Communications of the Association for Information Systems

Volume 52 Article 20

2-23-2023

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Recommended Citation
Schulze, L., Trenz, M., Cai, Z., & Tan, C. (2023). Conducting Online Focus Groups - Practical Advice for Information Systems Researchers. Communications of the Association for Information Systems, 52, pp-pp. https://doi.org/10.17705/1CAIS.05216

Communications of the Association for Information Systems

Tutorial Article DOI: 10.17705/1CAIS.05216 ISSN: 1529-3181

Conducting Online Focus Groups - Practical Advice for Information Systems Researchers

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Abstract:

Video-based online focus groups (OFGs) present an emerging opportunity for Information Systems (IS) researchers to circumvent spatial and temporal constraints in collecting rich data. They enable researchers to overcome interpersonal and operational challenges arising from face-to-face (F2F) focus groups (FGs) by allowing participants, who are located anywhere in the world, to share their personal experiences from behind their screens. However, the realization of the full potential of OFGs for IS research is currently hampered by challenges and uncertainty over best practices when conducting such FGs. Consequently, we offer a detailed account of our own experiences with seven OFGs in the context of digital platforms. In supplementing our own experiences with those of others reported in extant literature on (online) FGs in and beyond the IS discipline, we (a) arrive at hurdles inherent to the OFG method, (b) derive lessons learned from our own experience with OFGs, and (c) prescribe actionable advice to researchers who are interested in conducting OFGs in the future.

Keywords: Online Focus Group, Videoconference, Research Method, Qualitative Research.

This manuscript underwent peer review. It was received 08/05/2022 and was with the authors for five months for two revisions. Lauri Wessel served as Associate Editor.

1 Introduction

> *"The scientific basis of knowledge does not necessarily lie in the research method; rather, it lies in how we design the research and implement it." (Fern, 2001, p. 147)*

Phenomena of interest to the IS discipline are not only becoming increasingly globally distributed, but they also typically involve hard to reach communities (e.g., C-level executives or minorities) and touch on sensitive topics such as biases, discrimination, or personal issues. For instance, in a recent research project, we wanted to learn more about the experiences of workers on digital labor platforms the likes of Fiverr or Uber. However, sensemaking and discovery around those topics demand deep conversations and interactive discussions, which are often hard to realize given the global distribution of participants and their individual experiences with select digital labor platforms.

Although the FG approach, which facilitates orchestrated discussions among informants who possess knowledge on a given topic of interest (Krueger & Casey, 2014), appears appropriate in our context, its pre-requisite of a F2F setting constrains its applicability due to a combination of interpersonal (e.g., undesirable group dynamics) (Fern, 2001) and operational (e.g., high costs, need for collocation, and time commitments) (Clapper & Massey, 1996; Matthews et al., 2018) challenges. To circumvent these limitations, researchers have begun to leverage technology to conduct FGs online, thereby allowing rich insights to be generated on a broader range of phenomena. Compared to text-based FGs which have been applied extensively and have been subjected to intense methodological scrutiny (e.g., Chase & Alvarez, 2000; Easton et al., 2003; Parent et al., 2000; Reid & Reid, 2005; Stewart & Williams, 2005), knowledge about their synchronous, video-based counterpart is scarce. To this end, we aim to offer advice for designing and conducting OFGs, especially within the IS discipline. We regard OFGs as a variant of FGs. Indeed, conducting OFGs bears its own challenges that must be considered and mitigated. Challenges not only manifest during the sampling and recruitment phase before the OFG (e.g., how to convene a meeting with participants who are dispersed spatially and temporally), but they also occur during the OFG itself due to a lack of control over the research settings (e.g., how to minimize interruptions from participants' immediate physical environment), missing opportunities for socializing (e.g., how to overcome participants' inhibitions toward one another), and technological constraints (e.g., how to ensure each participant has an equal opportunity to speak).

By elucidating *the challenges researchers face when designing and conducting online focus groups as well as how these challenges can be overcome*, this study contributes methodologically (Bergh et al., 2022) by presenting modest changes (transcending FGs from F2F to online settings) that could be taken by researchers to circumvent spatial and temporal constraints when conducting FGs for a broad range of purposes. We address readers with little FG experience as well as readers with prior FG experience, but little OFG experience from within and outside the IS discipline.

To achieve the abovementioned objective, we blend insights from literature reviews with a detailed account of OFGs from our own experience to arrive at recommendations for conducting OFGs. Literature reviews and exemplary applications of the method are core elements of other methodological articles (e.g., MacKenzie et al., 2011; Nickerson et al., 2013; Tremblay et al., 2010). We present our insights on OFGs in the form of a confessional tale that "lift[s] the veil of public secrecy surrounding fieldwork" (Van Maanen, 2011, p. 91). It is a form of fieldwork writing that admits flaws in the account of the research endeavor (Van Maanen, 2011). This high level of transparency contains pedagogical value (Burton-Jones, Boh et al., 2021), permitting other scholars to gain a first-hand account of OFGs as a viable approach to knowledge generation (see introductory quote).

We advance extant literature on OFGs in the following ways. First, we review the application and value of FGs (F2F and online) in the IS discipline. Given the lagging deployment of OFGs in IS, we offer four reasons for IS researchers to consider conducting OFGs in the future. Second, we describe an empirical OFG study in IS and critically reflect on the challenges we faced as well as the lessons learned. This allows other researchers to learn from our experiences. Third, we build on prior research from other disciplines that have more experience than IS in conducting OFGs. We integrate their recommendations with ours, thereby giving rise to synthesized advice that might be even more readily generalized. Fourth, we acknowledge the specifics of our empirical context and show how OFGs in other research projects may differ from ours. This showcases the high variety of OFGs and caters to the need for individual adjustments to the method to match the requirements of specific research projects. Lastly, we supply

hands-on materials that can be harnessed by scholars to justify the applicability of OFGs in their context, to design and conduct OFGs, and to report on their OFG method.

2 (Online) Focus Groups in Current and Future Information Systems Research

2.1 Value, Purpose, and Application of Focus Groups

FGs are invaluable for eliciting people's understandings, opinions, and views. By means of group discussions, they add more depth to the data than individual interviews can generate (Merton et al., 1990; Parker & Tritter, 2006). As the quality of data collected increases with its richness (Abrams et al., 2015; Charmaz, 2014), FGs offer a unique opportunity for researchers. During FGs, participants express concepts and concerns in their own language, allowing researchers to conceive real-world phenomena (Wilkinson, 1998). Unknown information is uncovered and surfaced (Fern, 2001), and FGs permit the production of more fully articulated accounts (Wilkinson, 1998), collective sensemaking (Wilkinson, 1998), and constructing collective views (O.Nyumba et al., 2018). They allow an investigation of group-level, or relational phenomena, but are equally useful when concepts of interest emerge from the group discussion and when the subjects are embedded in a collective (Bélanger, 2012).

FGs are employed as a means of qualitative data collection across scientific disciplines (Wilkinson, 1998) and are an increasingly indispensable component of the methodological toolkit for IS researchers (Bélanger, 2012). To investigate how FGs in general and OFGs, in particular, have been employed in IS research, we present the results of a structured literature review. We expand on Bélanger's (2012) literature review on F2F FGs by including work that has been published since 2011 in twelve relevant IS journals. Our final set of papers includes 86 papers that were published from 1988 to mid-2022 (for details on the methodology, see Appendix A).

Within extant literature, many IS researchers employed FGs as a means of generating rich data. In line with Bélanger (2012), we discover that FGs are often employed to explore opinions, requirements, or topics, generate theory, hypotheses, or constructs (73% of the reviewed papers are exploratory research), or/and to explain, confirm or validate theory, findings or artifacts (43%[1] of the reviewed papers are explanatory research). In this sense, FGs contribute to all five types of theories defined by Gregor (2006), namely theories for analyzing, explaining, predicting, explaining, and predicting, as well as design and action (Bélanger, 2012). For the bulk of these studies, the FG method is embedded in a larger research methodology (90%), serving more specific purposes than the general ones presented above (generating rich findings, finding consensus, exploring a topic, etc.). For instance, they serve as an aid for developing measures or for validating artifacts (see Table 1). In 10 percent of the reviewed papers, FGs were employed as a single source of data and are independent of an overarching methodology. In conclusion, FGs not only appear to be methodologically versatile in that they generate data as a sole method or enrich insights yielded by other qualitative or quantitative data (Bélanger, 2012), but they are also theoretically meaningful across any stage of theory development, be it theory building or theory testing (Fern, 2001). Conventionally, FGs have been conducted F2F. The prevalence of F2F FGs is both historical (i.e., difficult for FGs to be conducted virtually in the absence of collaborative technologies) and deliberate (i.e., creating a personal environment by meeting in person).

[1] Percentages do not total 100% because both purposes are possible within one study.

Table 1. Purposes of Focus Groups in Combination with Other Method(ology)

Method(ology)	Specific Purpose of Focus Groups	Exemplary Studies
Mixed-methods (31)	Facilitate pre-understanding (39%)	"This part of the study [focus groups] was designed to provide information to the research team from potential users of the product." (Donmez et al., 2014, p. 746)
	Develop measures (45%)	"[..] derive an exhaustive list of factors around relation-specific IT use for exploitation and exploration […]" (Lee & Scott, 2015, p. 912)
	Triangulate findings (16%)	"[…] assess if the empirical benefits we found with respect to extensional representations might apply to practice […]" (Samuel et al., 2018, p. 1201)
Design science research (DSR) (20)	Identify requirements (45%)	"[…] receive in-depth feedback on the requirements regarding the usability of such a tool […]" (Bélanger et al., 2013, p. 1164)
	Evaluate artifacts (75%)	"[…] provide evidence of utility and efficacy of the IVM metric in field settings" (Tremblay et al., 2012, p. 332)
Case study (19)	Develop measures (16%)	"[…] [convert findings] into case vignettes with supporting graphical CATWOEs for presentation to management and other groups for further input and reflection" (Ferneley & Light, 2006, p. 302)
	Triangulate findings (32%)	"[…] solicit information about the conceptual and content validity of the identified factors" (Nahar et al., 2006, p. 666)
Multi-methods (5)	Triangulate findings (40%)	"[…] testing the rigor of the findings emerging from analysis of the interviews" (Royle & Laing, 2014, p. 68)
Action research (2)	Triangulate findings (50%)	"[…] improve the framework and confirm its utility in the application field" (Ebel et al., 2016, p. 540)
Note: Percentages refer to the share of papers included in the literature review [Sample n = 86]		

2.2 Challenges of Face-to-Face Focus Groups

Despite FGs' promise of generating rich insights for theory building and testing, interpersonal and operational aspects of the F2F setting have rendered FGs infeasible or unattractive for researchers in the past. We summarize these operational and interpersonal challenges of F2F FGs. In F2F settings, FG participants and moderators, usually the researchers, must be collocated in the same place. This translates into challenges in terms of sampling, time, and costs (Clapper & Massey, 1996; Matthews et al., 2018). It is very expensive and time-consuming to collocate FG participants in one place in certain cases, which makes it impossible to conduct FGs with select groups of people. For instance, busy professionals and experts, rural communities, and people unable to travel due to physical conditions are precluded from participation in F2F FGs (Matthews et al., 2018; Stewart & Shamdasani, 2017). Their unavailability reduces and biases samples, which limits the potential for generalizing findings to the population of interest. If this population of interest is distributed globally and across different cultures, conducting FGs in person bears the risk of bias towards dominant regions, which is an issue prevalent within IS literature (Pauleen et al., 2006). Additionally, researchers' limited funding might prevent the use of a F2F FG, albeit desirable for the investigation of a phenomenon at hand.

In the F2F setting, undesired group processes can result from the research setting and the perception of privacy intrusions (Fern, 2001). Participants' personal space preferences vary and depend on the familiarity among participants and the formality of the research setting. If participants feel like their personal space is invaded, compensation issues, such as becoming more defensive in statements, or retrieving to silence, negatively influence the quality of the group discussion (Fern, 2001). Additionally, if particular participants are seated in a central spot facing all other participants, the seating order can generate opinion leaders (Fern, 2001). Individual factors, such as a higher socioeconomic status that becomes evident in F2F meetings, might inhibit contributions from other participants (Fern, 2001). If participants do not feel like they are in a protected and respectful environment, they do not openly share their experiences, thoughts, and feelings (Merton et al., 1990). Therefore, valuable insights remain unsurfaced. To address these challenges the format of FGs co-evolved with advances in collaborative technologies from F2F, to text-based formats (e.g., via email, forums, or social media), to audio-based formats (e.g., via telephone or voice messages), to video-based OFGs (e.g., via videoconferencing technology) over time (Parker & Tritter, 2006).

2.3 Value and Opportunities of Online Focus Groups in IS Research

OFGs, when done rigorously, may be able to overcome the operational and interpersonal restrictions of F2F FGs. Operational issues arising from the F2F setting can be mitigated by OFGs as follows. OFGs are cheaper and can be conducted faster than F2F FGs, because travel time and costs are eliminated (Flynn et al., 2018; Matthews et al., 2018; Stewart & Shamdasani, 2017). Globally distributed and previously hard-to-reach groups can be included in OFG studies (Matthews et al., 2018; Rupert et al., 2017; Stewart & Shamdasani, 2017). Additionally, OFGs are easier to integrate into life (Matthews et al., 2018), which in turn bolsters participants' likelihood of committing to FG studies. This allows researchers to assemble suitable participants more conveniently and quickly generate rich insights. For instance, busy C-level executives could be recruited for an OFG (see Table 2 for more examples).

Therefore, conducting FGs online gives IS researchers the opportunity to

- conduct *more* FGs with participants *similar* to the ones of F2F FGs.
- *start* conducting FGs with previously *unavailable* participants in F2F FGs.

Interpersonal issues resulting from the physical setting in F2F FGs can be mitigated by OFGs as well. In prior literature, there is evidence that OFGs facilitate rapport building (Lathen & Laestadius, 2021) and a natural flow of ideas (Matthews et al., 2018) and result in data that is as rich as that obtained from F2F FGs (Abrams et al., 2015; Namey et al., 2020). The discussion via videoconferencing technology among previously unfamiliar people provides evidence that self-disclosure increases, as compared to F2F settings (Schouten et al., 2009). OFG participants may be physically based in their homes or other familiar places where they feel comfortable, anonymous, and safe (Clapper & Massey, 1996; Stewart & Shamdasani, 2017). These feelings contribute to the intended goals of FGs (Krueger & Casey, 2014), such as an engaged discussion (Matthews et al., 2018; Stewart & Shamdasani, 2017). While technology mediation reduces some cues (e.g., body language), technology mediation can also be advantageous. First, only one participant can speak at a time due to the audio transmission limitations of videoconferencing technology. This FG ground rule (Fern, 2001) is enforced by technology and reduces the risk of dominant participants. It allows for more friendly interactions where participants feel respected because interruptions are less frequent (Nobrega et al., 2021; Tuttas, 2015). Therefore, the single contributions of participants become less interrupted and more focused on the topic (Abrams et al., 2015; Flynn et al., 2018; Keemink et al., 2022; van der Kleij et al., 2009). Second, unwanted and confounding cues, such as visible social status, can be reduced to a certain extent by the online setting and enable more heterogeneity in the composition of groups (Clapper & Massey, 1996).

