channel			
	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
Mean	85	120	193	350	3	5	10	31	1	2	3	12	2	4	3	5
Median	24	51	89	160	1	4	6	25	1	1	2	6	0	1	0	0
SD	142	140	249	464	3	5	10	25	2	3	5	15	5	9	6	13
Max	926	801	1990	3162	16	25	63	123	8	12	22	90	31	77	33	119

Normalised clustering results (largest cluster size across all time periods in bold).

Cluster	Description	T	Chat	Meeting	Call	Channel	Size
C0	Largely passive or little use	1	.06	.12	.05	.01	
		2	.06	.13	.04	.00	17
		3	.16	.17	.04	.00	15
		4	.13	.29	.03	.00	18
C1	Occasional use, primarily of Chat	1	.50	.00	.05	.06	
		2	.64	.00	.20	.13	11
		3	.67	.06	.26	.27	10
		4	.32	.14	.43	.16	5
C2	Use of Chat and Meeting	1	.60	.56	.08	.13	25
		2	.59	.60	.05	.17	31
		3	.63	.62	.14	.02	35
		4	.60	.71	.21	.04	
C3	Use of all features but Channel	1	.70	.65	.61	.13	46
		2	.79	.69	.60	.15	54
		3	.82	.79	.80	.11	54
		4	.82	.82	.72	.11	
C4	Use of all features	1	.86	.79	.69	.71	40
		2	.86	.77	.63	.73	61
		3	.82	.72	.51	.73	
		4	.85	.83	.67	.72	43

(43). Further, it is noticeable that there are few changes between T2 and T3 – a time where neither substantial changes in the technology nor external shocks occurred. It is important to note that a change in clusters means that users vary their behaviour relative to the organisational trend by either showing a decrease, a stronger increase, or different features used (data was normalised within each time period).

The outlined results show that feature use is highly individual and changes over time. While some users just follow an organisational trend, others change their feature use in breadth and depth over time. We thus support that feature use varies over time – particularly when there are technological changes or external shocks. Especially during COVID-19, we find that users tend to use MS Teams at a higher intensity but

that the use of the Channel feature decreased. We proceed with further analysis regarding the explanation of this heterogeneity.

One potential reason explaining differences between individuals may be the organisational hierarchy. Task has long been known to influence user choice in communication and collaboration (Daft & Lengel, 1983; Goodhue & Thompson, 1995; Trevino et al., 1987). The position in the organisational hierarchy can be regarded as a proxy for the task, as every position encompasses specific tasks – particularly regarding communication. For example, Brown et al. (2010) show the influence of task characteristics on collaboration technology use. They base their argument on Dennis et al. (2008), who explain managers' choice of media for communication purposes with their media synchronicity theory. Other studies find an impact of organisational hierarchy on IS use behaviour in collaboration platforms (Frank et al., 2017; Behrendt et al., 2015; Riemer et al., 2015). Hence, we hypothesise that organisational roles influence post-adoptive feature use behaviour and analyse the relationship between clusters and hierarchical positions.

Indeed, some of the hierarchical positions are predominantly present in specific clusters (see, Table 3). The three organisational positions of operational employee, assistant to the head of a department, and head of support function mostly occupy high-intensity clusters (C3 or C4). For all three positions, channel use decreases during T4. This picture is less clear for heads of departments: the quantitative data shows some to be in C0, whereas others occupy C2 to C4. Over time, most of those individuals tend to occupy C2. These results suggest different use styles within the hierarchical level but a general tendency to use digital media less frequently than the other three positions. Administrative employees mainly belong to C0 without major changes during the first three periods. Yet, many switched to C1 and C2 in T4. For part-time employees use varies strongly between C0 to C4. This may be because they have variable work hours and tasks with relatively high variance between individuals. Yet, over time, more than 80% of them are in C2 to C4, which indicates an increase in MS Teams use.

Our analysis suggests clear tendencies between use behaviour and hierarchical positions, supporting the previously stated hypothesis. Yet, we observe a larger spread for some positions than for others. This heterogeneity is subject to further analysis in our qualitative strand.

In summation, our quantitative analysis shows support for varying feature use over time. Yet, some of the use patterns remain relatively consistent over time. Changes are strong in time periods where novel situations, such as new functionalities or external shocks, occur. These changes may be specific to individual features. Additionally, we find hierarchical positions and tasks as potential factors explaining differences between individuals. We proceed to the qualitative results to investigate why changes in use behaviour are observed.

5. Qualitative results

Because of the extraordinary situation presented by COVID-19 and the limitations of our anonymised data set, we conducted user interviews to get a deeper understanding of the circumstances that drove user behaviour. We aim to identify rationales for changes in user behaviour found in our quantitative strand, emphasising the novel situation of work-from-home due to COVID-19.

5.1. Automatic cognitive mode

First, and congruent with the literature, we identify that many individuals do not deliberately think about their use behaviours. This has been described as an automatic cognitive mode of IT use (Ferratt et al., 2018). Research has indicated that the IT use-related habit construct refers to "automatic responses to specific cues" (Polites & Karahanna, 2013, 224). Habit plays an important role in post-adoption literature (e.g., Benlian, 2015; Jasperson et al., 2005) and is "the

Percentage of users in clusters for each hierarchical position and period.

C	Part-time Employee				Administrative Employee				Operational Employee			
	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
0	19%	7%	8%	13%	86%	86%	86%	43%	7%	-	-	2%
1	20%	11%	10%	3%	-	-	-	29%	2%	-	-	-
2	19%	22%	24%	28%	-	-	-	14%	14%	16%	13%	9%
3	21%	25%	30%	33%	14%	-	-	-	48%	41%	38%	60%
4	21%	34%	28%	20%	-	14%	14%	14%	29%	43%	49%	30%
N	Large (>75)				Small (<15)				Medium (40–60)			
C	Assistant to Head of Dept.				Head of Support Function				Head of Department			
-	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
0	-	-	-	-	-	-	-	-	44%	44%	22%	11%
1	-	-	-	-	-	-	-	-	-	-	-	-
2	11%	11%	-	-	33%	-	-	-	-	11%	44%	67%
3	44%	89%	22%	67%	-	-	17%	50%	33%	33%	11%	11%
4	44%	-	78%	33%	67%	100%	83%	50%	22%	11%	22%	11%
N	Small (<15)				Small (<15)				Small (<15)			

extent to which people tend to perform behaviours automatically because of learning" (Limayem et al., 2007, 705). During COVID-19 and work-from-home, some interviewees report that little has changed regarding their use behaviour. For example, Assistant to Head of Department 1 said: "Not a lot has changed, except that I now use MS Teams more because I cannot go to the office anymore. [...] We were already a distributed team before, and many of my daily meetings were already via MS Teams". Another one stated: "the recent changes, particularly because of COVID-19, are mainly intensity-related" (Operational Employee 1). This indicates they automatically apply their previous knowledge about and experiences with IT to this novel situation (automatic cognitive mode).

Interestingly, habitual use of other tools was also mentioned as a factor preventing the use of single features of MS Teams in our interviews. One interviewee, for example, states: "Among part-time employees, it is often the case that people simply send text messages via WhatsApp. [...] Why should I get used to [MS Teams Chat] if I am already used to WhatsApp?" (Part-time Employee 1). These observations point to habit being a strong predictor for feature use. Particularly individuals and groups who have already established use processes and norms for digital communication report this.

However, we observe users switching between clusters in our quantitative strand, which indicates that such habits can be broken and behaviours may change. Thus, and in line with previous research, we distinguish between habitual use behaviour, which relates to an *automatic cognitive mode*, and a *conscious cognitive mode*, where individuals make deliberate use decisions (Ferratt et al., 2018; Jasperson et al., 2005; Venkatesh et al., 2012).