While improvements in interpersonal exchange are useful for all phenomena, they are necessary for sensitive topics, as participants might otherwise not participate in FGs in the first place, or do not open up in a F2F setting. In the online setting, inhibitions are released easier, which enables researchers to generate deeper insights (e.g., Thunberg & Arnell, 2021). For instance, talking about their own misbehavior on digital platforms is easier if participants feel safe and anonymous.

Therefore, conducting FGs online gives IS researchers the opportunity to

- collect *richer* FG data on topics *similar* to the ones discussed in F2F FGs.
- *start* collecting FG data with previously too *sensitive* topics for F2F FGs.

We summarize the described advantages of OFGs over F2F FGs in Table 2. We also include exemplary existing and new IS phenomena that could immediately benefit from those advantages. A combination of the two advantages (i.e., conducting OFGs with previously unavailable participants, talking about sensitive topics) is also possible and could yield entirely new insights. The list of examples is far from complete. Instead, it is supposed to illustrate the broad variety of opportunities to arise for IS research. Hence, we conclude, that IS research can benefit from adopting OFGs as a research method in the future.

Table 2. Advantages of Online Focus Groups and Exemplary Applications in IS Research

Advantages of Online Focus Groups	Resulting Opportunities for IS Researchers
Broader applicability through lower cost and time investments for assembling suitable participants (*overcoming operational F2F challenges*)	Conduct **more** FGs with the same resources/Conduct the same number of FGs with fewer resources.
	Conduct **new** FGs on topics where FGs were hardly applicable, for example, • privacy preferences of social media users in different countries/ cultures • engagement of community members in a global healthcare community • post-adoption challenges after implementing an information system in a rural village • technostress experienced by chief executive officers • outsourcing project management success in the views of different stakeholder groups
Increased richness through the release of inhibitions on sensitive topics and information (*mitigating interpersonal F2F challenges*)	Generate **richer** insights on established topics through the release of inhibitions.
	Generate **new** insights on topics previously considered too sensitive, for example, • spread of misinformation on social media • use of information systems for improving personal health when living with severe illness • human errors in security behavior • experienced discrimination in IS careers

2.4 Current Inhibitions to Online Focus Groups

Most FGs in IS research were conducted F2F (see Appendix A). Interestingly, of the 86 identified IS papers that report on the FG method in detail, only one employed OFGs for data collection. In this paper, Bergvall-Kåreborn and Howcroft (2014) investigate mobile applications development and distribution and conduct two OFGs, alongside F2F and text-based FGs, and individual interviews. No details are reported about the reasoning for choosing OFGs, how the OFGs were conducted, what challenges had to be overcome, or how they differed from F2F FGs.

The lack of published OFG studies in IS research was astonishing to us. Other disciplines, such as healthcare or marketing, are further advanced in the application of OFGs and the provision of methodological advice (see Appendix B for an interdisciplinary review of OFG literature). Considering the centrality of digital technology as the object of IS studies, digital technology has not found its way into our methods, at least FGs, yet. While OFGs hold the potential for generating knowledge in IS (see above), the present lack of knowledge on how to conduct OFGs in practice poses a significant obstacle to their adoption. Therefore, we take a forward-looking stance (Burton-Jones, Butler et al., 2021) and propose that OFGs become increasingly utilized in IS research in the future once methodological guidance becomes available. This paper provides a first step in that direction by introducing the method to IS, describing the challenges of conducting OFGs, and providing actionable advice on how to overcome these challenges.

3 Advice for Conducting Online Focus Groups

Having established the opportunities of OFGs, we now turn to our recommendations for conducting OFGs. We describe the steps involved in the focus group process – *recruitment and sampling, research setting*, *preparation, facilitation* (O.Nyumba et al., 2018) – which apply to all kinds of FGs, whether online or F2F. Additionally, we introduce a new, last step, which we refer to as *follow-up,* that can occur after the FG took place. The procedural description addresses all steps involved in OFGs and represents a holistic overview necessary for discussing the method. In each of the steps, there are OFG-specific considerations that have to be accounted for. We present them in detail below.

We acknowledge that OFGs are not uniform and that many different variations of OFGs exist even though they are all conducted using videoconferencing technology. To set the boundaries for the recommendations we derive from the OFGs we conducted, we first present the diversity OFGs can

accommodate in Table 4. In the following section, after introducing the topic of our OFG study, we explain the considerations that influenced our OFGs and reflect on possibly diverging OFGs.

3.1 Exemplary Online Focus Group Study

Our study is set in the context of digital platforms. In the specific case of digital labor platforms, transactions between workers, who offer their services, and clients, who acquire those services are mediated through the platform (Rai et al., 2019). In order to coordinate a large number of users, digital labor platforms "exercise […] control through their design features and algorithms, which are a set of rules and routines that are coded and programmed with a set of instructions on how to perform the tasks" (Rani & Furrer, 2020, p. 5). The prevalence and impact of these algorithmic management practices for workers are at the center of our investigation. Therefore, we sought to discuss the experiences of workers on a broad range of digital labor platforms.

Due to a lack of an established standard for reporting OFGs (Bélanger, 2012; Fern, 2001; Tuttas, 2015), we built on Fern's (2001) suggestions for *reporting* FGs and adapt them to the online setting. We focused on those suggestions that refer explicitly to data collection (as opposed to data analysis) and replaced the location-dependent details (geographic location and group setting) with the OFG setting. Thus, we report on the *purpose* of the OFG, the *recruitment* strategy, the *number* of groups and participants, the rationale for *sampling* decisions, the *setting* of the OFGs, the *questions* asked during the OFG, and an account of the *data* collected during the OFG. The details on our OFGs can be found in Table 3. The analysis of the OFG transcripts is in progress and the results of our study will not be discussed in this paper.

Just like every research project, our study is embedded in its unique context. Some of the choices we made were given by our research context, such as that potential participants were unknown to us and spread across the globe, which required recruiting them online. Some other choices were more deliberate. For instance, we decided not to use functionalities such as screen sharing to guide the discussion. In Table 4 we subsume both, given situations and deliberate choices, under the term considerations. As we acknowledge that our study showcases only one way of conducting FGs online, we map our considerations alongside alternatives that might apply to other OFGs (see rectangles in Table 4). Our particular setting establishes the boundaries for applying the recommendations to other OFG studies.

Table 3. Online Focus Group Reporting (Adapted from Fern (2001))

Element	Description	Exemplary Study
Purpose	What is the purpose of conducting the OFG(s) within the research context?	We employ OFGs as the sole method of data collection because collective sensemaking in the group discussion helps us understand the individualized experiences of workers with algorithmic management practices on different digital labor platforms. The phenomenon is global because there exist many digital labor platforms around the world. The participants' use of and experiences with digital labor platforms were investigated. Oftentimes, they work on these platforms for supplemental income in addition to other responsibilities and can be considered busy. They use the technological interfaces of digital labor platforms, which is also their key common characteristic of interest. Thus, OFGs seem appropriate in our context.
Recruitment strategy	How were participants recruited?	We attracted participants via posts in blogs and forums on social media sites (Reddit, Facebook, LinkedIn, Baidu Tieba) that are highly populated with platform workers. We included non-monetary (e.g., opportunity for exchange with other workers) and monetary (30 US dollars/ 100- 200 Chinese Yuan, based on contributions) incentives, as well as the screening survey link in our post. The screening survey included a privacy consent and questions regarding work experience, demographics, and availability. Interested participants provided their email or instant messaging (i.e., WeChat and QQ) contact details.
Number of OFGs and participants	How many OFGs were conducted and how many participants did each OFG have?	OFG 1 (moderated in Germany on January 9, 2021): 7 participants OFG 2 (moderated in China on January 16, 2021): 4 participants OFG 3 (moderated in China on January 30, 2021): 2 participants OFG 4 (moderated in Germany on February 3, 2021): 2 participants OFG 5 (moderated in Germany on February 5, 2021): 2 participants OFG 6 (moderated in Germany on March 3, 2021): 2 participants OFG 7 (moderated in China on April 17, 2021): 4 participants
Reasoning for sampling within and across	How were participants sampled within and across the	After conducting a pilot group (OFG 1), we sampled participants within each group according to the following criteria, in descending order of importance: nature of work they performed (homogeneous), substantial work experience on the platforms, high willingness to contribute to the discussion, fluent in English

OFGs	OFGs?	(applies to international groups only), availability. Across the groups, we tried to achieve heterogeneity by accommodating different types of work and different geographical foci. OFG 1 (pilot): different types of work; Greece (1), India (1), Pakistan (1), Russia (1), UK (1), USA (2) OFG 2: ride sharing; China (4) OFG 3: design; China (2) OFG 4: writing; Kenya (2) OFG 5: food delivery; USA (2) OFG 6: microtasks; Canada (1), Egypt (1) OFG 7: food delivery; China (4)
OFG setting	How did the OFGs take place?	Participants received invitation and reminder emails/messages which included all organizational issues (i.e., time and date, calendar entry, videoconference link, moderator, anticipated duration, agenda, technical help, environment, privacy, request for response). We used the videoconferencing tools Zoom and Tencent Meeting. Participants were able to see and talk to each other and the moderator, who was one of the researchers. The chat was also available. Introductory slides were shared with all participants. Breakout rooms[2], individual meetings, or instant messaging were used to discuss private matters prior or after the OFGs.
OFG questions	Which questions were included in the OFGs?	After an introduction to the research team, the research question, and the ground rules, participants introduced themselves. Then, we followed the moderator's guide and asked participants about their interactions with the platforms and clients in the awareness, negotiation, preparation, fulfillment, and follow-up stages of the work process on digital labor platforms.
Data collected	Which data was collected?	All OFGs were recorded and transcribed verbatim. In total, the OFGs generated approximately 630 minutes of audio-visual data. Additionally, text (chat) data was generated.

In the *first step*, the goal of OFGs is to assemble knowledgeable participants within and across groups to reach theoretical saturation. We acknowledge that our way of recruiting unknown participants online to reach demographically heterogeneous workers globally is only one way of recruitment. OFG recruitment might vary in different situations. For instance, if researchers are conducting a case study in a specific company and conduct OFGs with employees who are distributed across a country within one time zone and culture, participants might be known, more committed, and recruited online, as well as offline (e.g., after a team meeting). We usually had a short period between recruitment and the OFG, and based sampling primarily on one shared criterion (the type of work they do).

The goal of the *second step* is to minimize issues resulting from the environment. With regard to the digital research setting, participants and moderators might possess different levels of familiarity with videoconferencing technologies. Considering the physical research setting, participants might choose appropriate or inappropriate environments.

In the *third step*, OFGs might give rise to individual and organizational issues that are separate from the topic of the discussion. The goal of the preparation step is to separate these topics from the OFG itself. However, if no such issues (e.g., compensation) exist, a priori communication might be less frequent than in our case. If researchers know the participants, there is no need for individual identification. In contrast to our study, researchers might choose to send participants questions or research materials in preparation for the OFG.

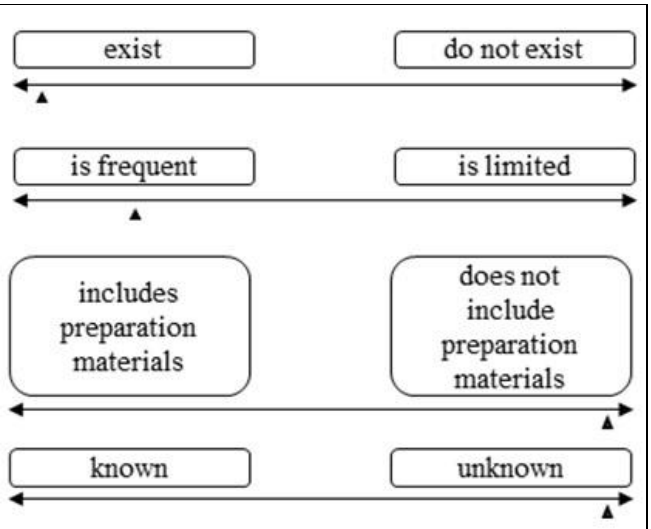
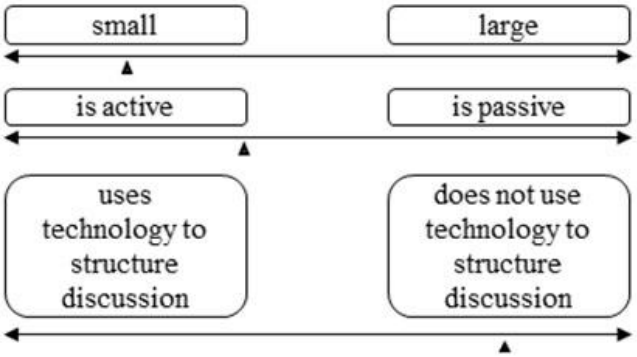
In *step four*, the goal is to enable active participation and to facilitate discussion among the participants. Hereby, we had group sizes from two to seven participants, which can be considered rather small. To facilitate discussion, the moderator took on a more active role in facilitating turn-taking than in F2F FGs. In contrast to our study, moderators might even choose to use technology, such as time tracking, to balance the speaking times of individual participants, or to visualize questions or research materials.

In the *last step*, our study might have been special in the sense that for the international groups, individual compensation processes were necessary and led to a high commitment of participants for follow-up interviews. However, in other OFGs, there might be no individual or organizational issues that must be addressed outside the OFGs, such that the follow-up step is unnecessary.

[2] Breakout rooms allow moderators to split the videoconference meeting in separate sessions with only selected participants present.

Table 4. Key Online Focus Group Activities and Considerations

Step	Key online focus group activities	Online focus group considerations	
1:Recruitment and sampling	Assemble knowledgeable online focus group participants within and across groups to reach theoretical saturation.	Participants can be…	offline ↔ online fast ↔ slow known ↔ unknown committed ↔ uncommitted
		Recruitment can be…	located in same time zone ↔ located in different time zones
		Sampling within groups can be…	homogeneous regarding one key characteristic ↔ homogeneous regarding multiple characteristics heterogeneous regarding other characteristics ↔ homogeneous regarding other characteristics
2: Research setting	Minimise issues resulting from the use of videoconferencing technology.	Participants can be…	familiar with video-conferencing technology ↔ unfamiliar with video-conferencing technology in an appropriate environment ↔ in an inappropriate environment
		Moderator can be…	familiar with video-conferencing technology ↔ unfamiliar with video-conferencing technology

3: Preparation	Ensure that individual and organisational issues can be addressed outside of the online focus group.	Private and individual issues… A priori communication … Participants can be…	
4: Facilitation	Enable active participation and facilitate discussion among participants.	Groups can be… Moderator…	
5: Follow-up	Ensure that individual and organisational issues can be addressed outside of the online focus group.	Private and individual issues…	

Note: Triangles on sliding scale indicate where our online focus groups fall on the spectrum.