5.2. Trigger events for sensemaking

We propose that changes in post-adoption use behaviour happen when individuals deliberately think about their use, change their cognition and turn to new behaviours – a sensemaking process. Asking interviewees about changes in their feature use, we found that this sensemaking process starts when a trigger event, such as a novel situation, occurs that causes uncertainty and requires adaptation. Our interviews identified several trigger events that caused individuals and teams to evaluate their prior use processes. The conditions reported in the interviews represent novel situations that interrupt the automatic cognitive mode and provide uncertainty on whether the habitual use is still adequate. Conscious processing leading to the reflection of use behaviour generally occurs due to a stimulus (Jasperson et al., 2005). Part-time Employee 3 relates to this deliberate process: "I also evaluated which kind of communication I will use MS Teams for and for which communication I will stick with the old tools".

Trigger events for such sensemaking may be a *change in task* (most often through a change of hierarchical position). Such a change may lead to different feature use: "With the change in position, I obtained new tasks and so, I changed the way I communicated" (Head of Support Function 3). Also, with a *change of team*, the feature use reportedly changes frequently: "Recently I have changed teams, and since then I also use the Channel function, because the new team uses it to communicate internally" (Part-time Employee 2). Further, a *change in the technology features*, in this case, the ability for users to create sub-teams within their team channels, was mentioned. Head of Support Function 2 reported: "Since this new functionality [of sub-teams in Teams channels] exists, our use has changed massively – not just in the sub-channels but also in others". Similarly, the *introduction of an IT system* like MS Teams itself could be seen as a trigger condition (Griffith, 1999). Part-time Employee 2 reports: "I used it pretty much directly. I thought [MS Teams] was appealing and [one of my teams] was pretty quick to adopt it – so I got to know the tool very quickly". Finally, interviewees also report that the *introduction of new work policies* (specifically WFH-policies associated with COVID-19) led them to reassess their use of digital communication and collaboration tools. "Every exchange in person is now done with [MS Teams] Chat; every telephone call is now done with [MS Teams] Call" (Head of Support Function 3). Overall, our interviews mention various trigger events that trigger the switch from an automatic to a conscious cognitive mode.

5.3. Conscious cognitive mode

We highlight exemplars for deliberate use decisions and how the individuals restored or changed their use processes in response to new senses. For example, we heard about a deliberate change due to the introduction of MS Teams: "Through trial and error, we found out when the usage [of teams channels] made sense and when not. Our usage changed, but not necessarily in one direction. It was more a zigzag course until we found out what works best for each sub-team" (Head of Support Function 2). The interviewee further reported that the resulting use was rather stable once established. Others mentioned that "[The introduction of sub-team channels] fit well with a new project that I had. There, we were able to try and consider to what extent we want to use it" (Part-time Employee 3). During the work-from-home situation, an administrative team realised: "It was difficult to explain something via e-mail. We often had misunderstandings. In

one hour, we had 45 e-mails. We then decided, 'it cannot go on like this – what can we do?'. From then on, we asked people to call us via MS Teams in such situations" (Administrative Employee 1). It is evident from the reports that sensemaking revolved around the task at hand and that often single features of MS teams were affected. It also shows that *creation* and *interpretation* of senses and *enactment* were often circular or reoccurring within the sensemaking process until a stable condition was reached.

5.4. Restoring task-technology-fit

Interviewees described that their *task* influences the way MS Teams is used. Individuals select different features for the various communication and collaboration tasks. "For knowledge-intensive tasks, you cannot chat, you must use the Call function. For coordination tasks, you can chat or call" (Operational Employee 1). Multiple other interviewees echo this.

At the same time, they see the *technology* itself as a decisive factor. Social presence describes "a technology's ability to transmit nonword cues (e.g., voice inflexion) and nonverbal cues (e.g., gestures, facial expressions)" (Brown et al., 2010 p. 19). Interviewees explain that they choose Meeting rather than leaner features (e.g., Channel) because "you still see each other", which was important during COVID-19 for lack of personal interaction (Administrative Employee 1). Head of Department 1 relates: "Communication is also about personal interaction, which can hardly be replaced by a video conference and is also very important from a social aspect", explaining the choice of face-to-face interactions over MS Teams use before COVID-19.

Also, reprocessability was found to be an important technology characteristic. Administrative Employee 1 reports that "due to the task, [the team] communicates mainly via e-mail since everyone [. . .] can see prior messages". Hence, the task demands creating records of communication. This is congruent with media synchronicity theory which suggests reprocessability determines media choice and describes it as "the extent to which the medium enables a message to be reexamined or processed again" (Dennis et al., 2008, 587).

The importance of individual communication tasks regarding use becomes especially apparent during COVID-19. For some users, their tasks do not demand increased use of MS Teams features. For example, Head of Department 1 states he has many planned meetings in his regular workday: "as head of department, I am barely involved in ad-hoc topics. Rather, I have many regular meetings during my workday". Therefore, COVID-19 only influenced his use of one feature: Meeting. Administrative Employee 1, who reported the necessity to reprocess records of communication, does not see the "need to change anything from using e-mail at the moment" due to the nature of the task. This shows that individuals evaluate their options for digital communication and make deliberate use decisions based on *task-technology-fit* that seems plausible to them. Task-technology-fit is the "degree to which a technology assists an individual in performing his or her portfolio of tasks" (Goodhue & Thompson, 1995, 216). It is a highly individualised assessment that depends on individual tasks and personal judgment.

Congruent with our quantitative findings, most respondents reply that they used MS Teams features more intensely once the lockdown due to COVID-19 caused them to work from home. The reason is that social-distancing measures made in-person communication unavailable, which affected the perceived task-technology-fit for some users regarding some tasks. Further, we found that even for passive users, the Meeting feature increased substantially during COVID-19. We attribute this to the fact that video calls are the second richest medium after the unavailable in-person meetings. Other users had previously worked in distributed teams and had established digital use processes that do not rely on in-person communication.

5.5. Sensemaking resources

Several other factors influence sensemaking and, thus, the conscious use decisions. Previous research has summarised these as *sensemaking resources*, specifically individual, organisational, and network resources (Mesgari & Okoli, 2019). We follow this framework and present insights gained through our interviews along these categories. Table 4 summarises the sensemaking resources.

Individual sensemaking resources relate to the user's individual identity and include mental maps and existing knowledge structures (Mesgari & Okoli, 2019). Particularly with administrative employees, we find a lack of *technology self-efficacy* to influence MS Teams use negatively. For example, Administrative Employee 1, whose self-reported usage behaviour matches C0, says that the low use of MS Teams is "probably also due to my [lack of] technical know-how". Technology self-efficacy is the belief in one's ability to use computer technology (McDonald & Siegall, 1992; Venkatesh & Davis, 1996).

Other such resources are *past experiences* (Venkatesh et al., 2003), particularly with digital technologies and work in distributed teams. Mainly interviewees who reported no major changes in use besides an increased intensity mentioned this factor. Assistant to Head of Department 1 reports, "we had already worked in a distributed world before. For example,

Factors that contributed to individual sensemaking during COVID-19.

Resource Types	Contributing Factors	Changes with Social Distancing Measures due to COVID-19	Example Quote
Organisational Resources	Resource-Facilitating Conditions	Organisational investment in proactive technical support	"I have the incredible luxury of having the IT department at my side, explaining it to me and setting it up over hours".
	Technology-Facilitating Conditions	Organisational investment in digital infrastructure	"Because we have no microphone and no headset here at work, and we were the last to be upgraded to Windows 10".
	Available Technology	Already high maturity of communication and collaboration technology before the pandemic	"Only after we were able to change team Channel privacy, we started to use this functionality".
	WFH-Policies and Recommendations	Recommendation for digital tools to maintain communication; all organisational meetings, such as jour fixes, pushed to MS Teams	"We were encouraged to do more things via MS Teams. For example, with mentoring, the organisational recommendation was to do it via teams rather than not do it at all".
Network Resources	Team Norms	Team efforts to find new norms for remote work	"Answering questions via chat does not work for us because we work as a team. We can access each other's e-mails, but not the chat – so it would not be documented and retraceable what happened".
	Superior Influence	Maintaining close contact with superiors had to go through digital communication	"My boss did not like to communicate via WhatsApp. Therefore, we quickly moved our communication to MS Teams".
	Peer Influence	Peer group expands beyond geographically close contacts, shifts to others with similar tasks	"I was also in contact with [colleague from other location] via teams. It was great syncing with her: how are they doing it, how are we doing it"
	Network Externalities	Better reachability of colleagues increases network effects	"In the long run, MS Teams [Chat] has become more used by everyone and therefore, more useful".
	Geographic Proximity	Increased work-from-home decreases proximity	"MS Teams meetings were used for all meetings where it was clear from the outset that they were not in the same location".
Individual Resources	Technology Self-Efficacy	Necessary exposure to IT reinforces self-efficacy beliefs of individuals with low IT confidence	"For me, the first week with MS Teams was chaos, but that's probably also due to my technical know-how. [. . .] If you don't have to deal with it, then you don't do it. For us [older people], there is a greater entry barrier than for the young people".
	Past Experiences	Previous experience working with individuals from other locations became valuable	"Which tool is ultimately used is based on habit. The Heads of Departments are used to simply writing e-mails".
	Cognitive Capacity	Increased digital communication within the organisation leads to a higher cognitive load	"My attention is on e-mails, chat and calls – it's not possible for me to follow the team's channels in parallel as well. That's too many channels. When the team actively needs me, they write e-mails or chat messages".