3.2 Key Challenges and Lessons Learned

A summary of our key challenges and lessons learned in each step of the OFGs is presented in Table 5. In the subsequent discussion, we contrast our own experiences against other researchers who conducted and reported on their experiences with OFGs in other disciplines. Thereby, we provide comprehensive practical advice for researchers who plan to conduct OFGs.

Table 5. Key Challenges and Lessons Learned from Exemplary Study

Focal Objective	Online Focus Group Challenge	Lessons Learned
Step 1: Recruitment and Sampling: Assemble knowledgeable OFG participants within and across groups to reach theoretical saturation		
• Reaching an adequate number of prospective participants during recruitment	• Lack of domestic knowledge about channels through which targeted participants can be reached	• Consider fast online recruitment through dedicated social media groups/forums • Adhere to group/forum guidelines; ask administrators when in doubt • Include participants' benefits, link to screening survey, and university affiliation in the social media post
• Reducing attrition between recruitment and execution	• Scheduling conflicts due to participants being located across different time zones • Natural loss of interest among participants over time	• Coordinate participants' time preferences in a spreadsheet • As a moderator, approximate participants' time zones • Shorten time between recruitment and execution • Have multiple points of contact • Over-recruitment substantially
• Ensuring sample representation	• Difficulty in guaranteeing desired group composition due to sampling constraints	• Determine desired attributes of participants via screening survey • Sample participants to achieve homogeneity within groups on key characteristics and relaxing on other characteristics
Step 2: Research Setting: Minimize interruptions from contextual environment		
• Pre-empting potential environmental interruptions	• Inability to ensure a common sterile environment for discussion among participants	• Remind participants to be in a conducive environment for discussion
• Ensuring participants' familiarity with the research setting	• Constraints and/or preference for videoconferencing technologies could exist among participants	• Supply participants with a guide on videoconferencing technology • Conduct individual technical checks (e.g., breakout rooms)
Step 3: Preparation: Ensure that individual and organizational issues can be addressed outside of the OFG		
• Pre-empting unrelated conversations	• Limited opportunities for private exchange during OFG to deal with individual concern(s) if it exists	• Have multiple points of contact • Schedule welcoming session (e.g., breakout rooms)
• Ensuring the identity of participants	• Anonymity masks participants' identity from researchers	• Maintain contact via the same contact points throughout the study • Verify contact information
Step 4: Facilitation: Enable active participation and facilitate discussion among participants		
• Minimizing disruptions	• Technical issues may be experienced by individual participants	• Have a technical assistant available
• Ensuring continuous flow of conversation	• Connectivity issues and drop-outs may lead to a stall in conversation due to small group size • Difficulty in assuring balanced and derivative contributions from participants	• Have a group size larger than two • Have a group size of max. four • As a moderator, actively ensure turn-taking (e.g., calling upon specific participants) • As a moderator, actively establish connections between participants' contributions
Step 5: Follow-up: Ensure that individual and organizational issues can be addressed outside of the OFG		
• Ensuring all opinions have been expressed by participants	• Possibility of participants having derivative opinions which cannot be expressed in public	• Organize individual follow-up exchange

3.2.1 Step 1: Recruitment and Sampling

The goal of the recruitment process is to assemble groups with knowledgeable participants on the research topic (Krueger & Casey, 2014). Conducting more than one group is necessary for theoretical sampling or to reach theoretical saturation (Conboy et al., 2012; Krueger & Casey, 2014). As participation depends on the participants' consent, self-selection is not avoidable. We faced several obstacles when recruiting participants and scheduling the OFGs with the potential participants located in different time zones. We discuss our experiences and potential solutions below.

Reaching an adequate number of prospective participants. When trying to reach potential participants online, our posts on social media groups/forums were sometimes regarded as spam by administrators and members. One thing we learned was that we had to pay attention to the community guidelines of the online groups/forums to reach participants and avoid upsetting group members. Otherwise, researchers risk bans from the groups/forums, thus eliminating chances of reaching participants. When in doubt, we found it helpful to contact the group/forum administrators and ask for their permission to post. Care should be taken with regard to specific keywords in the post that could result in automatic declines of posts. In the post, outlining the benefits for the participants and including a link to the screening survey proved to be a suitable approach. In line with research ethics standards and to increase credibility among group/forum members, the researchers' identities and the university affiliation were clearly stated. Generally, the use of targeted population-specific social media groups was found to be useful in our study, similar to Halliday et al. (2021).

Reducing attrition between recruitment and execution. Differences in time zones create obstacles in scheduling the OFGs when participants are globally distributed (Tuttas, 2015). Care should be taken, such that the risk of losing valuable potential participants between recruitment and the execution of the OFG. There are different options to overcome scheduling challenges on the participants' side. When participants' commitment is still low, it makes sense for the researcher to coordinate schedules among the participants. From one OFG, which we planned but failed to execute due to non-responsive participants, we observed this lack of engagement. We allowed the nine selected participants to reschedule and provided them with a link to a scheduling software page. However, none of the potential participants participated and indicated their availability on the page. Therefore, maintaining a spreadsheet that includes individual time preferences, along with the time zones of the participants seems to be preferable when participants are still less engaged (Matthews et al., 2018; Tuttas, 2015). While our experience was that this was a time-consuming task, it did remove the burden of organizational issues from participants and made it more likely they will participate. When all selected participants already consented to participate and are highly engaged, all group members can be asked for their time preferences (e.g., by using scheduling software (Keemink et al., 2022; Tuttas, 2015)). When there are numerous alternative potential participants readily available, self-selection of participants to pre-defined times might also make sense (Nobrega et al., 2021; Stewart & Shamdasani, 2017). On the moderator side, efforts are necessary to arrange the most convenient time for participants. In this sense, the researcher who moderates the OFGs should match the participants' time zones. In our OFGs, we were able to approximate this by dividing the moderator's role strategically, namely, a researcher, who was located in China, conducted all OFGs with Chinese participants.

Even after having successfully scheduled OFGs, we encountered challenges due to the natural loss of interest among participants over time. High attrition rates show that participants frequently drop out throughout the recruitment process. Just like in other OFG studies (Eigege et al., 2022; Halliday et al., 2021; Matthews et al., 2018; Stewart & Shamdasani, 2017), our attrition rate was quite high. We invited four to thirteen participants per group. Of those invited, 15-67 percent showed up (the failed group not being counted here). The range indicates that, although the process was the same for all groups, there were unpredictable variations in attendance rates. While sampling challenges exist, countermeasures can be taken. From the OFG that failed to take place, we learned that it is crucial to have a short period between recruitment and the execution of the OFG. Most of the selected participants filled in the screening survey in mid-December 2020. We only notified them of their acceptance to the OFG by mid-January 2021. A four weeks time delay seemed to put participants off. Therefore, the faster lead time of OFGs (Stewart & Shamdasani, 2017) has to be taken into account. Participants need multiple points of contact before the OFG in order to actually participate (Stewart & Shamdasani, 2017). Additionally, we would like to follow others in recommending substantial over-recruitment (Matthews et al., 2018; Stewart & Shamdasani, 2017; Tuttas, 2015) to increase the chances of attracting the desired number of participants.

Ensuring sample representation. As for the single groups, we encountered challenges with regard to within-group composition. General FG literature proposes several FG designs, which include single-category designs or broad involvement designs that are based on one shared attribute among participants only, and multiple-category and double-layer designs that are based on multiple attributes of the participants (Krueger & Casey, 2014). In our study, we initially aimed for assembling participants along multiple attributes and thought of quantitative procedures to achieve this. However, as attrition cannot be anticipated beforehand, we discovered that designs that include one type of participant only, based on a single attribute, are the preferred design choice for OFGs. We learned from our OFGs and other studies (e.g., Halliday et al., 2021; Nobrega et al., 2021; Parker & Tritter, 2006) that it makes sense to use a pre-screening survey to determine the potential participant's fit, availability, demographics, and consent to assist the sampling process.

3.2.2 Step 2: Research Setting

The research setting in OFGs is divided into the digital and physical spheres. Physically, participants can decide themselves on where to join the OFG, such that the choice of their physical research location is outside the researcher's control. The responsibility for securing a private and appropriate space and stable Internet access is placed on the participants (Lathen & Laestadius, 2021). This poses an operational challenge for researchers because the participants' selected location might be inappropriate. The digital research setting pertains to the use of videoconferencing technology. Digitally, there are advantages and disadvantages of specific videoconferencing technology. However, contemporary technology inexpensively meets all OFG requirements, such as capacities for multiple participants, no signup requirements for participants, breakout rooms, video and audio transmission, chat, and recording functionalities (Tuttas, 2015). Beyond the availability, there is the operational challenge that comes from participants being inexperienced with videoconferencing technology.

Pre-empting potential environmental interruptions. Initially, we were concerned that participants might join in from inappropriate locations, such as while driving or in noisy environments. Therefore, we asked them in a prior communication to ensure that their environment is safe and without disruptions to the OFG. In the OFGs, we took note of the participants' environments as well. All participants seemed to be at a home and, although children and pets were occasionally present, there was no notable disruption caused by the environments of the participants. Thus, we regard a note on the appropriateness of the environment as sufficient to address the challenge of environmental interruptions.

Ensuring participants' familiarity with the research setting. Handling videoconferencing technology can prove difficult for participants (Stewart & Shamdasani, 2017). One option to support participants is to provide them with the opportunity to test the software beforehand (Lathen & Laestadius, 2021; Matthews et al., 2018). In our OFGs, we informed participants prior to the OFG which videoconferencing tool will be used and provided them with a user guide. Additionally, before the OFG started, all technical questions from the participants were addressed in individual meetings or messages. None of our participants expressed or showed any insecurity with regard to the technology in the OFG discussion, although first-time users were present. The general ease of use of videoconferencing technology is also observed in other studies (e.g., Keemink et al., 2022; Nobrega et al., 2021).

3.2.3 Step 3: Preparation

Preparation challenges arise due to the lack of possibilities for private conversations during the OFGs. Side-conversations, individual questions and requests, and socializing among the participants, as well as between participants and moderators cannot be accommodated easily. Additionally, when recruiting anonymous participants online, researchers face the challenge of verifying the identity of participants to ensure that those selected actually participate themselves (Stewart & Shamdasani, 2017).

Pre-empting unrelated conversations. To overcome the interpersonal challenge that multiple individual conversations cannot take place concurrently during the OFGs, we took two measures. First, between the participants' declaration of interest and the start of the OFG, we regularly engaged with them, which is in line with other studies (e.g., Keemink et al., 2022; Tuttas, 2015). In doing so, rapport-building has to be carefully weighed with perceptions of privacy intrusion (Stewart & Shamdasani, 2017). In all of our correspondences, we offered participants the opportunity to pose their questions, such that we were able to address any open questions and concerns before the OFG took place. If they did not have any requests, participants received three preparation emails/messages from us: an automatic response after taking the screening survey, the OFG invitation, and the reminder. None of the participants seemed to

have perceived this as intrusive. To prepare for the group discussion, one participant expressed the wish to receive the main questions prior to the OFG. While this would reduce spontaneity, it might yield more complete information during the OFG and could be considered for future OFGs.

Second, in the international groups, we asked research assistants to individually welcome each participant in breakout rooms. Thus, individual and private issues, such as technical checks, consent to recording, privacy settings, and the compensation process could be discussed privately. This allowed participants to address pressing organizational issues and individual questions right up-front and separated the organizational issues from the discussion of the topic of interest. Meanwhile, the moderator was present in the main room for relaxed conversations with the participants who came in or returned from the individual welcome. Thus, neither the other participants nor the moderator was distracted from issues other than the main topic. In the Chinese groups, the moderator conducted individual technical checks with the participants in separate meetings, which had the same effect (i.e., separating organizational issues from the OFG discussion).

Ensuring the identity of participants. While doubts about the identity of participants are more likely in text-based OFGs than in video-based OFGs, it is still necessary to ensure that the selected participants participate themselves. In our study, we maintained contact with participants via the same email address/instant messaging account throughout the screening survey, the notification of acceptance, the reminders, and the compensation. Participants were aware, that their compensation was tied to an active contribution in the OFG. This applies especially to the Chinese FGs, as monetary incentives were staggered according to their contributions to the discussion. In the international groups, we asked participants in the individual breakout rooms to tell us their email address/instant messaging account and verified it. None of the participants failed this check and we never had any doubts in the discussion that participants were not as knowledgeable as they claimed to be in the screening survey.

3.2.4 Step 4: Facilitation

To achieve data richness in OFGs, particularities of videoconferencing technology that influences the flow of the discussion have to be considered. These consist of disruptions and challenges in facilitating flow in the discussion.

Minimizing disruptions. In prior literature, frequently reported technical challenges of videoconferencing tools include delayed connectivity, speaker and microphone adjustments, inconsistent sound quality, and technical interruptions (Tuttas, 2015). It might be helpful to ask a research assistant to be present throughout the entire OFG, such that she/he can discuss individual technical difficulties with participants outside the main discussion room. While we asked a research assistant to be present during the pilot OFG, we never needed his service and decided to conduct the subsequent OFGs without assistance. However, we might have been lucky. Others also report having an assistant on standby (Halliday et al., 2021; Matthews et al., 2018), who can spontaneously assist in case a participant experiences technical difficulties.

Ensuring continuous flow in conversation. In our effort to ensure a continuous flow of communication, we experienced one instance in which technical issues considerably disrupted the group discussion. One of two participants in an OFG experienced a network blackout and dropped out for about 30 minutes. During this time, we interviewed the remaining participant alone. As soon as the other participant returned, the first individual conversation had already ended. Thus, we continued the discussion with the returning participant where he broke off and interviewed him separately as well. These kinds of technical disruptions cannot be prevented. We regard two participants as the minimum for an OFG, which distinguishes them from individual interviews. To soften the impact of dropouts during the OFG, aiming for a group size larger than two is advisable. It is highly unlikely that any two participants experience technical issues at the exact same time. If there are always at least two other participants present, the OFG can continue, and the moderator can re-integrate the returning participant as soon as they return.

The richness of OFG discussions largely depends on the active contributions of participants, as facilitated by the moderator. While F2F FGs recommend group sizes of up to 12 participants (Wilkinson, 1998), OFGs profit from smaller group sizes (Tuttas, 2015), preferably up to a maximum of four participants (Eigege et al., 2022; Lathen & Laestadius, 2021; Nobrega et al., 2021). In our OFGs, we made the observation that the discussions composed of two and four participants were much more insightful than the group with seven participants. This was due to longer and more frequent talking opportunities for each individual participant, which engaged all participants. In the larger group with seven participants (OFG 1),

every single participant had longer waiting times when wishing to speak up, which might evoke disinterest and fatigue. Especially when sitting in front of an electronic device at home, participants might easily shift their attention to other things.