our daily team meetings have always been via teams". Such individuals already have mental models to which they can revert.

Lastly, interviewees mentioned issues with information overload related to a given *cognitive capacity* (Speier et al., 1999), which is taxed or exceeded with increased digital communication. "My attention is on e-mails, chat and calls – it's not possible for me to follow the team's channels in parallel as well. That's too many channels. When the team actively needs me, they write e-mails or chat messages" (Head of Support Function 1). This was mentioned particularly by individuals higher up the hierarchy. While heads of departments have always been reluctant to use chat and channel frequently, heads of support functions and assistants to the head of a department became reluctant with an increase in digital communication in T4.

Network resources are important in the social process of sensemaking where interpretations and feedback of others influence individual sensemaking (Mesgari & Okoli, 2019). Team norms influence sensemaking because "ultimately, it is a team decision through which feature to communicate" (Operational Employee 1). Further, "the use of Channels depends on the team. Some teams use the feature, and some do not. So, my use also changes with the teams I'm in" (Assistant to Head of Department 1). It was reported that several teams in the organisation started developing new norms on how to communicate and interact with a majority working from home in T4. These new team norms have likely influenced post-adoptive MS Teams use during COVID-19, particularly for channels, where small teams tend to report little use, and larger teams have established team-wide routines for coordination among the team.

Similarly, we find evidence for *social influence by superiors and peers*, which is the "degree to which an individual perceives that important others believe that he or she should use the [new] system" (Venkatesh et al., 2003 p. 451). Head of Support Function 2, who considers himself one of the most active MS Teams users of the organisation, states: "When I still got messages in Skype for Business, I always answered to write in MS Teams [Chat]" (Head of Support Function 2). For example, a head of a department,

who is likely a passive user of the Chat function, relates: "Sometimes young employees wrote to me via MS Teams, so I pointed out bilaterally that they should write me an e-mail instead" (Head of Department 1). These results indicate that preferences of other individual team members and emergent team norms substantially influence the individual users' sensemaking.

In the early phases of a new collaboration and communication tool, *network externalities* have been found to play an important role. Network externalities refer to "the positive external consumption benefits as a result of technology use. That is, a user will benefit more from a technology as the total number of users for this technology increases" (Lou et al., 2000, p. 94). Our interviews echo this, particularly for the Chat function. Employees report that "in the long run, MS Teams Chat has also become more used by everyone and therefore more useful" (Part-time Employee 1). This appears to be consistent among employees who appreciate that they can now reliably reach many colleagues through MS Teams. Yet, extended availability seems to be a personal preference, where "some people are available basically until they go to bed" and others are not. "If I don't expect to get an immediate response from someone via Teams Chat, I rather use e-mail to contact them", reports Head of Support Function 3. Better reachability became especially evident in T4 when more people started actively using MS Teams and could be reliably reached: "I started to use the Call function with the video functionality to start interacting with people. Before that time, I would have probably used the Chat" (Part-time Employee 3). "I now assume that the other person is sitting in front of the computer, and I just try to call [via MS Teams]" (Head of Support Function 3).

Further, *geographic proximity* affects MS Teams use, which refers to the geographic distribution of the members of a group (Massey & Montoya-Weiss, 2006). With different geographic locations of the team members, meetings cannot be held in person and must be moved to Teams: "MS Teams [Meeting] was used for all meetings where it was clear from the outset that you were not in the same location" (Head of Support Function 3). While this was already the case for distributed teams before COVID-19, we naturally find that geographic proximity was drastically reduced due to work-from-home.

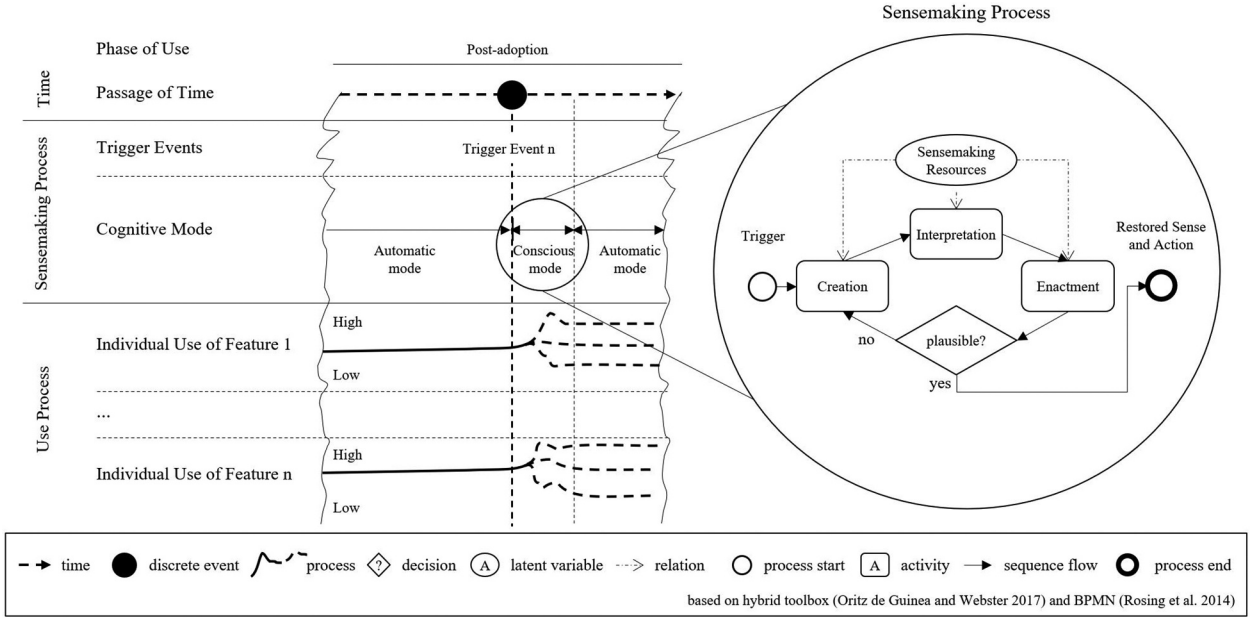
Organisational resources are context-specific factors that aid individuals in their sensemaking (Mesgari & Okoli, 2019). Regarding this study's focus, organisational factors surrounding the used technology and WFH-policies are relevant. For example, some interviewees mentioned that they were not able to use all MS Teams features: "because we were the last to be upgraded to Windows 10" (Administrative Employee 1). This represents a lack of *technology-facilitating conditions*, which refer to technical compatibility issues (Brown et al., 2010). The same interviewee reported that the team "[has] no microphone and no headset here at work". Yet, during COVID-19, the organisation's technical support helped them overcome barriers: "I have the incredible luxury of having the IT department at my side, explaining it to me and setting it up over hours" (Administrative Employee 1). Thus, we identify *resource-facilitating conditions* as a second influencing factor regarding the organisation related to the availability of time, money, and infrastructure (Brown et al., 2010).

Further, the WFH-policy and the organisation's associated recommendations are resources for individual sensemaking. As pointed out, the organisation called for their employees to maintain high levels of communication and rely on digital tools. One interviewee mentioned, "We were encouraged to do more things via MS Teams. For example, with mentoring, the organisational recommendation was to do it via teams rather than not do it at all". (Head of Support Function 2).

6. Model synthesis

Our quantitative results show that individual feature use varies over time and that substantial changes across multiple individuals occur when novel situations trigger sensemaking processes. As a result of the sensemaking process, a stable automatic use behaviour forms. To account for this, we create a hybrid model that combines the process nature of sensemaking with the technology use outcomes (Ortiz de Guinea & Webster, 2017). Figure 2 depicts the model of sensemaking and post-adoptive communication and collaboration use. The model uses the hybrid toolbox as suggested by Ortiz de Guinea and Webster (2017) and some elements of BPMN (Rosing et al., 2015).

The hybrid model shows the passage of time and the corresponding trigger events for technology sensemaking. These events trigger the sensemaking process in a conscious cognitive mode (Louis & Sutton, 1991). This is also referred to as a sensemaking episode, where the individual tries to make sense of the situation through creation, interpretation, and enactment (Sandberg & Tsoukas, 2015). Through enactment, individuals adjust their use processes according to their preliminary sense and get feedback for subsequent creation and interpretation. Individuals resort to their sensemaking resources to construct an initial sense of a situation and receive feedback. If the sense created in this process is not yet plausible to the user, the process continues. This circular relationship causes the zigzag-motioned adjustment in use behaviour mentioned in our interviews. Users have successfully restored their sense and action if the created sense is plausible. Future use reverts to an automatic



Hybrid model of sensemaking and post-adoptive communication and collaboration use.

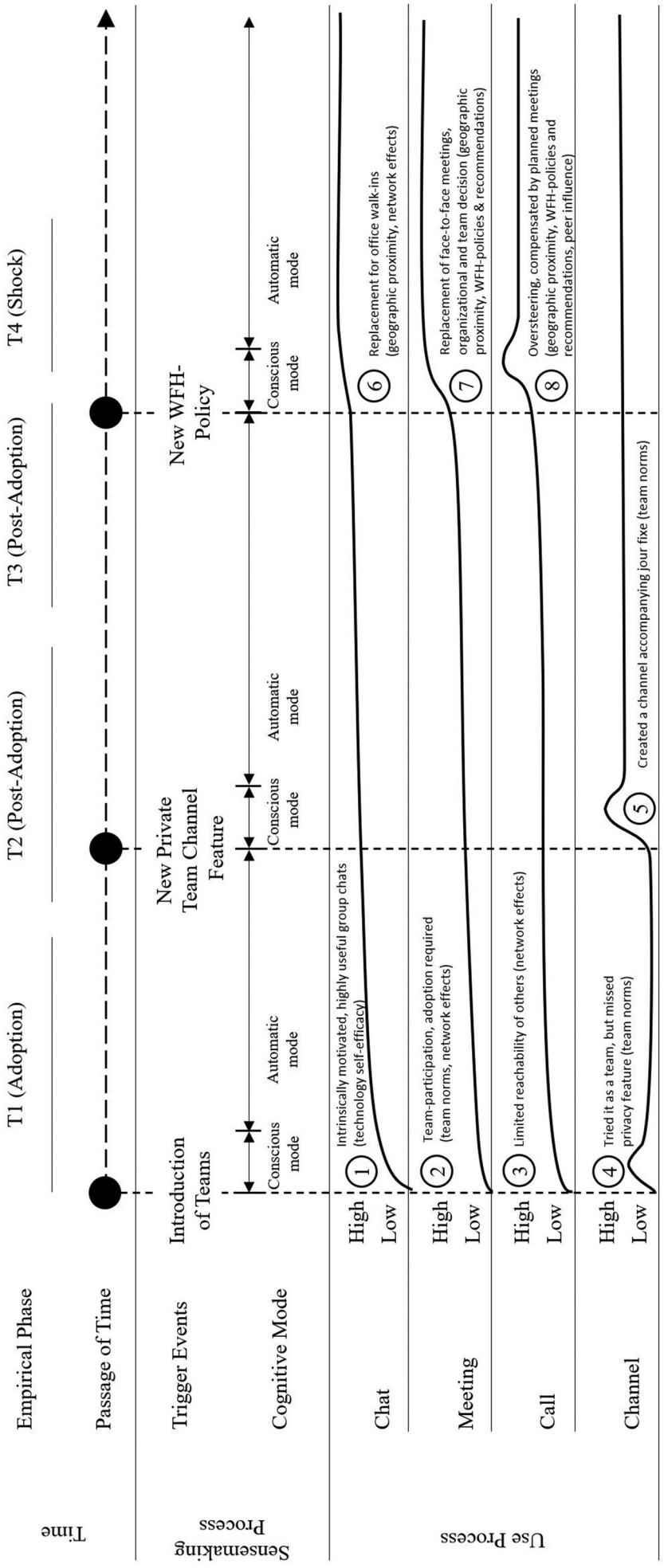
cognitive mode and forms new habitual behaviour over time. A fluctuating line between low and high in the hybrid model depicts the corresponding changes in individual feature use. Straight lines represent no change.

It is important to note that whether and how individuals adapt their use long-term after the conscious cognitive phase depends on the plausibility attributed to the created senses. In other words, individuals draw from their individual experience and resources, such as organisational guidelines, to create and validate senses about a plausible fit between the task and technology that is congruent with their social norms and has the potential to restore their interrupted organising. Depending on the feedback they receive, they may also conclude that no adjustment is necessary and revert to old habits and use patterns. Thus, how feature use is affected depends on the individual sensemaking process. Examples of such alternative outcomes are depicted through dashed lines in Figure 2. We proceed to illustrate this through instantiations.

7. Model instantiation and examples

Data of the Head of Support Function 2 allowed us to reconstruct his use patterns and illustrate the hybrid model of sensemaking and post-adoptive communication and collaboration use. We started by analysing the transcript from his first interview again. A second interview in September 2021 allowed us to obtain his feedback on whether all use patterns were accounted for correctly. We also received permission to assess his actual use frequencies and found that he belongs to cluster C4 in all time periods. Figure 3 shows his use of MS Teams features and the sensemaking process. While our model focuses on post-adoption, we also consider T1, which is the adoption phase. Prior literature has extensively argued that introducing technologies triggers sensemaking (Griffith, 1999). Therefore, we start our instantiation with the adoption phase and show how use behaviour changes due to sensemaking in the post-adoption phase. Note that cluster means are normalised for a given time period while the lines in the model shown in Figure 3 are not normalised. We provide a second instantiation of a less active user in Appendix B to illustrate the other end of the spectrum of use patterns.

At the point of adoption and regarding Chat (1), the individual reported to be highly self-efficacious and intrinsically motivated to use chat. He reported that the chat functionalities provided by MS Teams offer great ways to communicate efficiently – particularly through group chats. While he recognised the advantages of meetings (2) early, he pointed out that "the whole team must be in it and the hurdle for that is higher. Thus, it wasn't a big bang but took some time", which emphasises the role of team norms. For Call (3), he pointed out that the reachability of others was first limited because "people took some time to recognise the advantages, but after that more were reachable". For Channel, "we tried, but it didn't really work. Not everybody saw the messages immediately, and therefore it kind of dropped off". This changed with the introduction of the private sub-team feature (5): "I literally thought this is the solution to all problems – I later came to realise that it is not. But we did use it for specific things, such as a channel that accompanies our weekly



Hybrid model of teams use exemplarily instantiated based on data of head of support function 2.

meetings, where we post updates on those issues". He also stated that this "substantially changed our usage of MS Teams – also for other sub-team channels".