The role of the moderator is critical for an insightful group discussion (O.Nyumba et al., 2018). In OFGs, technology influences how the moderator can facilitate the discussion. While FGs generally benefit from having only one person speak at a time (Fern, 2001), this might inhibit the flow of communication and reduce the spontaneity of responses (Stewart & Shamdasani, 2017). In some OFG papers, the moderator's role is generally perceived to be similar to their role in F2F FGs (Matthews et al., 2018; Tuttas, 2015). However, others advise that the moderator takes on a more active role to maintain a steady flow of communication (Nobrega et al., 2021; D. W. Stewart & Shamdasani, 2017). From our experience, we agree with the latter view. While participants built on each other's comments and addressed each other directly, generally the expectation seemed to be waiting to be called upon by the moderator. This might be due to politeness and a wish to not disrupt the previous speaker (van der Kleij et al., 2009). Thus, we recommend that the moderator takes on an active role in promoting turn-taking in the OFG. As additional support for moderators, Stewart and Shamdasani (2017) highlight the potential of technology through time-tracking monitors and hand raise functionalities. These can be implemented to ensure that all participants receive similar attention and contribute equally to the OFG. Attention has to be taken though, such that the OFG does not turn into a more structured group interview (Parker & Tritter, 2006). One of our participants suggested that the moderator's screen could be shared at all times, such that questions and notes would be visible to all participants.

3.2.5 Step 5: Follow-up

In F2F FGs, participants are debriefed, compensated, and bade goodbye at the end of the FG itself (Krueger & Casey, 2014). However, similar to the preparation of OFGs, the lack of possibilities for private conversations is an interpersonal challenge that prevents these kinds of conversations in OFGs. Thus, we propose the addition of a follow-up step in OFGs. It involves arranging for individual exchange after the OFG.

Ensuring all opinions have been expressed by participants. In the international groups, individual follow-up meetings first emerged because of administrative reasons. However, they turned out to be valuable for generating additional insights for two reasons. First, researchers receive an additional point of contact. Rather than making post-hoc sense of ambiguous statements participants expressed during the OFG, researchers can ask for clarification and follow-up questions. Second, participants receive the opportunity to use the time after the OFG to reflect on their contributions and experiences and might add insights in the follow-up meeting. They can also pose additional questions or use the opportunity to modify their prior comments. In the Chinese groups, we also encouraged further exchange via instant messaging, which was in line with previous contact and participants' preferences. An additional idea that we had to mitigate the limited opportunities for individual exchange among participants, but did not implement, was to offer networking opportunities. Participants could stay in the videoconferencing room after the OFG to engage in individual discussions and exchange private contact information.

3.3 Checklist for Online Focus Group Researchers

Detailing the process of conducting OFGs (*recruitment and sampling, research setting*, *preparation, facilitation,* and *follow-up)* enabled us to reflect on and summarize the challenges and lessons learned when conducting OFGs (see Table 5). The challenges point future OFG researchers to potentially critical obstacles when conducting OFGs. Given the lessons learned in this study, future OFG researchers should be able to avoid these obstacles and successfully conduct OFG studies. To provide researchers with even more hands-on advice, we propose a checklist with important aspects to consider and questions to address that should be instrumental in planning and conducting OFG studies. While some of these self-reflective questions are not exclusive to OFGs, they are only useful for researchers considering OFGs if they are complete. We hope they will serve as a catalyst for more and richer insights derived from OFGs.

1. *Purpose-oriented application*: What is my reason for conducting FGs, in general, and OFGs in particular? How do the advantages of OFGs come into play when deciding on the methodology for my particular research question? (Section 2 can guide your argumentation here)

2. *Recruitment*: Did I substantially over-recruit participants to arrive at group sizes between three and four participants per group? Did I establish procedures that allow me to account for the fast lead time in recruitment?
3. *Group composition*: Did I sample participants within a group according to one shared key characteristic that is crucial to my research question? Did I allow for heterogeneity in other characteristics?
4. *Digital research setting*: Did I establish procedures that cater to the heterogeneous technological skills of participants and did I allow participants to become familiar with videoconferencing technology before the OFG? Did I arrange for technical assistance during the OFG?
5. *Facilitation*: Did I actively moderate the OFG to balance participants' contributions by initiating turn-taking and establishing connections between participants' comments?
6. *Individual conversations*: Did I provide participants regularly with the opportunity to discuss private matters outside the OFG, whether in breakout rooms, individual meetings, via email, or instant messaging?
7. *Reporting*: Did I report on key OFG method aspects to provide transparency and enable the advancement of the method? (see Table 3 for a blueprint)

In closing, our checklist offers advice for researchers within and outside the IS discipline who consider using OFGs for advancing knowledge on their respective research questions. While it is derived from our own experiences and complemented with findings from other disciplines, the checklist warrants application and adaptation over time.

4 Limitations and Future Research

The limitations of FGs in general and OFGs, in particular, are presented below. Additionally, we outline the limitations of our own analysis of OFGs and propose future research to advance the method.

FGs possess some inherent limitations, just like any other research method (Fern, 2001). Some of these limitations cannot be overcome with OFGs. (Online) FGs cannot be used to generate statistically significant explanations or predictions (Krueger & Casey, 2014; O.Nyumba et al., 2018; Wilkinson, 1998). Samples are usually small, not random, and convenience samples (Fern, 2001; Wilkinson, 1998). However, they are useful for a broad range of purposes which we outlined above.

Although we presented possible solutions to the challenges of OFGs we encountered, some limitations remain. While the Internet is broadly available, people without Internet access and access to videoconferencing software and hardware cannot participate in OFGs (Lathen & Laestadius, 2021; Stewart & Shamdasani, 2017). In globally dispersed groups, language barriers might exist, which prevents certain groups of people from participating. Although OFGs allow engaging a wider group of participants, sampling may still be restricted by technical issues, time differences, and attrition, which cannot be ruled out.

We outlined operational and interpersonal advantages that render OFGs especially suitable in certain cases. However, there are also cases in which F2F FGs might be preferable. When participants (and researchers) are naturally collocated in one place, it does not make sense to switch to an online medium for conducting the FG. For instance, if a researcher conducts a case study, an ethnography, or an action research project in a case company with a single site, it seems natural that co-workers are interviewed in F2F FGs. Other potential examples include pupils in a classroom or families at home. Hereby, organizational issues of F2F FGs do not apply. Additionally, there are ways to mitigate interpersonal issues in F2F discussions (e.g., by arranging seating around a round table (Fern, 2001)). While there is evidence for increased self-disclosure that leads to desirable releases of inhibitions in OFGs, other factors, especially the moderator's skills and the respectful group atmosphere, also impact the quality of the interpersonal exchange. Therefore, the role of the moderator is critical to the success of OFGs, just like in F2F FGs (Halliday et al., 2021; Lathen & Laestadius, 2021).

In our analysis, we focused on video-based OFGs, as opposed to text-based or audio-based OFGs. However, we outlined their high potential for valuable contributions to IS research above. Additional comparisons between the different variations of OFGs (video-based vs. text-based vs. audio-based) can be found elsewhere (e.g., Stewart & Shamdasani, 2017). Our analysis of OFGs involves important steps of OFGs, including recruitment and sampling, research setting, preparation, facilitation, and follow-up. However, we did not discuss data analysis and evaluation, which are critical for any research method

(Conboy et al., 2012). We do not expect any differences in F2F FGs in these steps. Thus, we refer the reader to other sources for excellent discussions of FG analysis and evaluation (e.g., Fern, 2001; Karwatzki et al., 2017; Kidd & Parshall, 2000; Nili et al., 2017; O'hEocha et al., 2012; Onwuegbuzie et al., 2009; Parker & Tritter, 2006; Sim, 1998; Wilkinson, 1998).

The timing of data collection amid the Covid19 pandemic and associated social distancing policies was especially fertile for OFGs. However, we propose that the global prevalence and use of videoconferencing technology extend beyond the pandemic (Keen et al., 2022). Additionally, the use of videoconferencing technology for other methods, such as individual interviews, might also increase. However, a discussion about the online interview method is out of the scope of this paper and may be found elsewhere (e.g., Archibald et al., 2019; Lobe et al., 2020; Lobe & Morgan, 2021).

Last, while we have substantial experience with the FG method (F2F FGs, and OFGs), collectively, the discipline has much more experience. Despite the low number of publications of OFGs in the IS discipline, we assume that other IS researchers have started collecting experience with the method or will do so in the future. Their experiences will aid in advancing the method.

5 Conclusion

OFGs bear the potential to generate rich insights into many IS phenomena alongside traditional F2F FGs. We outline OFGs' operational and interpersonal advantages for IS research. We summarize different variations in OFGs and propose some commonalities. The transparent report of our own experiences showcases the challenges which are associated with OFGs. We discuss potential solutions to those challenges in the identification and recruitment of participants, the research setting, the preparation, the facilitation, and the follow-up step of OFGs. Thereby, researchers are equipped with practical advice on how to overcome the challenges of conducting OFGs. The prospect of an increasing number of OFGs in the future will show the usefulness of the best practices and open up a discourse on advancements of the OFG method.

6 Disclosure Statement

The authors report there are no competing interests to declare.

References

Abrams, K. M., Wang, Z., Song, Y. J., & Galindo-Gonzalez, S. (2015). Data richness trade-offs between face-to-face, online audiovisual, and online text-only focus groups. *Social Science Computer Review*, *33*(1), 80–96.

Annabi, H., & McGann, S. (2019). MISunderstood: A longitudinal analysis of major MISperceptions. *Communications of the Association for Information Systems*, *44*, 537–571.

Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using Zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods*, *18*.

Armstrong, D. J., Riemenschneider, C. K., Allen, M. W., & Reid, M. F. (2007). Advancement, voluntary turnover and women in IT: A cognitive study of work–family conflict. *Information & Management*, *44*(2), 142–153.

Armstrong, D. J., Riemenschneider, C. K., & Giddens, L. G. (2018). The advancement and persistence of women in the information technology profession: An extension of Ahuja's Gendered theory of it career stages. *Information Systems Journal*, *28*(6), 1082–1124.

Bawack, R. E., & Kala Kamdjoug, J. R. (2020). The role of digital information use on student performance and collaboration in marginal universities. *International Journal of Information Management*, *54*, 102179.

Bélanger, F. (2012). Theorizing in information systems research using focus groups. *Australasian Journal of Information Systems*, *17*(2), 109–135.

Bélanger, F., Crossler, R. E., Hiller, J. S., Park, J.-M., & Hsiao, M. S. (2013). POCKET: A tool for protecting children's privacy online. *Decision Support Systems*, *54*(2), 1161–1173.

Bergh, D. D., Boyd, B. K., Byron, K., Gove, S., & Ketchen, D. J. (2022). What constitutes a methodological contribution? *Journal of Management*.

Bergvall-Kåreborn, B., & Howcroft, D. (2014). Persistent problems and practices in information systems development: A study of mobile applications development and distribution. *Information Systems Journal*, *24*(5), 425–444.

Blohm, I., Riedl, C., Füller, J., & Leimeister, J. M. (2016). Rate or trade? Identifying winning ideas in open idea sourcing. *Information Systems Research*, *27*(1), 27–48.

Blom, J. o, & Monk, A. F. (2003). Theory of personalization of appearance: Why users personalize their PCs and mobile phones. *Human–Computer Interaction*, *18*(3), 193–228.

Bødker, M., Gimpel, G., & Hedman, J. (2014). Time-out/time-in: The dynamics of everyday experiential computing devices. *Information Systems Journal*, *24*(2), 143–166.

Burton-Jones, A., Boh, W. F., Oborn, E., & Padmanabhan, B. (2021). Advancing research transparency at MIS Quarterly: A pluralistic approach. *MIS Quarterly*, *45*(2), iii–xviii.

Burton-Jones, A., Butler, B. S., Scott, S., & Xu, S. X. (2021). Next-generation information systems theorizing: A call to action. *MIS Quarterly*, *45*(1), 301–314.

Burton-Jones, A., & Volkoff, O. (2017). How can we develop contextualized theories of effective use? A Demonstration in the context of community-care electronic health records. *Information Systems Research*, *28*(3), 468–489.

Charmaz, K. (2014). *Constructing grounded theory* (Second edition). Sage Publications.

Chase, L., & Alvarez, J. (2000). Internet research: The role of the focus group. *Library & Information Science Research*, *22*(4), 357–369.

Chesney, T., Coyne, I., Logan, B., & Madden, N. (2009). Griefing in virtual worlds: Causes, casualties and coping strategies. *Information Systems Journal*, *19*(6), 525–548.

Choi, H., Lee, M., Im, K. S., & Kim, J. (2007). Contribution to quality of life: A new outcome variable for mobile data service. *Journal of the Association for Information Systems*, *8*(12), 598–618.

Clapper, D. L., & Massey, A. P. (1996). Electronic focus groups: A framework for exploration. *Information & Management*, *30*(1), 43–50.

Conboy, K., Fitzgerald, G., & Mathiassen, L. (2012). Qualitative methods research in information systems: Motivations, themes, and contributions. *European Journal of Information Systems*, *21*, 113–118.

Crossler, R. E., & Posey, C. (2017). Robbing Peter to pay Paul: Surrendering privacy for security's sake in an identity ecosystem. *Journal of the Association for Information Systems*, *18*(7), 487-515.

D'Ambra, J., & Rice, R. E. (2001). Emerging factors in user evaluation of the world wide web. *Information & Management*, *38*(6), 373–384.

de Vreede, G.-J., Jones, N., & Mgaya, R. (1999). Exploring the application and acceptance of group support systems in Africa. *Journal of Management Information Systems*, *15*, 197–220.

Debreceny, R., Putterill, M., Tung, L.-L., & Gilbert, A. L. (2003). New tools for the determination of e-commerce inhibitors. *Decision Support Systems*, *34*(2), 177–195.

Delir Haghighi, P., Burstein, F., Zaslavsky, A., & Arbon, P. (2013). Development and evaluation of ontology for intelligent decision support in medical emergency management for mass gatherings. *Decision Support Systems*, *54*(2), 1192–1204.

Doherty, N. F., King, M., & Al-Mushayt, O. (2003). The impact of inadequacies in the treatment of organizational issues on information systems development projects. *Information & Management*, *41*(1), 49–62.

Donmez, B., Matson, Z., Savan, B., Farahani, E., Photiadis, D., & Dafoe, J. (2014). Interruption management and office norms: Technology adoption lessons from a product commercialization study. *International Journal of Information Management*, *34*(6), 741–750.

Easton, G., Easton, A., & Belch, M. (2003). An experimental investigation of electronic focus groups. *Information & Management*, *40*(8), 717–727.

Ebel, P., Bretschneider, U., & Leimeister, J. M. (2016). Leveraging virtual business model innovation: A framework for designing business model development tools. *Information Systems Journal*, *26*(5), 519–550.

Eigege, C. Y., Daundasekara, S. S., Gomez, M. L., Walton, Q. L., & Hernandez, D. C. (2022). Conducting research six feet apart: The feasibility of transitioning qualitative research to meet the emerging research needs during a pandemic. *International Journal of Qualitative Methods*, *21*, 1-12.

Feldman, S., Schooley, B., & Tipper, B. (2022). Design knowledge for collaborative health information systems for substance use disorder. *Communications of the Association for Information Systems*, *51*(1). Retrieved from https://aisel.aisnet.org/cais/vol51/iss1/6.

Fern, E. F. (2001). *Advanced focus group research*. Sage.

Ferneley, E., & Light, B. (2006). Secondary user relations in emerging mobile computing environments. *European Journal of Information Systems*, *15*(3), 301–306.

Flynn, R., Albrecht, L., & Scott, S. D. (2018). Two approaches to focus group data collection for qualitative health research: Maximizing resources and data quality. *International Journal of Qualitative Methods*, *17*(1), 1-9,.

Geissler, G., Zinkhan, G., & Watson, R. T. (2001). Web home page complexity and communication effectiveness. *Journal of the Association for Information Systems*, *2*(1), 1–48.

Germonprez, M., Kendall, J. E., Kendall, K. E., Mathiassen, L., Young, B., & Warner, B. (2017). A theory of responsive design: A field study of corporate engagement with open source communities. *Information Systems Research*, *28*(1), 64–83.

Germonprez, M., Levy, M., Kendall, J. E., & Kendall, K. E. (2020). Tapestries of innovation: Structures of contemporary open source project engagements. *Journal of the Association for Information Systems*, *21*(3), 637–663.

Goldkuhl, G. (2019). The generation of qualitative data in information systems research: The diversity of empirical research methods. *Communications of the Association for Information Systems*, *44*, 572–599.

Gottschalk, P. (1999). Strategic information systems planning: The IT strategy implementation matrix. *European Journal of Information Systems*, *8*(2), 107–118.

Gregor, S. (2006). The nature of theory in information systems. *MIS Quarterly*, *30*(3), 611–642.

Halliday, M., Mill, D., Johnson, J., & Lee, K. (2021). Let's talk virtual! Online focus group facilitation for the modern researcher. *Research in Social and Administrative Pharmacy*, *17*(12), 2145–2150.

Han, W., Ada, S., Sharman, R., & Rao, H. R. (2015). Campus emergency notification systems: An examination of factors affecting compliance with alerts. *Management Information Systems Quarterly*, *39*(4), 909–929.

Ho, S. Y., Pan, G., & Ferguson, C. (2008). The information systems-accounting nexus: Lessons from an Australian institution. *Communications of the Association for Information Systems*, *22,* 197-210.

Ho, V. T., Ang, S., & Straub, D. (2003). When subordinates become IT contractors: Persistent managerial expectations in IT outsourcing. *Information Systems Research*, *14*(1), 66–86.

Hüner, K. M., Otto, B., & Österle, H. (2011). Collaborative management of business metadata. *International Journal of Information Management*, *31*(4), 366–373.

Iannacci, F., Simeonova, B., & Kawalek, P. (2022). Investigating the determinants of inter-organizational information sharing within criminal justice: A context-mechanism-outcome approach. *Journal of Information Technology*, *37*(2), 188–208.

Jackson, S. (2021). Exploring the use and adoption of workplace automation through metaphors: A discourse dynamics analysis. *Communications of the Association for Information Systems*, *49*(1), 86-109.

Karwatzki, S., Trenz, M., Tuunainen, V. K., & Veit, D. (2017). Adverse consequences of access to individuals' information: An analysis of perceptions and the scope of organisational influence. *European Journal of Information Systems*, *26*(6), 688–715.

Keemink, J., Sharp, R., Dargan, A., & Forder, J. (2022). Reflections on the use of synchronous online focus groups in social care research. *International Journal of Qualitative Methods*, *21*. 1-13.

Keen, S., Lomeli-Rodriguez, M., & Joffe, H. (2022). From challenge to opportunity: Virtual qualitative research during COVID-19 and beyond. *International Journal of Qualitative Methods*, *21*, 1-11.

Kendall, J., & Kendall, K. (1993). Metaphors and methodologies: Living beyond the systems machine. *Management Information Systems Quarterly*, *17*(2), 149–171.

Kidd, P. S., & Parshall, M. B. (2000). Getting the focus and the group: Enhancing analytical rigor in focus group research. *Qualitative Health Research*, *10*(3), 293–308.

Krasnova, H., Spiekermann, S., Koroleva, K., & Hildebrand, T. (2010). Online social networks: Why we disclose. *Journal of Information Technology*, *25*(2), 109–125.

Krell, K., Matook, S., & Rohde, F. (2011). Development of an IS change reason–IS change type combinations matrix. *European Journal of Information Systems*, *20*(6), 629–642.

Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research* (5th edition). Thousand Oaks, California: Sage Publications.

Lam, A. W. K., Varona-Marin, D., Li, Y., Fergenbaum, M., & Kulić, D. (2016). Automated rehabilitation system: Movement measurement and feedback for patients and physiotherapists in the rehabilitation clinic. *Human–Computer Interaction*, *31*(3–4), 294–334.

Lathen, L., & Laestadius, L. (2021). Reflections on online focus group research with low socio-economic status African American adults during COVID-19. *International Journal of Qualitative Methods*, *20*, 1-10.

Le Rouge, C. M., & Niederman, F. (2006). Information systems and health care XI: Public health knowledge management architecture design: A case study. *Communications of the Association for Information Systems*, *18*, 176-204.

Lee, G., & Xia, W. (2010). Toward agile: An integrated analysis of quantitative and qualitative field data. *Management Information Systems Quarterly*, *34*(1), 87–114.

Lee, M. T., & Scott, K. (2015). Leveraging IT resources, embeddedness, and dependence: A supplier's perspective on appropriating benefits with powerful buyers. *Information & Management*, *52*(8), 909–924.

Leifer, R., Lee, S., & Durgee, J. (1994). Deep structures: Real information requirements determination. *Information & Management*, *27*(5), 275–285.

Leonhardt Kjærgaard, A., & Blegind Jensen, T. (2014). Using cognitive mapping to represent and share users' interpretations of technology. *Communications of the Association for Information Systems*, *34*, 1097-1114.

LeRouge, C., Hevner, A. R., & Collins, R. W. (2007). It's more than just use: An exploration of telemedicine use quality. *Decision Support Systems*, *43*(4), 1287–1304.

Lins, S., Schneider, S., Szefer, J., Ibraheem, S., & Sunyaev, A. (2019). Designing monitoring systems for continuous certification of cloud services: Deriving meta-requirements and design guidelines. *Communications of the Association for Information Systems*, *44*, 406–510.

Lobe, B., Morgan, D., & Hoffman, K. A. (2020). Qualitative data collection in an era of social distancing. *International Journal of Qualitative Methods*, *19*.

Lobe, B., & Morgan, D. L. (2021). Assessing the effectiveness of video-based interviewing: A systematic comparison of video-conferencing based dyadic interviews and focus groups. *International Journal of Social Research Methodology*, *24*(3), 301–312.

Lowry, P., Romans, D., & Curtis, A. (2004). Global journal prestige and supporting disciplines: A scientometric study of information systems journals. *Journal of the Association for Information Systems*, *5*(2), 29–77.

MacKenzie, S. B., Podsakoff, P. M., & Podsakoff, N. P. (2011). Construct measurement and validation procedures in MIS and behavioral research: Integrating new and existing techniques. *Management Information Systems Quarterly*, *35*(2), 293–334.

Mattarelli, E., Bertolotti, F., & Macrì, D. M. (2013). The use of ethnography and grounded theory in the development of a management information system. *European Journal of Information Systems*, *22*(1), 26–44.

Matthews, K. L., Baird, M., & Duchesne, G. (2018). Using online meeting software to facilitate geographically dispersed focus groups for health workforce research. *Qualitative Health Research*, *28*(10), 1621–1628.

Meeks, W. L., & Dasgupta, S. (2004). Geospatial information utility: An estimation of the relevance of geospatial information to users. *Decision Support Systems*, *38*(1), 47–63.

Merhout, J. W., & Havelka, D. (2008). Information technology auditing: A value-added IT governance partnership between IT management and audit. *Communications of the Association for Information Systems*, *23*, 463-482.

Merton, R. K., Fiske, M., & Kendall, P. L. (1990). *The focused interview: A manual of problems and procedures* (2nd edition). Free Press.

Miltgen, C. L., & Peyrat-Guillard, D. (2014). Cultural and generational influences on privacy concerns: A qualitative study in seven European countries. *European Journal of Information Systems*, *23*(2), 103–125.

Moncur, W., Masthoff, J., Reiter, E., Freer, Y., & Nguyen, H. (2014). Providing adaptive health updates across the personal social network. *Human–Computer Interaction*, *29*(3), 256–309.

Motamarri, S., Akter, S., Ray, P., & Tseng, C.-L. (2014). Distinguishing "mHealth" from Other Healthcare Services in a Developing Country: A Study from the Service Quality Perspective. *Communications of the Association for Information Systems*, *34,* 669-692.

Nahar, N., Lyytinen, K., Huda, N., & Muravyov, S. V. (2006). Success factors for information technology supported international technology transfer: Finding expert consensus. *Information & Management*, *43*(5), 663–677.

Namey, E., Guest, G., O'Regan, A., Godwin, C. L., Taylor, J., & Martinez, A. (2020). How does mode of qualitative data collection affect data and cost? Findings from a quasi-experimental study. *Field Methods*, *32*(1), 58–74.

Nevo, D., & Kotlarsky, J. (2014). Primary vendor capabilities in a mediated outsourcing model: Can it service providers leverage crowdsourcing? *Decision Support Systems*, *65*, 17–27.

Ng, K. C., Zhang, X., Thong, J. Y. L., & Tam, K. Y. (2021). Protecting against threats to information security: An attitudinal ambivalence perspective. *Journal of Management Information Systems*, *38*(3), 732–764.

Nickerson, R. C., Varshney, U., & Muntermann, J. (2013). A method for taxonomy development and its application in information systems. *European Journal of Information Systems*, *22*(3), 336–359.

Nili, A., Tate, M., & Johnstone, D. (2017). A framework and approach for analysis of focus group data in information systems research. *Communications of the Association for Information Systems*, *40*, 1–21.

Nobrega, S., El Ghaziri, M., Giacobbe, L., Rice, S., Punnett, L., & Edwards, K. (2021). Feasibility of virtual focus groups in program impact evaluation. *International Journal of Qualitative Methods*, *20*, 1-10.

O'hEocha, C., Wang, X., & Conboy, K. (2012). The use of focus groups in complex and pressurised IS studies and evaluation using Klein & Myers principles for interpretive research. *Information Systems Journal*, *22*(3), 235–256.

Onwuegbuzie, A. J., Dickinson, W. B., Leech, N. L., & Zoran, A. G. (2009). A qualitative framework for collecting and analyzing data in focus group research. *International Journal of Qualitative Methods*, *8*(3), 1–21.

O.Nyumba, T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, *9*(1), 20–32.

Otondo, R. F., Pearson, A. W., Pearson, R. A., Shaw, J. C., & Shim, J. P. (2009). Managerial problem-solving in the adoption of radio frequency identification technologies. *European Journal of Information Systems*, *18*(6), 553–569.

Pallud, J., & Monod, E. (2010). User experience of museum technologies: The phenomenological scales. *European Journal of Information Systems*, *19*(5), 562–580.

Parent, M., Gallupe, R. B., Salisbury, Wm. D., & Handelman, J. M. (2000). Knowledge creation in focus groups: Can group technologies help? *Information & Management*, *38*(1), 47–58.

Parker, A., & Tritter, J. (2006). Focus group method and methodology: Current practice and recent debate. *International Journal of Research & Method in Education*, *29*(1), 23–37.

Parmar, V., Keyson, D., & de Bont, C. (2009). Persuasive technology to shape social beliefs: A case of persuasive health information systems for rural women in India. *Communications of the Association for Information Systems*, *24*, 427-454.

Pauleen, D. J., Evaristo, R., Davison, R. M., Ang, S., Alanis, M., & Klein, S. (2006). Cultural bias in information systems research and practice: Are you coming from the same place I am? *Communications of the Association for Information Systems*, *17*, 354–372.

Payton, F. C. (2016). Cultures of participation—For students, by students. *Information Systems Journal*, *26*(4), 319–338.

Price, R., Neiger, D., & Shanks, G. (2008). Developing a measurement instrument for subjective aspects of information quality. *Communications of the Association for Information Systems*, *22*, 49-74.

Rai, A., Constantinides, P., & Sarker, S. (2019). Editor's comments: Next-generation digital platforms: Toward human–AI hybrids. *MIS Quarterly*, *43*(1), iii–ix.

Ramasubbu, N., & Kemerer, C. F. (2021). Controlling technical debt remediation in outsourced enterprise systems maintenance: An empirical analysis. *Journal of Management Information Systems*, *38*(1), 4–28.

Rani, U., & Furrer, M. (2020). Digital labour platforms and new forms of flexible work in developing countries: Algorithmic management of work and workers. *Competition & Change*, *25*(2), 212-236.

Reibenspiess, V., Drechsler, K., Eckhardt, A., & Wagner, H.-T. (2020). Tapping into the wealth of employees' ideas: Design principles for a digital intrapreneurship platform. *Information & Management*, *59*(3), 1-62.

Reid, D. J., & Reid, F. J. M. (2005). Online focus groups: An in-depth comparison of computer-mediated and conventional focus group discussions. *International Journal of Market Research*, *47*(2), 131–162.

Reid, M. F., Allen, M. W., Armstrong, D. J., & Riemenschneider, C. K. (2010). Perspectives on challenges facing women in IS: The cognitive gender gap. *European Journal of Information Systems*, *19*(5), 526–539.

Riemenschneider, C., & Armstrong, D. (2021). The development of the perceived distinctiveness antecedent of information systems professional identity. *Management Information Systems Quarterly*, *45*(3), 1149–1186.

Royle, J., & Laing, A. (2014). The digital marketing skills gap: Developing a digital marketer model for the communication industries. *International Journal of Information Management*, *34*(2), 65–73.

Rupert, D. J., Poehlman, J. A., Hayes, J. J., Ray, S. E., & Moultrie, R. R. (2017). Virtual versus in-person focus groups: Comparison of costs, recruitment, and participant logistics. *Journal of Medical Internet Research*, *19*(3), e6980.

Samuel, B. M., Khatri, V., & Ramesh, V. (2018). Exploring the effects of extensional versus intensional representations on domain understanding. *Management Information Systems Quarterly*, *42*(4), 1187–1209.

San Nicolas-Rocca, T., Schooley, B., & Joo, S.-J. (2014). Design and development of a patient-centered e-health system to improve patient understanding at discharge. *Communications of the Association for Information Systems*, *34*, 453-476.