With the new WFH-policy, Chat (6) changes were moderate, but he deliberately decided to replace walk-ins to offices with MS Teams Chat as the geographic proximity decreased. "Calls are too invasive because I expect the person to be instantly available, e-mails are too long, so I chose chat". He further reported that network effects were at play: "I started with people that I knew used Teams and it worked well. Later, I started chatting with individuals I had never chatted bevor. Some had never been available and now suddenly were". He explained that he replaced physical meetings with MS Teams Meeting (7). His use decision mainly followed organisational recommendations and team decisions. "That wasn't an individual decision – you were part of a group where others had a say or decided. But we were encouraged by the organisation to do more things via Meeting. For example, coaching-related meetings or coffee meetings".

Regarding Call (8), the availability of others (network effects) raised the feature's utility and resulted in increased use. Yet, an initial oversteering was noted that resulted in too many calls that others found invasive. He reported that: "Phone calls have always been considered an exception. It wasn't initially clear if that was the case for MS Teams calls too. Later we learned as a collective that it was ok to decline MS Teams calls". Yet, he reported that in some instances where he initially called via MS Teams, he scheduled Meetings in the subsequent weeks due to peer influence.

We further relate other observations from our study's qualitative and quantitative strands to the hybrid model. Administrative employees were confronted with a situation where existing use processes were to use a combination of face-to-face communication and email as a primary source of communication. They reported that this seized to work because of physical distancing and information overload. After deliberation among peers, they decided a change was necessary (peer influence). Because users were provided with headsets and received extensive assistance from the IT department during COVID-19 (facilitating conditions), they overcame their lack of experience and technology self-efficacy and found a plausible solution to restore sense and action. The solution was to use the Call function for some internal requests. This led several administrative employees to occupy cluster C1 (which has a high level of Calls in T4) rather than C0. We provide a visual instantiation for Administrative Employee 1 in Appendix B.

Heads of support functions had previously used many features but reported that they had limited cognitive capacity to follow all digital communication after it had increased during COVID-19. The Channel feature, often used for documentation of operational processes, was deprioritized as a result. New team norms were established where subordinates contacted heads of support functions directly via Chat if they needed assistance or input. We see changes from C4 to C3 in our quantitative data for head of support functions and other employee types that substantiate this finding.

Despite some of these substantive changes, the quantitative data also suggests that several hierarchical levels remain relatively stable in their distribution across clusters. For example, the breadth of feature use remains relatively stable for heads of departments. They already occupied cluster C2 in T3 and remained in it after the new WFH-policy was introduced. The qualitative data suggests they have always avoided high levels of synchronous digital communication, such as Calls (cognitive capacity). Instead, they mainly maintained digital contact with employees via Meetings (and Chat in some instances). Yet, their use intensity of these features increased following the organisational trend. This suggests that existing behavioural patterns continued to be plausible to them.

8. Discussion

This paper examines heterogeneous post-adoptive feature use behaviour in communication and collaboration tools and the individual changes that COVID-19 and the mandatory WFH-policy had. It thus addresses the need to better understand post-adoptive use (Bagayogo et al., 2014; Benlian, 2015). Our study shows that novel situations trigger individual sensemaking processes and may result in an adaptation of use. We aim to learn from the external shock of COVID-19 to understand its effects regarding post-adoptive use of communication and collaboration technology. In the following, we discuss our findings and integrate the qualitative and quantitative results by providing meta-inferences (Venkatesh et al., 2013; Venkatesh, Brown et al., 2016). With the purpose of complementarity, we provide rich insights into the investigated phenomenon by combining quantitative insights on changes in use behaviours and qualitative insights on the factors that drive them.

8.1. Summary of findings

Regarding our first objective, we find that feature use changed in the post-adoptive phase from the introduction of MS Teams to an external shock. We further find that these changes affect individuals heterogeneously in our quantitative analysis. The results thus challenge the existing presumption that post-adoptive use growth rates decrease over time (Benlian, 2015). Rather, our findings suggest that individual feature use behaviour may vary over time for communication and collaboration

technology. This is congruent with other prior work (e.g., Bagayogo et al., 2014; Jasperson et al., 2005; Kim & Malhotra, 2005).

Yet, in line with research on post-adoption, we also find habitual use to play an important role in determining use behaviour (e.g., Venkatesh et al., 2012). We could relate many changes in use to trigger events that cause individuals to break existing habits. Following this study's second objective, we attribute changes in use behaviour to sensemaking triggered by novel situations through which post-adoptive use is deliberately altered (Jasperson et al., 2005).

Our interviews revealed that novel situations can induce changes in use behaviour. This is in line with previous research that finds novel situation to present triggering conditions for individual sensemaking (Griffith, 1999). For example, we find that new tasks, new teams, or changes in WFH-policies often lead to a change in use. Building on existing literature, we argue that such novel situations induce sensemaking, which may lead to changes in use behaviour.

Prior studies on IS use, particularly regarding communication and collaboration, often focus on the influence of static intentions on static technology use. Yet, to the best of our knowledge, the reasons and effects of drastic changes in use have scarcely been considered so far. Without consideration of sensemaking and the conscious cognitive efforts, changes in antecedents (such as geographical proximity in the case of work-from-home) would only influence user behaviour marginally. However, several changes observed in our study go beyond such marginal shifts. We consider this an empirical contribution that challenges existing views (Ågerfalk, 2014; Ågerfalk & Karlsson, 2020).

8.2. Formal propositions

This study's focus and novelty lie in consideration of an external event (COVID-19) and an associated change (decreasing co-workers" geographical proximity due to mandatory WFH-policy) as a trigger event for sensemaking. We observe that while use skyrockets organisation-wide, changes in individual use are heterogeneous due to different 'organising tasks', the users" individual resources and, individual sensemaking processes. The study reveals four main propositions about post-adoptive use behaviours of communication and collaboration technology following an exogenous shock that provides such a novel situation. Besides WFH-policies to contain a pandemic, other examples for such situations would be a move of parts of the workforce to a different location, mergers and acquisitions, corporate restructuring, or a shift in employment policy providing freedom to work remotely. The following deliberations and factors seem particularly pressing in such situations regarding post-adoptive use of communication and collaboration technology. We thus propose:

Proposition 1: An exogenous shock that causes a novel situation, such as a change in geographic proximity of co-workers, a change in tasks or a change in teams, triggers sensemaking episodes that may result in a substantial change in post-adoptive use behaviour of communication and collaboration technology.

As has been pointed out, the result of sensemaking may be either no change in use behaviour, short-term change as part of a conscious cognitive mode followed by a return to the old behaviour, or a sustained change in use behaviour. When we refer to a *substantial change* in the following, we consider individual sustained changes relative to the organisational trend, which may increase or decrease because of network effects or changes in demand.

We propose that changes in use behaviour are related to the level of experience with the use of a digital communication and collaboration technology is an important influencing factor on the level of change in use behaviour. Individuals with low technology self-efficacy are least likely to have previously used the digital tools and have not established mental maps or other experiences that they can relate to. The novel situation triggers them to acknowledge that old habits are not plausible ways to deal with the novel situation. Because these individuals have low levels of self-efficacy and experience, they also have the biggest need for assistance in these situations. On the flip side, users with high levels of previous experience have already established work routines, practised versatile use, and created mental maps to deal with similar situations (in the instance of WFH this relates to work in distributed teams). Therefore, they have a lower need for conscious adaptation of work and use routines. We thus propose:

Proposition 2: In response to an exogenous shock that causes a novel situation, the level of a user's previous experience and technology self-efficacy determine the likelihood for a substantial change in post-adoptive use behaviour of communication and collaboration technology and the need for assistance to master the potential change.

Sensemaking is a social process. Norms and guidelines from other organisational actors serve as input for initial senses and feedback from the environment helps substantiate these senses. Multi-lateral communication and collaboration technologies comprise features used by multiple members of the group – either simultaneous or asynchronous. Use depends on team

characteristics, such as size and work routines for such features. This fits with previous research suggesting that individuals do not necessarily create their own senses but rely on existing ones from their social environment (Mesgari & Okoli, 2019). Our findings indicate that individuals and teams engage in social sensemaking and negotiate with others to find converging senses. We thus propose:

Proposition 3: In response to an exogenous shock that causes a novel situation, use decisions for multi-lateral collaboration and communication result from a social process that explains differences between teams and groups.