Schouten, A. P., Valkenburg, P. M., & Peter, J. (2009). An experimental test of processes underlying self-disclosure in computer-mediated communication. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, *3*(2). Retrieved from https://cyberpsychology.eu/article/view/4227

Schwade, F. (2021). Social collaboration analytics framework: A framework for providing business intelligence on collaboration in the digital workplace. *Decision Support Systems*, *148*, 1-34..

Scott, C., Fuller, M. A., MacIndoe, K. M., & Joshi, K. D. (2009). More than a bumper sticker: The factors influencing information systems career choices. *Communications of the Association for Information Systems*, *24*, 7-26.

Seidel, S., Chandra Kruse, L., Székely, N., Gau, M., & Stieger, D. (2017). Design principles for sensemaking support systems in environmental sustainability transformations. *European Journal of Information Systems, 27*(2), 221-247.

Shanks, G., Jagielska, I., & Jayaganesh, M. (2009). A framework for understanding customer relationship management systems benefits. *Communications of the Association for Information Systems*, *25*(1), 263-288.

Shi, S., Wang, Y., Chen, X., & Zhang, Q. (2020). Conceptualization of omnichannel customer experience and its impact on shopping intention: A mixed-method approach. *International Journal of Information Management*, *50*, 325–336.

Sim, J. (1998). Collecting and Analysing Qualitative Data: Issues Raised by the Focus Group. *Journal of Advanced Nursing*, *28*(2), 345–352.

Singh, A., Piana, S., Pollarolo, D., Volpe, G., Varni, G., Tajadura-Jiménez, A., Williams, A. C., Camurri, A., & Bianchi-Berthouze, N. (2016). Go-with-the-flow: Tracking, analysis and sonification of movement and breathing to build confidence in activity despite chronic pain. *Human–Computer Interaction*, *31*(3–4), 335–383.

Slavova, M., & Karanasios, S. (2018). When institutional logics meet information and communication technologies: Examining hybrid information practices in ghana's agriculture. *Journal of the Association for Information Systems*, *19*(9), 775–812.

Soellner, M., Bitzer, P., Janson, A., & Leimeister, J. M. (2018). Process is king: Evaluating the performance of technology-mediated learning in vocational software training. *Journal of Information Technology*, *33*(3), 233–253.

Sreejesh S, Paul, J., Strong, C., & Pius, J. (2020). Consumer response towards social media advertising: Effect of media interactivity, its conditions and the underlying mechanism. *International Journal of Information Management*, *54*.

Srivastava, S. C., & Teo, T. S. H. (2009). Citizen trust development for e-government adoption and usage: Insights from young adults in Singapore. *Communications of the Association for Information Systems*, *25*(1), 359-378.

Stewart, D. W., & Shamdasani, P. (2017). Online focus groups. *Journal of Advertising*, *46*(1), 48–60.

Stewart, K., & Williams, M. (2005). Researching online populations: The use of online focus groups for social research. *Qualitative Research*, *5*(4), 395–416.

Sun, R., Gregor, S., & Fielt, E. (2021). Generativity and the paradox of stability and flexibility in a platform architecture: A case of the oracle cloud platform. *Information & Management*, *58*(8), 103548.

Sutton, S. G., Hampton, C., Khazanchi, D., & Arnold, V. (2008). Risk analysis in extended enterprise environments: Identification of critical risk factors in B2B e-commerce relationships. *Journal of the Association for Information Systems*, *9*(4), 151–174.

Syed, R. (2020). Cybersecurity vulnerability management: A conceptual ontology and cyber intelligence alert system. *Information & Management*, *57*(6), 1-17.

Tan, C.-H., Sutanto, J., Phang, C. W., & Gasimov, A. (2014). Using personal communication technologies for commercial communications: A cross-country investigation of email and SMS. *Information Systems Research*, *25*(2), 307–327.

Thunberg, S., & Arnell, L. (2021). Pioneering the use of technologies in qualitative research—A research review of the use of digital interviews. *International Journal of Social Research Methodology*.

Torkzadeh, G., Chang, J. C.-J., & Hansen, G. W. (2006). Identifying issues in customer relationship management at Merck-Medco. *Decision Support Systems*, *42*(2), 1116–1130.

Tran, B., Rafinejad-Farahani, B., Moodie, S., O'Hagan, R., & Glista, D. (2021). A scoping review of virtual focus group methods used in rehabilitation sciences. *International Journal of Qualitative Methods*, *20*, 1-18..

Tremblay, M. C., Hevner, A. R., & Berndt, D. J. (2010). Focus groups for artifact refinement and evaluation in design research. *Communications of the Association for Information Systems*, *26*(1), 599-618.

Tremblay, M. C., Hevner, A. R., & Berndt, D. J. (2012). Design of an information volatility measure for health care decision making. *Decision Support Systems*, *52*(2), 331–341.

Tuttas, C. A. (2015). Lessons learned using web conference technology for online focus group interviews. *Qualitative Health Research*, *25*(1), 122–133.

van der Kleij, R., Maarten Schraagen, J., Werkhoven, P., & De Dreu, C. K. W. (2009). How conversations change over time in face-to-face and video-mediated communication. *Small Group Research*, *40*(4), 355–381.

Van Maanen, J. (2011). Confessional tales. In *Chicago guides to writing, editing, and publishing*. *Tales of the field: On writing ethnography* (2nd ed, pp. 73–100). University of Chicago Press.

Voigt, M. (2014). Improving design of systems supporting creativity-intensive processes – A cross-industry focus group evaluation. *Communications of the Association for Information Systems*, *34*(1), 1493-1514.

Wallace, J., Mullarkey, M. T., & Hevner, A. (2022). Patient health locus of control: The design of information systems for patient-provider interactions. *European Journal of Information Systems*, *32*(1), 52-61.

Wiesche, M., Jurisch, M. C., Yetton, P. W., & Krcmar, H. (2017). Grounded theory methodology in information systems research. *MIS Quarterly*, *41*(3), 685–701.

Wilkinson, S. (1998). Focus group methodology: A review. *International Journal of Social Research Methodology*, *1*(3), 181–203.

Wu, J., Song, S., & Whang, C. H. (2021). Personalizing 3D virtual fashion stores: Exploring modularity with a typology of atmospherics based on user input. *Information & Management*, *58*(4), 1-10.

Xia, W., & Lee, G. (2005). Complexity of information systems development projects: Conceptualization and measurement development. *Journal of Management Information Systems*, *22*(1), 45–83.

Zhang, H., Chari, K., & Agrawal, M. (2018). Decision support for the optimal allocation of security controls. *Decision Support Systems*, *115*, 92–104.

Zhang, W., Wei, C.-P., Jiang, Q., Peng, C.-H., & Zhao, J. L. (2021). Beyond the block: A novel blockchain-based technical model for long-term care insurance. *Journal of Management Information Systems*, *38*(2), 374–400.

Appendix A: Literature Review: (Online) Focus Groups in Information Systems Research

To tailor our literature review to IS publications only, we follow Wiesche et al.'s (2017) approach. Their goal was similar to ours, namely, to investigate how a specific methodology, in their case grounded theory methodology, is applied in IS research. They selected 13 leading IS journals for their literature review. The selection was built on Lowry et al.'s (2004) analysis of leading IS journals (see Table A1). Due to its contemporary nature, a high number of FG publications, and a dedicated tutorial format for methods papers, we added the *Communications of the Association for Information Systems* journal to the list of journals.

Table A1. Focus Group Papers Across Selected IS Journals

Selected Information Systems Journals	Number of Focus Group Studies Published	Number of Focus Group Studies Included in Our Literature Review
Communications of the Association for Information Systems (CAIS)	48	16
Decision Support Systems (DSS)	35	10
European Journal of Information Systems (EJIS)	41	11
Human–Computer Interaction (HCI)	10	4
Information & Management (I&M)	53	9
Information Systems Journal (ISJ)	22	6
Information Systems Research (ISR)	16	5
International Journal of Information Management (IJIM)	47	6
Journal of Information Technology (JIT)	5	3
Journal of Management Information Systems (JMIS)	5	5
Journal of the Association for Information Systems (JAIS)	25	6
Management Information Systems Quarterly (MISQ)	41	5
Management Science	10	0
Organization Science	19	0
Total	**305**	**86**

In July 2022, we searched the journal papers' full texts for the keyword 'focus group'. After skimming through the 773 results, we found that 377 (49%) of them conducted FGs. The remaining hits that were excluded from further analysis just mentioned FGs, (e.g., as an additional method that should be applied in future research) (348), are practitioner papers (e.g., the CAIS series "Developments in Practice") (33), discuss FG methodology (8), do not focus on IS topics (4), or were not available (3).

I&M (53), CAIS (48) the IJIM (47), EJIS (41), and MISQ (41) are the journals that published most studies including FGs. During the last decade, publications of FGs grew. Between 2012 and 2021, an average of 19.8 papers per year was published.

For our in-depth analysis, we decided to exclude papers that do not report on the FGs in detail. 86 papers (23%) fulfill these conditions. The lack of detailed FG reporting is in line with observations in previous literature (e.g., Bélanger, 2012). The main reason appears to be that FGs are often conducted in addition to, or as a part of a larger methodology.

Our literature review builds on and expands Bélanger's (2012) literature review. We only have an overlap of eight studies, which were used in both, her and our, reviews. The differences stem from two sources. First, we use the abovementioned criteria to identify relevant IS journals. This results in a different journal selection. Second, we covered studies that were published after Bélanger's (2012) work (i.e., after 2011). Additionally, we further differentiate the methodology, especially the purposes of studies employing mixed-

methods, distinguish the setting of the FG (F2F vs. OFG) and identify the methodological literature basis of the studies.

Table A2 summarizes the analyzed literature. Table A3 summarizes the number of FGs and participants per research methodology. Table A4 summarizes prior IS literature on the FG methodology.

Table A2. Concept Matrix Literature Review (Online) Focus Groups in Information Systems

Reference	Journal	Research Question (RQ) or Purpose	Method(ology)	Focus Group Purpose	Focus Group Sample	Focus Group Setting
Annabi & McGann (2019)	Communications of the Association for Information Systems	RQ1: What perceptions did students have about MIS programs between 2006 and 2014? RQ2: Which perceptions changed during that period? RQ3: Which perceptions did not change and why?	case study	exploratory	3 FGs (33 students in total; 8-11 students per group)	n/a
Armstrong et al. (2007)	Information & Management	RQ1: How do women in IT perceive the interaction of work and family responsibilities? RQ2: If there is an interaction, how do these women see it affecting advancement and voluntary turnover?	focus groups	exploratory	6 FGs (39 women in total; 4-8 women per group)	F2F
Armstrong et al. (2018)	Information Systems Journal	Purpose of this research is to test Ahuja's model and explore new relationships in determining the persistence and advancement of women in the IT field.	focus groups	explanatory	7 FGs (28 women in total; 7-9 women per group from 3 companies)	F2F
Bawack & Kala Kamdjoug (2020)	International Journal of Information Management	Purpose of this research is to propose a model that explains the changing information behaviors of students in the digital age and the effect this has on their learning outcomes.	mixed-methods (focus group, survey; compensation)	explanatory	1 FG (10 students)	F2F
Bélanger et al. (2013)	Decision Support Systems	Purpose of this research is to follow design science guidelines to design an artifact called POCKET (Parental Online Consent for Kid's Electronic Transactions) that provides a reliable, trustworthy technology option for obtaining verifiable parental consent as required by COPPA.	DSR	exploratory	4 FGs (18 parents in total; 3-6 participants per group)	F2F
Bergvall-Kåreborn & Howcroft (2014)	Information Systems Journal	RQ: What are the persistent problems and practices for external developers participating on platform ecosystems, such as mobile applications development and distribution?	case study	exploratory	10 FGs (60 participants in total; 2 video-based with 2 participants per group; 5 F2F with 2-4 participants per group; 3	F2F, video-based, text-based

					text-based with 2-18 participants per group)	
Blohm et al. (2016)	Information Systems Research	Purpose of this research is to investigate conditions under which task representations for open idea evaluation using rating scales and preference markets are similar or different and the general ease of use with which the corresponding IT-based task representations can be operated.	mixed-methods (focus groups, experiment; diversity, developmental)	explanatory	5 FGs (28 participants in total; 4-6 participants per group)	n/a
Blom & Monk (2003)	Human–Computer Interaction	RQ: Why do people personalize and how does this process change their view of the product concerned?	multi-methods	exploratory + explanatory	10 FGs (7 in UK with 3-6 participants per group; 3 in Finland with 5 female students per group)	F2F
Bødker et al. (2014)	Information Systems Journal	RQ: How does the use and experience of experiential computing devices change over time in everyday life?	case study	exploratory	3 FGs (14 participants in total; 4-5 participants per group)	n/a
Burton-Jones & Volkoff (2017)	Information Systems Research	Purpose of this research is to offer and demonstrate an approach for developing contextualized theories of effective use.	case study	exploratory	25 FGs	n/a
Chesney et al. (2009)	Information Systems Journal	Purposes of this research are to: (1) Identify grieving behaviors in Second Life as representative of virtual worlds and examine similarities and/or differences with behaviors seen in other contexts (e.g., school or workplace); (2) Examine the perceptions of victims on the impact of such behavior; (3) Assess potential reasons why grieving occurs and possible options to combat such behavior; (4) Attempt to quantify who the likely targets and perpetrators are.	case study	exploratory	4 FGs (14 residents in total)	virtual world, text-based
Choi et al. (2007)	Journal of the Association for Information Systems	Purpose of this research is to construct a theoretical model that can reliably and validly measure the relationship between mobile data	mixed-methods (focus groups, interviews, survey; developmental)	exploratory	5 FGs (28 participants in total; 5-7 participants per group; participant	n/a

		services and quality of life.			groups divided in middle school / high school / college students, working adults, mobile data services experts)	
Crossler & Posey (2017)	Journal of the Association for Information Systems	RQ: Why would individuals use a system that requires them to sacrifice their privacy on the Internet to a third-party intermediary in exchange for the promise of increased security?	mixed-methods (focus groups, surveys; developmental, compensation)	exploratory	5 FGs (34 students in total; 2-12 students per group)	F2F
D'Ambra & Rice (2001)	Information & Management	RQ1: What level of success is being experienced by users in utilizing the web for information-based activities? RQ2: How has user behavior changed and how have benefits, if any, been derived from the change?	mixed-methods (focus groups, surveys; developmental, corroboration/confirmation)	exploratory	4 FGs (26 students in total)	n/a
de Vreede et al. (1999)	Journal of Management Information Systems	Purpose of this research is to generate insight into the contextual issues surrounding the effective use and the acceptance of Group Support Systems (GSS) technology.	case study	exploratory	7 FGs	F2F
Debreceny et al. (2003)	Decision Support Systems	Purposes of this research are to: (1) Analyze alternative research techniques to capture and analyze inhibitors to the adoption of electronic commerce (EC); (2) Describe a suite of research techniques appropriate for mapping the EC decision-space and inhibitors to the adoption of EC at the level of the firm; (3) Outline the application of this methodology to Singapore.	mixed-methods (focus groups, survey; developmental)	exploratory + explanatory	4 FGs (38 participants in total); 1 GDSS FG (26 participants)	F2F, text-based (GDSS)
Delir Haghighi et al. (2013)	Decision Support Systems	Purposes of this research are to: (1) Review current ontology evaluation methods; (2) Describe an ontology-based system architecture for medical	DSR	explanatory	1 FG (10 domain experts)	F2F

		emergency management in mass gatherings that incorporates the Domain Ontology for Mass Gatherings ontology, which illustrates effectiveness of the proposed approach for ontology construction and evaluation.				
Doherty et al. (2003)	Information & Management	Purpose of this research is to identify what is meant by the term "inadequate treatment" and how it influences systems' success.	mixed-methods (focus groups, survey; expansion)	explanatory	3 FGs (5-6 practitioners per group)	n/a
Donmez et al. (2014)	International Journal of Information Management	Purpose of this research is to explore factors that influence technology adoption in an office environment, with an emphasis on technology aimed at managing focused and collaborative work by reducing unwelcome interruptions for its users.	mixed-methods (focus groups, usability tests, interviews, surveys; complementarity)	exploratory	2 FGs (11 participants in total; 5-6 practitioners per group)	F2F
Ebel et al. (2016)	Information Systems Journal	Purposes of this research are to: (1) Analyze existing knowledge on business model design and management, resulting in a first systematization of the activities that are necessary for developing and managing new business models; (2) Create and evaluate a new business model development tool based on the focus groups.	action research	explanatory	1 FG with 6 expert developers	n/a
Feldman et al. (2022)	Communications of the Association for Information Systems	Purpose of this research is to investigate how to design (collaborative) health information systems to support community workers to fight the opioid crisis	DSR	exploratory + explanatory	4 FGs (5-10 participants per group)	n/a
Ferneley & Light (2006)	European Journal of Information Systems	Purpose of this research is to investigate how the mobility of technology can influence the dynamics in the relationships between primary and secondary users.	case study	exploratory	18 FGs (8-15 male firefighters per group)	F2F
Geissler et al. (2001)	Journal of the Association for Information Systems	RQ1: Which design elements (e.g., text, graphics, and length) contribute to perceived Web home page complexity?	mixed-methods (focus groups, interviews, experiments; developmental, completeness)	exploratory	5 FGs	n/a

		RQ2: What is the relationship between the perceived complexity of a Web home page and its communication effectiveness?				
Germonprez et al. (2017)	Information Systems Research	RQ: How is design enacted through corporate engagement with open-source communities?	case study	exploratory	3 FGs (29 participants in total; 6-15 participants per group)	F2F
Germonprez et al. (2020)	Journal of the Association for Information Systems	RQ: How can open-source projects be understood as more than volunteer-driven, clan communities through the lens of innovation networks?	case study	exploratory	3 FGs (8-20 participants per group)	F2F
Gottschalk (1999)	European Journal of Information Systems	RQ: What content characteristics of formal IT strategy predict the extent of plan implementation?	mixed-methods (focus group, survey; developmental)	explanatory	1 FG (5 chief information officers in total)	F2F
Han et al. (2015)	Management Information Systems Quarterly	RQ1: What are the important factors influencing students' emergency notification systems message compliance intentions? RQ2: How does the level of trust in the quality of information affect compliance intention when the information is received? RQ3: Does the importance of these factors change in different types of incidents? RQ4: What we can do to improve immediate compliance?	mixed-methods (focus groups, interviews, surveys; corroboration/ confirmation, expansion)	explanatory	FG(s) (6 students per group)	n/a
Ho et al. (2003)	Information Systems Research	Purpose of this research is to focus on the phenomenon of persistent expectations by exploring the conditions under which managerial expectations persist and the effect on managerial evaluation of contractor performance.	mixed-methods (focus groups, survey; developmental)	exploratory	3 FGs (19 employees in a public sector organization offering IT services to government bodies; 6-7 employees per group)	n/a
Ho et al. (2008)	Communications of the Association for Information Systems	RQ1: Do accounting students see IS courses as relevant? RQ2: What are accounting students' perceptions of IS courses? RQ3: how should we tailor the IS courses to suit the needs of accounting students?	mixed-methods (focus groups, survey; expansion)	explanatory	4 FGs (32 accounting students from the University of Melbourne)	F2F
Hüner et al.	International	Purposes of this	DSR	exploratory +	2 FGs (23	F2F

(2011)	Journal of Information Management	research are to: (1) Identify business requirements to be met by a repository which supports the collaborative management of business metadata; (2) Implement a wiki-based business metadata repository; (3) Evaluate its use in a business context.		explanatory	subject-matter experts in total; 9-14 experts per group)	
Iannacci et al. (2022)	Journal of Information Technology	RQ1: What is the role of IT governance in generating successful inter-organizational information sharing? RQ2: What is the associated mechanism for generating a positive outcome (or the lack thereof)? RQ3: In what way do IT governance, project management, and technological compatibility combine to achieve efficient and effective inter-organizational information sharing?	multi-methods (focus groups, interviews)	exploratory	6 FGs (3-5 subject-matter experts per group)	n/a
Jackson (2021)	Communications of the Association for Information Systems	RQ: How can the discourse dynamics approach help explain metaphor making and particularly IS metaphors' elicited and dynamic nature?	focus groups	exploratory	4 FGs (21 participants in total)	F2F
Karwatzki et al. (2017)	European Journal of Information Systems	RQ: What are individuals' perceived adverse consequences of access to their information and what is the scope of organizational influence on these consequences?	focus groups	exploratory	22 FGs (119 participants in total; 4-10 participants per group)	n/a
Kendall & Kendall (1993)	Management Information Systems Quarterly	Purpose of this research is to investigate the importance of metaphors in organizational life.	multi-methods	exploratory	FGs in 16 companies (3-6 participants per group)	F2F
Krasnova et al. (2010)	Journal of Information Technology	RQ1: Given the obvious potential for abuse, aren't users concerned about their privacy? RQ2: Aren't there any privacy mechanisms that could regulate some of the observed self-disclosure behavior? RQ3: What concrete benefits so powerfully motivate users to engage in this process? And by what costs are	mixed-methods (focus groups, survey; developmental)	explanatory	2 FGs (16 students under 30 in total; 8 students per group)	F2F

		they offset?				
Krell et al. (2011)	European Journal of Information Systems	RQ: What are the IS change reason–IS change type combinations that are likely to result in a successful IS change?	focus groups	exploratory + explanatory	3 FGs (27 IS experts in total; 8-10 experts per group)	n/a
Lam et al. (2016)	Human–Computer Interaction	Purpose of this research is to improve exercise performance and tracking for both patients and physiotherapists by proposing the use of an Automated Rehabilitation System.	DSR	exploratory	1 FG (13 physiotherapists in total)	F2F
LeRouge & Niederman (2006)	Communications of the Association for Information Systems	Purpose of this research on public health management was to modularize a diverse collection of functions into logical knowledge patterns that can be recognized by all users for subsequent development where each module can be produced relatively independently from the others	case study	exploratory + explanatory	6 FGs (4-6 subject-matter stakeholders per group)	F2F
LeRouge et al. (2007)	Decision Support Systems	Purpose of this research on telemedicine encounters is to define the factors of intelligent effort (i.e., use quality) as users and technologies interact within the telemedicine system.	case study	exploratory	6 FGs (average of 6 patients per group)	F2F
Lee & Scott (2015)	Information & Management	RQ: What can a supplier do to appropriate its share of relational benefits?	mixed-methods (focus groups, survey; developmental)	exploratory	2 FGs (groups divided into suppliers and buyers)	n/a
Lee & Xia (2010)	Management Information Systems Quarterly	RQ1: How are the two dimensions response extensiveness and response efficiency of software development agility related to each other? RQ2: How can team autonomy and team diversity affect software development agility? RQ3: How do the two dimensions of software development agility affect software development performance in terms of on-time completion, on-budget completion, and software functionality?	mixed-methods (focus groups, interviews, survey; developmental, corroboration/ confirmation, expansion)	exploratory	1 FG (45 IS managers in total)	n/a
Leonhardt & Jensen (2014)	Communications of the Association	RQ: How can cognitive mapping enable inquiry into representation and	case study	exploratory	1 FG (4 doctors in total)	F2F

	for Information Systems	sharing of users' interpretations of technology?				
Lins et al. (2019)	Communications of the Association for Information Systems	RQ: How should cloud service providers design a CSC monitoring system to enable certification authorities to conduct monitoring-based CSC?	DSR	exploratory + explanatory	5 FGs (33 subject-matter experts in total; 5-15 per group)	n/a
Mattarelli et al. (2013)	European Journal of Information Systems	RQ: How can ethnographic methods and the grounded theory approach be integrated within the development of information systems process?	case study	exploratory + explanatory	8 FGs (119 radiotherapy unit members in total; 11-27 members per group)	F2F
Meeks & Dasgupta (2004)	Decision Support Systems	Purpose of this research is to outline an algorithmic approach to estimating the content value of geospatial information and data sets for researchers and users of this type of information.	DSR	exploratory + explanatory	2 rounds of FG: (1) 3 FGs (8-10 participants per group) (2) 2 FGs (20 participants in total)	n/a
Merhout & Havelka (2008)	Communications of the Association for Information Systems	Purpose of this research is to summarize the explicit benefits of an internal IT audit function in companies. The authors also suggest several "value-added" benefits from IT audit activities that are commonly overlooked by managers	case study	exploratory + explanatory	5 FGs (27 subject-matter experts in total; 4-7 experts per group)	n/a
Miltgen & Peyrat-Guillard (2014)	European Journal of Information Systems	RQ1: On which issues do people really focus when their privacy may be at risk? That is, which criteria do people take into account when deciding whether to disclose or guard their personal data during digital transactions with public or private entities? RQ2: How does culture influence privacy concerns and related behaviors, in particular for people from geographically proximate nations in Europe? RQ3: How do people of different ages vary in their attitudes toward privacy and their subsequent behaviors?	focus groups	exploratory	14 FGs (139 participants in total; FGs divided by country and participants' age; 7 countries; 1 old FG, 1 young FG; 8-12 participants per group)	F2F
Moncur et al. (2014)	Human–Computer Interaction	RQ: How is information shared across the personal social network in the sensitive context of a health crisis?	DSR	exploratory	1 FG (7 white female parents in total)	F2F

Motamarri et al. (2014)	Communications of the Association for Information Systems	RQ: What factors make mHealth different from other existing healthcare services in developing countries?	mixed-methods (focus groups, interviews, survey; developmental)	exploratory	3 FGs (24 participants in total; 8 participants per group)	F2F
Nahar et al. (2006)	Information & Management	RQ1: What are the factors that affect the success of IT-supported international technology transfer? RQ2: What is the relative significance of different factors? And how can we determine such relative significance?	case study	explanatory	4 FGs (FGs divided by employees from Finnish technology suppliers; 4-6 participants per group)	text-based, video-based, audio-based
Nevo & Kotlarsky (2014)	Decision Support Systems	Purpose of this research is to study the crowdsourcing phenomenon with a focus on the capabilities required for outsourcing vendors to successfully employ crowdsourcing in delivering services to their clients.	case study	exploratory	5 FGs (48 IT experts in total; 6-12 experts per group)	text-based, audio-based
Ng et al. (2021)	Journal of Management Information Systems	Purpose of this research is to study how attitudinal ambivalence can affect individuals' behavior in response to cybersecurity threats. The authors also want to understand what motivates individuals to engage in protection behaviours against cybersecurity threats.	mixed-methods (focus groups, experiment; developmental)	exploratory	2 FGs (20 participants in total; 10 participants per group)	n/a
Otondo et al. (2009)	European Journal of Information Systems	RQ1: What problems do managers face when considering Radio Frequency Identification (RFID)? RQ2: How do managers make sense of these problems? RQ3: What cognitive patterns emerge as managers make sense of RFID?	multi-methods	exploratory	2 FGs (21 managers in total)	F2F
Pallud & Monod (2010)	European Journal of Information Systems	RQ1: Are the six phenomenological criteria suggested by Monod and Klein relevant to the assessment of visitor experience with IT in museums? Do these criteria correspond to individuals' needs when visiting a museum? RQ2: Further, to what extent does IT meet the criteria proposed by	case study	explanatory	3 FGs (33 participants in total; 9-13 participants per group)	F2F

		Monod & Klein (2005) and successfully convey a phenomenological experience to visitors?				
Parmar et al. (2009)	Communications of the Association for Information Systems	RQ1. How can we identify the social beliefs and information requirements related to primary health in rural areas in order to specify the design requirements of PHIs in terms of content, user interaction and physical design of the system? RQ2. How can we apply persuasive technology to shape existing social beliefs, thus persuading rural users to positively change their health behaviour and practices?	DSR	exploratory	6 FGs (42 participants in total; 7 participants per group)	F2F
Payton (2016)	Information Systems Journal	Purpose of this research is to study the creation of user experiences for health-related messages, particularly those regarding stigmatized conditions, such as HIV, while designing for cultures of participation among underrepresented groups within the myHealthImpactNetwork.org initiative.	action research	exploratory	3 FGs (40 black female students in total)	F2F
Price et al (2008)	Communications of the Association for Information Systems	The purpose of this research regarding subjective aspects of information quality is to (1) report the results of the instrument development and (2) to describe in detail the actual development process to serve as an aid to others considering instrument development	mixed-methods (focus groups, survey; developmental)	explanatory	3 FGs with IT experts	n/a
Ramasubbu & Kemerer (2021)	Journal of Management Information Systems	RQ: Does control balancing in outsourced enterprise systems maintenance projects improve remediation of technical debt?	mixed-methods (focus groups, secondary data analysis; corroboration / confirmation)	Exploratory	3 FGs (98 subject-matter stakeholders in total)	n/a
Reibenspiess et al. (2020)	Information & Management	RQ: Which design principles guide the design of a digital intrapreneurship platform fostering employee-driven ideas?	DSR	exploratory	4 FGs (20 subject-matter employees in total)	n/a
Reid et al. (2010)	European Journal of Information Systems	RQ: Are there differences in men's and women's perceptions about the challenges	focus groups	exploratory	6 FGs (45 participants in total; FGs divided by	F2F

		women face in IS?			gender and employer; 3 male FGs, 3 female FGs; 5-9 participants per group)	
Riemenschneider & Armstrong (2021)	Management Information Systems Quarterly	RQ1: What components of the work environment do IS professionals perceive as distinctive to their profession? RQ2: Does a multidimensional view of the perceived distinctiveness of the IS profession influence IS professional identity?	mixed-methods (focus groups, survey; developmental)	exploratory	6 FGs (45 subject-matter employees in total)	F2F
Royle & Laing (2014)	International Journal of Information Management	Purpose of this research is to enhance industry and academic knowledge of skills gaps across the communication industry and to provide an evidence-based model to aid educators and practitioners in addressing these gaps.	multi-methods	explanatory	1 FG (11 participants in total)	n/a
Samuel et al. (2018)	Management Information Systems Quarterly	RQ1: What is the effect of the type of representation that is used to encode semantics— an intentional representation and its extensional analogue—on domain understanding?	mixed-methods (focus groups, experiments; corroboration/ confirmation, expansion)	exploratory + explanatory	2 FGs (8 conceptual data modeling experts; 3-5 experts per group)	F2F
San Nicolas-Rocca et al. (2014)	Communications of the Association for Information Systems	The goal of the research is to investigate, design, and develop a PCEH application, taking into account Wilson's (2009) Patient-centered e-health themes	DSR	explanatory	5 FGs (39 participants in total; 4-12 participants per group)	n/a
Schwade (2021)	Decision Support Systems	RQ1: What are the current practices for conducting social collaboration analytics (SCA)? RQ2: Who are the stakeholders for SCA, and what are their information needs? RQ3: How can collaboration professionals be supported in gaining business intelligence on collaboration activities in the digital workplace?	DSR	exploratory	3 FGs (25 participants in total; 2-12 participants per group)	n/a
Scott et al. (2009)	Communications of the Association for	RQ1: What factors influence a business student's selection of a field of study and/or	focus groups	exploratory	6 FGs (31 students in total; 6 or more students	F2F