We further find that an increase in digital communication decreases superiors' use (in relative terms), for example, by limiting synchronous multi-lateral communication to reduce overload. We suspect that we see this more for individuals higher up the hierarchy. These individuals have more autonomy to choose their working mode, are less influenced (or not influenced) by their superiors and can more readily rely on others to adapt their communication style to suit theirs. Previous research indicates that multilateral platforms and enterprise social networks reduce the hierarchical distance (Behrendt et al., 2015). Possibly, they seek ways to reintroduce this distance to avoid the overload of digital communication. For example, heads of departments often deliberately refrain from using Chat, because they are in (digital) meetings for most of the day and do not desire the immediacy of the Chat feature. They instead push towards the use of asynchronous media, such as email. This is congruent with the media synchronicity theory, which mentions that managers tend to use email to convey information (Dennis et al., 2008). We thus propose:

Proposition 4: A novel situation that increases use of digital communication and collaboration on an organisational level makes individuals higher up the hierarchy find ways to decrease their exposure to information overload.

8.3. Theoretical contributions and implications

Through the combination of quantitative and qualitative data, we derive rich insights into the reasons for the use of communication and collaboration technology. These insights deliver two theoretical contributions: (1) a hybrid model on substantial changes in post-adoptive use behaviour of communication and collaboration technology and (2) propositions on such post-adoptive use behaviours following an exogenous shock that provides a novel situation.

The hybrid model can explain the drastic yet heterogeneous changes in use behaviour due to COVID-19 and provides influencing factors for the sensemaking process. This model combines previous literature on communication and collaboration technology, post-adoptive IS use, and sensemaking. The model consists of two elements: First, our hybrid model considers that non-reflective habitual use occurs as part of an automatic mode that is strongly based on prior use history (Jasperson et al., 2005). We propose that deliberate changes in use behaviour through technology sensemaking can be triggered as a result of novel situations. The underlying decision is largely driven by a judgment on the fit between task and technology (Goodhue & Thompson, 1995). Depending on the outcome of a cycle of creation, interpretation and enactment, use decisions are altered and may become habitual again. In that regard, our work has important parallels to existing conceptual work on type 1 and type 2 cognitive processes and IS use (Ferratt et al., 2018). What separates sensemaking from cognition is action (e.g., Sandberg & Tsoukas, 2015). The sensemaking perspective suggests that individuals make sense of actions retrospectively and receive feedback from their social environment. A zigzag-motioned adaptation of use processes in our qualitative results substantiates this view. For methodological reasons, empirical evidence on sensemaking is scarce (Weick et al., 2005).

Second, we provide influencing factors that affect individual sensemaking based on a framework for technology sensemaking resources (Mesgari & Okoli, 2019). We find relevant factors to correspond to previous work on communication and collaboration characteristics (Brown et al., 2010) and extend those characteristics through network externalities (Sykes & Venkatesh, 2017) and cognitive capacity (Speier et al., 1999). Many of these factors have previously been linked to well-known constructs of technology acceptance models (Brown et al., 2010).

The four propositions build on and abstract from the specific empirical findings. They summarise findings specific to the novel situation and suggest relationships to be explored in future research. They relate to the nature of novel situations, relationships between hierarchical positions and use behaviour, and sensemaking resources that have been consistently mentioned in the qualitative interviews. They further combine these factors with the outcome variables of changes in use behaviour.

These contributions' implications for future research are: First, they allow us to understand substantial changes in heterogenous individual post-adoptive use behaviour of communication and collaboration technology. This study helps explain why some user groups did not change their use of communication and collaboration features while others

did. It could also explain differences between organisations, for example, where tasks and available technology are different. COVID-19 will most likely not have been the last external shock. Other epidemics or catastrophes and organisational-specific shocks could create similar situations, such as mergers and acquisitions or organisational expansions to distributed locations. The model will help analyse and potentially predict user behaviour in such situations. Future research may use our propositions and model for confirmatory research inquiries into the matter.

Second, even without external shocks, the model of sensemaking and post-adoptive communication and collaboration use helps understand changes in post-adoptive use behaviour and the interplay with existing theories on communication and collaboration technology use. For example, we find evidence that changes in teams or tasks create similar situations, where employees re-evaluate and potentially change their use behaviour.

Third, our propositions are theoretical statements developed based on empirical grounds. They propose the relation between specific concepts in the particular context of post-adoptive use behaviour of communication and collaboration technology in novel situations. Future research may build on these propositions and test, support, doubt, deny, detail, or refine them to advance our knowledge of post-adoptive use behaviour of communication and collaboration technology.

8.4. Managerial implications

The managerial implications derived from our research are twofold: First, our model assists practitioners in being prepared and reacting quickly if shocks occur. It provides insights on how companies can leverage novel situations to break habits and trigger new use behaviours. The driving stimulus does not have to be a pandemic but can also be mergers, opening a new location, or a radically new HR strategy. We do not suggest creating such situations artificially but taking advantage of them by stimulating and supporting the technology sensemaking processes that take place. As our model indicates, organisations can act on an individual, group, and organisational level. They can, for example, foster individual technology self-efficacy by offering training, foster the development of new team norms regarding communication and collaboration, or provide necessary personal or monetary resources and compatible technology equipment to assist in the transformation from an organisational perspective. An example of the applicability of those recommendations is that MS has announced the introduction of a functionality that will allow managers to see emerging after-hours collaboration norms for their teams (Schafer, 2020). Further, prior literature suggests that individuals may also adopt available senses rather than make sense of a situation themselves (Mesgari & Okoli, 2019). Thus, managers or other assigned multipliers can act as sensegivers that advise users and encourage them to break existing habits in such phases.

Second, even if there is no such external shock, companies can use the model to identify potential novel situations that can induce technology sensemaking and lead to altered post-adoptive behaviours. Organizations aiming to influence post-adoptive communication and collaboration behaviour should be aware that novel situations result from a change in the portfolio of tasks, a change of the role in the organisation, the relocation of employees, or a change of geographical proximity through work-from-home or setting up distributed teams. It is essential to support employees in these circumstances and help them in their transition as they question old habits and form new intentions.

9. Limitations and further research

Our study is based on only one organisation and, thus, on a limited sample. The organisation under investigation is rather tech-savvy and operates in a knowledge-intense domain, which speaks for a high perceived usefulness of the tools. Hence, our data may be limited in generalisability to other organisational contexts. This is also true for the limited sample of user interviews. Further research may include other cases and different types of organisations to account for organisation-specific differences and other tools and features to account for technology-specific differences.

Secondly, the quantitative data available to us has some limitations as it only contains use counts for the four core features of MS Teams. This study falls short of considering communication and collaboration features more broadly. While there does not appear to be a consensus on which functions encompass communication and collaboration tools, previous research has listed further functions, such as email, wikis, notepads, collaborative document sharing, as well as shared calendars (e.g., Parker & Ingram, 2011). Users can access some of these via MS Teams "Apps & Services", such as MS Planner, MS OneNote, or the MS Outlook calendar. Yet, there is no usage data available within MS Teams. Further, the features considered in this paper aggregate quite broad sets of functions. While the literature suggests that parsimonious operationalisations create consistent empirical results, a more fine-grained conceptualisation of features could enrich our understanding in the future.

Thirdly, the time span of our analysis only includes quantitative data until April 2020. We encourage further research to regard post-adoptive user

behaviour after the first peak of COVID-19 and to identify long-term changes in user behaviour. Such insights will further help validate our view of the new normal. It will be interesting to see what habits will remain and which ones will again be broken after the forced work from home due to COVID-19. Further, we encourage future research to test our proposed model empirically, challenge the relationships and factors deduced from our analysis, and test and refine the propositions.