	Information Systems	career? RQ2: What factors encourage or deter a business student's choice to enter the field of MIS? and RQ3: What strategies can an MIS department employ to increase awareness about MISrelated careers among business students?"			per group)	
Seidel et al. (2017)	European Journal of Information Systems	RQ: What are appropriate design principles for IS for sensemaking (i.e., sensemaking support systems) in environmental sustainability transformations?	DSR	explanatory	5 FGs (21 participants in total; 4-5 participants per group)	F2F
Shanks et al. (2009)	Communications of the Association for Information Systems	The purpose of this research is the development of a framework designed specifically for CRM systems, that identifies and categorizes CRM benefits, provides indicators for each benefit, and describes example metrics that can be used for each indicator	DSR	explanatory	1 FG (6 subject-matter experts in total)	n/a
Shi et al. (2020)	International Journal of Information Management	Purpose of this research is to identify, promote, and provide customers with various experiential benefits to enhance their shopping satisfaction and intention.	mixed-methods (focus groups, interviews, survey; developmental)	exploratory	3 FGs (24 students with experience in omnichannel shopping; 3 students per group)	n/a
Singh et al. (2016)	Human–Computer Interaction	Purpose of this research is to propose a new sonification framework, Go-with-the-Flow, informed by physiotherapists and people with chronic pain. RQ1: Can sound be used to support physical activity in people with chronic pain? RQ2: Can sound be used to facilitate the learning of self-management skills? RQ3: What pain management principles must be encapsulated in the auditory feedback to make it effective for use in physical activity sessions? RQ4: How should the	DSR	explanatory	2 FGs (8 participants in total; FGs divided into people with chronic pain and physiotherapists; 3-5 participants per group)	F2F

		principles be translated into sonification elements?				
Slavova & Karanasios (2018)	Journal of the Association for Information Systems	RQ1: How do technical and nontechnical information artifacts transform farmers' information practices in rural Ghana? RQ2: How do new information practices challenge the existing smallholder logic and enable the value-chain logic in agriculture?	mixed-methods (focus groups, interviews, observations, secondary data analysis; complementarity, completeness)	exploratory	7 FGs (119 farmers in total; 11-25 farmers per group)	F2F
Soellner et al. (2018)	Journal of Information Technology	RQ1: Which constructs and facets should be included in a comprehensive model for evaluating the performance of technology-mediated learning (TML)? RQ2: What impacts do constructs related to TML inputs and the TML process have on each other and on constructs resembling TML outcomes?	mixed-methods (focus group, surveys; developmental)	exploratory + explanatory	1 FG (12 lecturers in total)	n/a
Sreejesh S et al. (2020)	International Journal of Information Management	RQ1: Does the level of media interactivity (high vs. low) play any role in influencing the consumers' attention and memory of the advertised brand/message? RQ2: If the media interactivity hurts the attention and memory of the ad presented in the media, then what management options exist to promote more considerable ad brand/message attention and memory without reducing the interactivity exposure level of the consumers in social media?	mixed-methods (focus groups, experiment; completeness)	exploratory	2 FGs (22 participants in total, 10-12 participants per group)	n/a
Srivastava & Teo (2009)	Communications of the Association for Information Systems	The purpose of this research is to understand how trust in e-governments develops and manifests among citizens	case study	exploratory	5 FGs (45 participants in total)	n/a
Sun et al (2021)	Information & Management	RQ: How does a platform architecture realize generativity?	case study	explanatory	2 FGs (10 subject-matter experts in total; 5 experts per group)	n/a
Sutton et al.	Journal of	Purposes of this	mixed-methods	exploratory	5 FGs (28	F2F

(2008)	the Association for Information Systems	research are to: (1) Explore and identify the critical risk factors involved in B2B e-commerce driven extended-enterprise systems that can potentially escalate an organization's overall enterprise risk; (2) Explore the interrelationships among the various B2B e-commerce risk components so as to understand how various components influence each other and affect overall risk.	(focus groups, survey; corroboration/ confirmation)		B2B core processes experts in total; FGs divided in 3 internal and 2 external experts; 4-7 experts per group)	
Syed (2020)	Information & Management	RQ: How can we design a vulnerability management ontology to better inform users about impending vulnerabilities and countermeasures?	DSR	explanatory	1 FG (12 domain experts in total)	n/a
Tan et al. (2014)	Information Systems Research	RQ: Which personal communication technologies (PCT) should retailers use though and should retailers adopt a single approach to target consumers across the world or is it worthwhile to use different PCTs, i.e., email versus SMS, in different countries?	mixed-methods (focus groups, surveys, field experiments; corroboration/ confirmation, developmental, expansion)	explanatory	2 FGs (15 customers in total; FG divided by nationality; 1 Chinese FG, 1 Swiss FG; 7-8 customers per group)	n/a
Torkzadeh (2006)	Decision Support Systems	Purposes of this research are to: (1) Identify primary factors that result in member dissatisfaction with customer relationship management, more specifically with the call center; (2) Produce a reliable and valid set of measures that can be used by the company and others to monitor employee training effectiveness and remedial plans.	mixed-methods (focus groups, surveys; developmental)	exploratory	6 FGs (36 customer service representatives in total; 6 representatives per group)	F2F
Tremblay et al. (2012)	Decision Support Systems	Purpose of this research is to propose a measure of data variability termed an information volatility measure (IVM) and introduce the notion of benchmarking the variability of data vis-à-vis a standard baseline to support better user	DSR	exploratory + explanatory	4 FGs (IT-domain experts)	F2F

		understanding.				
Voigt (2014)	Communications of the Association for Information Systems	RQ: Does the creativity-intensive process support systems architecture provide for a tool design that is useful for comprehensively supporting creativity-intensive processes?	DSR	explanatory	3 FGs (12 participants in total; 3-5 participants per group)	F2F
Wallace et al. (2022)	European Journal of Information Systems	The research goals are to identify and manage a patient's locus of control to support improved medical outcomes across a wide range of health conditions.	DSR	exploratory + explanatory	2 FGs (6 subject-matter experts in total; 6 experts per group)	n/a
Wu et al. (2021)	Information & Management	Purpose of this research is to develop a typology of atmospherics that contains user-generated modules and modular options for personalizing 3D virtual stores.	focus groups	exploratory	46 FGs (107 undergraduate students in total; 3-4 undergraduate students per group	F2F
Xia & Lee (2005)	Journal of Management Information Systems	Purpose of this research is to conceptualize and develop valid measurements of the key dimensions of information systems development project complexity.	mixed-methods (focus group, interviews, surveys; developmental)	explanatory	1 FG (45 IS managers in total)	n/a
Zhang et al. (2018)	Decision Support Systems	Purpose of this research is to address the limitation that many organizations make cybersecurity enhancing investments in the dark by developing highly granular risk-based models as components of a decision support system for planning optimal cybersecurity enhancing investments.	mixed-methods (focus groups, economic modeling, computational experiments, survey; completeness)	exploratory	1 FG (5 IT security professionals in total)	n/a
Zhang et al. (2021)	Journal of Management Information Systems	Purpose of this research is to address the challenges incurred by transaction costs associated with opportunism in authentication and verification, we propose in this research a novel blockchain-based technical model	DSR	explanatory	1 FG (3 insurance sales representatives in total)	n/a

Table A3. Focus Groups and Participants Across Methodologies

Methodology	Total Number of Papers Identified	Average Number of Focus Groups (range)	Average Number of Group Participants (range)	Average Number of Total Participants (range)
Mixed-methods	31	3.17 (1-7)	10.20 (4-45)	24.23 (5-119)
DSR	20	3.15 (1-6)	8.64 (3-20)	18.11 (3-46)
Case study	19	6.47 (1-25)	7.47 (2-22)	38.63 (4-151)
Focus groups	9	12.67 (3-46)	7.47 (3-12)	66.22 (21-170)
Multi-methods	5	4.75 (1-10)	5.88 (3-11)	30.25 (11-51)
Action research	2	2 (1-3)	6 (6-6)	40 (40-40)
Total	**86**	**5.37 (1-46)**	**7.61 (2-45)**	**36.24 (3-170)**
Note: includes available data only.				

Table A4. Focus Group Methodology Papers in IS Literature

Reference	Journal	Focus Group Setting	Focus
Abrams et al. (2015)3	Social Science Computer Review	Video-based, text-based	Comparison of data richness metrics between two F2F, two video-based, and two text-based focus groups
Bélanger (2012)3	Australasian Journal of Information Systems	Mostly F2F	Review of focus group literature in IS; use of focus groups for theorizing
Clapper & Massey (1996)	Information & Management	Computer-mediated communication, mostly text-based	Exploration of the potential of technology for focus groups; presentation of a computer mediated dialogue tool for text-based OFGs
Easton et al. (2003)	Information & Management	F2F/ text-based (with and without group support systems)	Comparison of F2F focus groups without and with group support systems
Goldkuhl (2019)	Communications of the Association for Information Systems	- (F2F assumed)	Comparison of a repertoire of empirical research methods, incl. focus groups, for generating qualitative data
Leifer et al. (1994)	Information & Management	- (F2F assumed)	Using focus groups for better information requirements determination in system development
Nili et al. (2017)	Communications of the Association for Information Systems	- (F2F assumed)	Systematic and integrative analysis of different types of data generated in focus groups
O'hEocha et al. (2012)	Information Systems Journal	F2F, partly text-based input based on videoconference	Operationalization of the Klein & Myers principles for interpretive study in the context of focus groups and recommendations for other IS researchers doing interpretive focus groups
Parent et al. (2000)	Information & Management	F2F/ text-based (with and without group support systems)	Comparison of F2F focus groups without and with group support systems
Tremblay et al. (2010)	Communications of the Association for Information Systems	- (F2F assumed)	Adaption of traditional focus group techniques for use in design research projects
Our study	Communications of the Association for Information Systems	Video-based	Introduction of OFGs to IS researchers; presentation of challenges and lessons learned from seven OFGs; update of literature review on focus groups in IS research

[3] Identified through backward search, as the journal not included in literature review

Appendix B: Literature Review: Interdisciplinary Online Focus Group Literature

We conducted an interdisciplinary literature review in order to identify guidelines for conducting OFGs as a blueprint for our own analysis. In July 2022, we searched ScienceDirect and WebofScience for '(online OR virtual OR video) focus group' in the title/abstract/keywords (ScienceDirect) or topic (WebofScience) sections. Of the 273 results, we eliminated false hits (i.e., a paper that did not conduct or discuss OFGs, book chapters), duplicates, and no access papers, such that we retained 239 papers. 38 percent of papers concerned video-based OFGs, and of these, nine papers discussed the method of OFGs (see Table B1). Most OFG method papers were published recently (2021 or 2022). Of the papers conducting OFGs (81), the large majority were published in the health discipline (78%).

Prior interdisciplinary OFG literature influenced and is extended by this study in the following ways. First, prior interdisciplinary OFG literature motivated us to investigate the adoption of OFGs in the IS discipline. The result (almost no use of OFGs in IS) led us to reflect on the reasons for the lack of OFGs in the IS discipline. We critically compared the suitability of OFGs in the IS discipline with others, such as marketing and healthcare, and found that inappropriateness was not a probable reason for the lack of OFG studies in IS. Rather, the lack of knowledge of the method was. Thus, we introduce the OFG method to the IS discipline. Second, we followed interdisciplinary OFG literature in sharing the details of our own OFG study (as did six other studies, namely Halliday et al., 2021; Keemink et al., 2022; Lathen & Laestadius, 2021; Matthews et al., 2018; Nobrega et al., 2021; Tuttas, 2015). When reporting the details and lessons learned, we took the recommendations provided in prior interdisciplinary literature into consideration. Thus, we provide recommendations to IS researchers that are based on both a synthesis of prior literature as well as our own additional observations and advice. Last, the OFG studies reported on in prior interdisciplinary OFG literature exhibited a broad variety of OFG designs. To acknowledge and showcase the different ways OFGs can be designed and conducted, we depicted the range of considerations in Table 4.

Table B1. Summary of Extant Literature on Interdisciplinary Online Focus Group

Reference	Journal	Discipline	Focus
Halliday et al. (2021)	Research in Social and Administrative Pharmacy	Health	Reporting OFG process and insights in qualitative feedback from researchers on eight OFGs
Keemink et al. (2022)	International Journal of Qualitative Methods	Interdisciplinary	Reporting lessons learned from six OFGs; insights in qualitative feedback from participants and researchers
Keen et al. (2022)	International Journal of Qualitative Methods	Interdisciplinary	Elaboration on advantages and disadvantages of OFGs; comparison between OFGs and F2F FGs
Lathen & Laestadius (2021)	International Journal of Qualitative Methods	Interdisciplinary	Reporting lessons learned from nine OFGs; insights in qualitative feedback from researchers; comparison between OFGs and F2F FGs
Matthews et al. (2018)	Qualitative Health Research	Health	Reporting lessons learned from six OFGs; insights in qualitative feedback from participants
Nobrega et al. (2021)	International Journal of Qualitative Methods	Interdisciplinary	Reporting OFG process and insights in qualitative feedback from participants and researchers on three OFGs; comparison between OFGs and F2F FGs
Stewart & Shamdasani (2017)	Journal of Advertising	Marketing	Comparison among different types of OFGs and distinction from F2F FGs
Tran et al. (2021)	International Journal of Qualitative Methods	Interdisciplinary	Literature review of OFG (text- and video-based) studies in rehabilitation sciences
Tuttas (2015)	Qualitative Health Research	Health	Reporting lessons learned from four OFGs

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