10. Conclusion

COVID-19 drastically changed how employees collaborate and caused a sudden surge in digital communication and collaboration tools. Researchers and practitioners predict remote work will likely be a central element in the new normal in organisations. Thus, a detailed understanding of user behaviour and its drivers in post-adoption is needed. We address this need by investigating the heterogeneous post-adoptive user behaviour of communication and collaboration technology within an organisation. We were able to show quantitatively that such post-adoptive use behaviour substantially changes for some users because of novel situations, such as the caused by mandatory WFH-policies during COVID-19. This study attributes these changes to individual sensemaking processes triggered by the novel situation. Thus, WFH-policies due to COVID-19 broke habits, created new intentions, and changed use behaviour. Additionally, we identify individual, network and organisational resources that influence the sensemaking process and present changes to these factors due to the novel situation. Our research provides avenues for future research and has implications for practitioners aiming to shape use behaviour in such novel situations.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This paper presents and discusses results of the Bavarian Research Association on Healthy Use of Digital Technologies and Media (ForDigitHealth), funded by the Bavarian Ministry of Science and Arts.

ORCID

Manfred Schoch http://orcid.org/0000-0002-4963-9257
Henner Gimpel http://orcid.org/0000-0003-1730-2614

References

Ågerfalk, P. J. (2014). Insufficient theoretical contribution: A conclusive rationale for rejection? *European Journal of Information Systems*, *23*(6), 593–599. https://doi.org/10.1057/ejis.2014.35

Ågerfalk, P. J., & Karlsson, F. (2020). Artefactual and empirical contributions in information systems research. *European Journal of Information Systems*, *29*(2), 109–113. https://doi.org/10.1080/0960085X.2020.1743051

Anderson, C. (2010). Presenting and evaluating qualitative research. *American Journal of Pharmaceutical Education*, *74*(8), 2–4. https://doi.org/10.5688/aj7408141

Bagayogo, F. F., Lapointe, L., & Bassellier, G. (2014). Enhanced use of IT: A new perspective on post-adoption. *Journal of the Association for Information Systems*, *15*(7), 361–387. https://doi.org/10.17705/1jais.00367

Behrendt, S., Klier, J., Klier, M., & Richter, A. (2015). The impact of formal hierarchies on enterprise social networking behavior. *Proceedings of the 36th International Conference on Information Systems (ICIS)*.

Benlian, A. (2015). IT feature use over time and its impact on individual task performance. *Journal of the Association for Information Systems*, *16*(3), 144–173. https://doi.org/10.17705/1jais.00391

Brown, S. A., Dennis, A. R., & Venkatesh, V. (2010). Predicting collaboration technology use: integrating technology adoption and collaboration research. *Journal of Management Information Systems*, *27*(2), 9–54. https://doi.org/10.2753/MIS0742-1222270201

Burton-Jones, A., & Straub, D. W. (2006). Reconceptualizing system usage: An approach and empirical test. *Information Systems Research*, *17*(3), 228–246. https://doi.org/10.1287/isre.1060.0096

Burton-Jones, A., & Gallivan, M. J. (2007). Toward a deeper understanding of system usage in organizations: A multilevel perspective. *MIS Quarterly*, *31*(4), 657. https://doi.org/10.2307/25148815

Califf, C., Sarker, S., & Sarker, S. (2020). The bright and dark sides of technostress: A mixed-methods study involving healthcare IT. *MIS Quarterly*, *44*(2), 809–856. https://doi.org/10.25300/MISQ/2020/14818

Daft, R. L., & Lengel, R. H. (1983). *Information richness: A new approach to managerial behavior and organization design*. Texas A and M University College Station College of Business Administration.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*(3), 319. https://doi.org/10.2307/249008

Dennis, A. R., Fuller, R. M., & Valacich, J. S. (2008). Media, tasks, and communication processes. A theory of media synchronicity. *MIS Quarterly*, *32*(3), 575–600. https://doi.org/10.2307/25148857

DeSanctis, G., & Poole, M. S. (1994). Capturing the complexity in advanced technology use: Adaptive structuration theory. *Organization Science*, *5*(2), 121–147. https://doi.org/10.1287/orsc.5.2.121

Ferratt, T., Prasad, J., & Dunne, E. J. (2018). Fast and slow processes underlying theories of information technology use. *Journal of the Association for Information Systems*, *19*(1), 1–22. https://doi.org/10.17705/1jais.00482

Frank, L. , Gimpel, H. , Schmidt, M. , &Schoch, M. (2017). Emergent User Roles of a Digital Workplace: A Network Analysis Based on Trace Data Proceedings of the 38th International Conference on Information Systems (ICIS),1–18.

Füller, J., Hutter, K., Hautz, J., & Matzler, K. (2014). User roles and contributions in innovation-contest communities. *Journal of Management Information Systems*, *31*(1), 273–308. https://doi.org/10.2753/MIS0742-1222310111

Gephart, R. P. (2004). Sensemaking and new media at work. *American Behavioral Scientist*, *48*(4), 479–495. https://doi.org/10.1177/0002764204270283

Glaser, B. G., & Strauss, A. L. (2009). *The discovery of grounded theory. Strategies for qualitative research*. New Brunswick:Aldine.

Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance. *MIS Quarterly*, *19*(2), 213. https://doi.org/10.2307/249689

Goodhue, D. L. (1995). Understanding user evaluations of information systems. *Management Science*, *41*(12), 1827–1844. https://doi.org/10.1287/mnsc.41.12.1827

Griffith, T. L., & Northcraft, G. B. (1994). Distinguishing between the forest and the trees: Media, features, and methodology in electronic communication research. *Organization Science*, *5*(2), 272–285. https://doi.org/10.1287/orsc.5.2.272

Griffith, T. L. (1999). Technology features as triggers for sensemaking. *Academy of Management Review*, *24*(3), 472–488. https://doi.org/10.5465/amr.1999.2202132

Herzog, C., Richter, A., & Steinhueser, M. (2015). Towards a framework for the evaluation design of enterprise social software. *Proceedings of the 36th International Conference on Information Systems (ICIS)*.

Hu, P. J., Chau, P. Y., Sheng, O. R. L., & Tam, K. Y. (1999). Examining the technology acceptance model using physician acceptance of telemedicine technology. *Journal of Management Information Systems*, *16*(2), 91–112. https://doi.org/10.1080/07421222.1999.11518247

Jasperson, J., Carter, P. E., & Zmud, R. W. (2005). A comprehensive conceptualization of post-adoption behaviors associated with information technology enabled work systems. *MIS Quarterly*, *29*(3), 525–557. https://doi.org/10.2307/25148694

Kelly, J. (2020). *The massive work-from-home-COVID-19 test was a great success and will be the new norm*, Forbes, https://www.forbes.com. Retrieved August 2, 2020, from https://www.forbes.com/sites/jackkelly/2020/05/11/the-massive-work-from-home-covid-19-test-was-a-great-success-and-will-be-the-new-norm/

Kim, S. S., & Malhotra, N. K. (2005). A longitudinal model of continued IS use: An integrative view of four mechanisms underlying postadoption phenomena. *Management Science*, *51*(5), 741–755. https://doi.org/10.1287/mnsc.1040.0326

Leech, B. L. (2002). Asking questions: Techniques for semistructured interviews. *Political Science and Politics*, *35*(4), 665–668. https://doi.org/10.1017/S1049096502001129

Limayem, M., Hirt, S. G., & Cheung, C. M. (2007). How habit limits the predictive power of intention: The case of information systems continuance. *MIS Quarterly*, *31*(4), 705. https://doi.org/10.2307/25148817

Lou, H., Luo, W., & Strong, D. (2000). Perceived critical mass effect on groupware acceptance. *European Journal of Information Systems*, *9*(2), 91–103. https://doi.org/10.1057/palgrave.ejis.3000358

Louis, M. R., & Sutton, R. I. (1991). Switching cognitive gears: From habits of mind to active thinking. *Human Relations*, *44*(1), 55–76. https://doi.org/10.1177/001872679104400104

Lucas, H. C., & Spitler, V. K. (1999). Technology use and performance: A field study of broker workstations. *Decision Sciences*, *30*(2), 291–311. https://doi.org/10.1111/j.1540-5915.1999.tb01611.x

Maitlis, S., & Christianson, M. (2014). Sensemaking in organizations: Taking stock and moving forward. *The Academy of Management Annals*, *8*(1), 57–125. https://doi.org/10.1080/19416520.2014.873177

Massey, A. P., & Montoya-Weiss, M. M. (2006). Unraveling the temporal fabric of knowledge conversion: A model of media selection and use. *MIS Quarterly*, *30*(1), 99. https://doi.org/10.2307/25148719

McDonald, T., & Siegall, M. (1992). The effects of technological self-efficacy and job focus on job performance, attitudes, and withdrawal behaviors. *The Journal of Psychology*, *126*(5), 465–475. https://doi.org/10.1080/00223980.1992.10543380

Mesgari, M., & Okoli, C. (2019). Critical review of organisation-technology sensemaking: Towards technology materiality, discovery, and action. *European Journal of Information Systems*, *28*(2), 205–232. https://doi.org/10.1080/0960085X.2018.1524420

Microsoft. (2021). *Microsoft Teams help & learning*. Retrieved September 24, 2021, from https://support.microsoft.com/en-us/teams

Möhring, K., Naumann, E., Reifenscheid, M., Weiland, A., Blom, A. G., Wenz, A., Rettig, T., Lehrer, R., Krieger, U., Juhl, S., Friedel, S., Fikel, M., & Cornesse, C. (2020). *Die Mannheimer Corona-Studie: Schwerpunktbericht zur Nutzung und Akzeptanz von Homeoffice in Deutschland während des Corona-Lockdowns*, University of Mannheim. Retrieved August 2, 2020, from https://www.uni-mannheim.de/media/Einrichtungen/gip/Corona_Studie/MannheimerCoronaStudie_Homeoffice_2020-07-09.pdf

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, *2*(3), 192–222. https://doi.org/10.1287/isre.2.3.192

Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization*, *17*(1), 2–26. https://doi.org/10.1016/j.infoandorg.2006.11.001

Orlikowski, W. J., Yates, J., Okamura, K., & Fujimoto, M. (1995). Shaping electronic communication: The metastructuring of technology in the context of use. *Organization Science*, *6*(4), 423–444. https://doi.org/10.1287/orsc.6.4.423

Ortiz de Guinea, A., & Webster, J. (2017). Combining variance and process in information systems research: Hybrid approaches. *Information and Organization*, *27*(3), 144–162. https://doi.org/10.1016/j.infoandorg.2017.06.002

Parker, R. E., & Ingram, A. L. (2011). Considerations in choosing online collaboration systems: Functions, uses, and effects. *Journal of the Research Center for Educational Technology*, *7*(1), 2–15.

Pawlowski, J. M., Bick, M., Peinl, R., Thalmann, S., Maier, R., Hetmank, L., Kruse, P., Martensen, M., & Pirkkalainen, H. (2014). Social knowledge environments. *Business & Information Systems Engineering*, *6*(2), 81–88. https://doi.org/10.1007/s12599-014-0318-4

Polites, G. L., & Karahanna, E. (2013). The embeddedness of information systems habits in organizational and individual level routines: development and disruption. *MIS Quarterly*, *37*(1), 221–246. https://doi.org/10.25300/MISQ/2013/37.1.10

Riemer, K., Stieglitz, S., & Meske, C. (2015). From top to bottom. *Business & Information Systems Engineering*, *57*(3), 197–212. https://doi.org/10.1007/s12599-015-0375-3

Rosing, M. V., White, S., Cummins, F., & Man, H. D. (2015). Business Process Model and Notation—BPMN . In *The complete business process handbook* (pp. 433–457). Elsevier. https://www.sciencedirect.com/book/9780127999593/the-complete-business-process-handbook

Sabherwal, R., Jeyaraj, A., & Chowa, C. (2006). Information system success: Individual and organizational determinants. *Management Science*, *52*(12), 1849–1864. https://doi.org/10.1287/mnsc.1060.0583

Saga, V. L., & Zmud, R. W. (1993). The nature and determinants of IT acceptance, routinization, and infusion. *Proceedings of the IFIP TC8 Working Conference on Diffusion, Transfer and Implementation of Information Technology*, 67–86.

Sandberg, J., & Tsoukas, H. (2015). Making sense of the sensemaking perspective: Its constituents, limitations, and opportunities for further development. *Journal of Organizational Behavior*, *36*(S1), S6–S32. https://doi.org/10.1002/job.1937

Schafer, P. (2020). *Introducing insights in Teams to power wellbeing and productivity*, Microsoft, techcommunity.microsoft.com. Retrieved September 23, 2020, from https://techcommunity.microsoft.com/t5/workplace-analytics-myanalytics/introducing-insights-in-teams-to-power-wellbeing-and/ba-p/1675767

Spataro, J. (2020). *Remote work trend report: Meetings*, Microsoft, microsoft.com. Retrieved 2 August, 2020, from https://www.microsoft.com/en-us/microsoft-365/blog/2020/04/09/remote-work-trend-report-meetings/

Speier, C., Valacich, J. S., & Vessey, I. (1999). The influence of task interruption on individual decision making: An information overload perspective. *Decision Sciences*, *30*(2), 337–360. https://doi.org/10.1111/j.1540-5915.1999.tb01613.x

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research*. Sage publications.

Sun, H. (2012). Understanding user revisions when using information system features: Adaptive system use and triggers. *MIS Quarterly*, *36*(2), 453. https://doi.org/10.2307/41703463

Sykes, T. A., & Venkatesh, V. (2017). Explaining post-implementation employee system use and job performance: Impacts of the content and source of social network ties. *MIS Quarterly*, *41*(3), 917–936. https://doi.org/10.25300/MISQ/2017/41.3.11

Taylor, J. R., & van Every, E. J. (1999). *The emergent organization*. Routledge.

Tibshirani, R., Walther, G., & Hastie, T. (2001). Estimating the number of clusters in a data set via the gap statistic. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, *63*(2), 411–423. https://doi.org/10.1111/1467-9868.00293

Trevino, L. K., Lengel, R. H., & Daft, R. L. (1987). Media symbolism, media richness, and media choice in organizations. *Communication Research*, *14*(5), 553–574. https://doi.org/10.1177/009365087014005006

van Alstyne, M., & Zhang, J. (2003). *EMailNet: A system for automatically mining social networks from organizational email communication*. North American Association for Computational Social and Organization Sciences.

van Slyke, C., Ilie, V., Lou, H., & Stafford, T. (2007). Perceived critical mass and the adoption of a communication technology. *European Journal of Information Systems*, *16*(3), 270–283. https://doi.org/10.1057/palgrave.ejis.3000680

Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: development and test. *Decision Sciences*, *27*(3), 451–481. https://doi.org/10.1111/j.1540-5915.1996.tb00860.x

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Venkatesh, V., Brown, S. A., Maruping, L. M., & Bala, H. (2008). Predicting different conceptualizations of system use: The competing roles of behavioral intention, facilitating conditions, and behavioral expectation. *MIS Quarterly*, *32*(3), 483–502. https://doi.org/10.2307/25148853

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157–178. https://doi.org/10.2307/41410412

Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative divide: guidelines for conducting mixed methods research in information systems. *MIS Quarterly*, *37*(1), 21–54. https://doi.org/10.25300/MISQ/2013/37.1.02

Venkatesh, V., Brown, S. A., & Sullivan, Y. W. (2016). Guidelines for conducting mixed-methods research: An extension and illustration. *Journal of the Association for Information Systems*, *17*(7), 435–494. https://doi.org/10.17705/1jais.00433

Venkatesh, V., Thong, J. Y., & Xu, X. (2016). Unified theory of acceptance and use of technology: A synthesis and the road ahead. *Journal of the Association for Information Systems*, *17*(5), 328–376. https://doi.org/10.17705/1jais.00428

Weick, K. E. (1979). *The social psychology of organizing* (2nd edn ed.). Addison-Wesley.

Weick, K. E. (1995). *Sensemaking in organizations*. Sage publications, Thousand Oaks.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, *16*(4), 409–421. https://doi.org/10.1287/orsc.1050.0133