

Exploring the Potential and Challenges of WhatsApp Focus Groups in Qualitative Consumer Research: A Case Study of Sustainable Eating

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Abstract: The emergence of digital technologies has opened new methods for engaging consumers, conducting focus groups, and gathering research material online. One such method is the use of smartphone-based mobile messaging platform WhatsApp, which allows real-time discussions and diary-type studies. Nevertheless, the potential of WhatsApp focus groups as a research method necessitates further exploration. This paper analyses the advantages and limitations of employing WhatsApp-based focus groups in qualitative consumer studies related to sustainable eating. Specifically, we will examine the effectiveness, interaction, and quality of research materials obtained through this method in previous studies. To carry out our study, we organized a focus group in Finland utilizing the WhatsApp-based platform with a pre-selected panel of 24 participants. The study explored barriers to sustainable food choices among so-called imperfect consumer segments. Based on our observations, mobile focus groups offer a fruitful method for studying consumer insights due to the direct and non-hierarchical communication channels they provide between participants and researchers. However, it is crucial to acknowledge that materials acquired through mobile groups may be less extensive than those obtained through traditional focus groups. Participants often rely on emojis and emoticons to convey meaning, which may pose challenges in terms of text-based coding, categorization, and software utilization. Furthermore, the fragmented nature of messages presented another challenge in analysing the collected material. Additionally, when employing WhatsApp focus groups as a method, careful preparation of the question route is necessary to ensure the production of high-quality research materials.

Keywords: Mobile focus groups, WhatsApp, Consumer studies, Sustainable consumption, Healthy eating

1. Introduction

In recent years, qualitative consumer research has significantly shifted towards using mobile and online platforms to gather data and insights. This shift has been driven by the proliferation of smartphones and the increasing popularity of messaging applications, such as WhatsApp, which have become integral parts of people's daily lives. As a result, researchers have begun to explore the potential of using WhatsApp-based focus groups in consumer studies.

Focus groups, in general, can be helpful when researchers want to understand people's thoughts and insights on specific topics. The interaction between participants can elicit data and ideas that might not be discovered with traditional structured interviews. Different methods of participation in product and service development have been developed for decades in several fields of science and evidence of the successful use of social media tools in user-centric design has been available for several years (Friedrich, 2013; Mensonen *et al.*, 2014). From the perspective of potential participants, social media tools are everyday life tools used for communicating with friends and family, organising events, sharing opinions, and collecting individuals to act together. Hence, using them as research platforms does not require additional skills and no additional downloads from the participants. In addition, online focus groups, particularly through mobile applications, can be a time-saving and economical approach to collecting qualitative data, especially when the research design relies on collecting multiple types of materials (Rivaz, Shokrollahi, and Ebadi, 2019). Mobile focus groups can thus make research participation convenient, at least for those familiar with mobile apps such as the widely utilised WhatsApp (Chen and Neo, 2019).

In addition to real-time discussions, diary-type studies have become more accessible due to the widespread use of smartphones (Kimhy, Myin-Germeys, and Palmie, 2012; Lukoff *et al.*, 2018). Smartphones can be used to automatically collect mobile sensing data to infer, predict, and summarise people's daily activities and behavioural patterns (Liao *et al.*, 2014). They can be used for gathering data on specific tasks. Additionally, mobile focus groups can facilitate the collection of rich and varied data. Researchers can elicit more detailed materials by integrating multimedia elements such as images, videos, and interactive exercises. This multimedia approach can enhance the overall engagement and quality of data gathered, leading to more robust findings.

Moreover, digital tools, such as large language models (LLM), can be used to analyse the data collected efficiently, e.g., creating persona descriptions based on the data collected.

However, further investigation is required to fully explore the potential of WhatsApp focus groups as a research method. In addition, every research context to gather qualitative data is different, and some basic principles can guide researchers in using these tools effectively. This paper explores the potential of the online focus group method in qualitative consumer studies based on literature and an empirical study. The starting points are the findings about the effectiveness, interaction, and quality of research materials acquired through mobile focus groups found in the previous research. Furthermore, through our own case study experience, we analyse how suitable mobile focus groups are for gathering data in a consumer case study.

The paper is organized as follows. The next section discusses previous research, focusing on the benefits and limitations of mobile focus groups as a research tool. Section three provides an outline of our target group and a description of the mobile focus group platform. Section four presents the findings, and the following sections the discussion and conclusions.

2. Previous Research on the Advantages and Limitations of Mobile Focus Groups

In the 21st century, the widespread adoption of online social interaction has spurred the development and diversification of online research tools. This expansion is particularly evident in the context of behavioral lifestyle changes in food consumption and sustainability. Researchers now have a wide range of methods to choose from, each offering unique advantages. One approach involves capitalising on the pervasive nature of online platforms, allowing researchers to observe and intervene in online life. Several studies (Oksman *et al.*, 2016; Närvänen *et al.*, 2018; Potter *et al.*, 2023) exemplify the utilisation of this method. Alternatively, researchers can opt for specifically designed online research platforms (Komonen and Seisto, 2022; Van der Merwe *et al.*, 2019; Graça *et al.*, 2019; Vainio *et al.*, 2016). Moreover, researchers can also combine multiple online platforms to prompt sustainable behavior using one tool, while collecting experiences through another tool (Kymäläinen, Seisto, and Malila, 2021)

Virtual focus groups have emerged since the early 2000s, offering several benefits over face-to-face focus groups (Stewart and Williams, 2005; Keen, Lomeli-Rodriguez, and Joffe, 2022). They share the qualities of conventional focus groups in that they afford a purposeful social interaction in generating research material (Stewart and Williams, 2005; Kymäläinen, Seisto, and Malila, 2021). However, virtual focus groups offer greater flexibility in terms of scheduling, as participants can engage in discussions at their convenience, reducing scheduling conflicts (Almujilli *et al.*, 2022; Morgan and Lobe, 2015). Furthermore, online platforms serve as valuable research management tools by facilitating participant recruitment (Lazzarini *et al.*, 2016).

A more recent introduction to the researcher palette, mobile focus groups, utilize smartphones to conduct research remotely. This method has gained popularity due to its convenience and cost-effectiveness (Rupert *et al.*, 2017). One of the primary benefits of mobile focus groups is their ability to overcome geographical limitations. They engage participants in their everyday settings, which helps especially inform the study of daily household food-related practices (Lukoff *et al.*, 2018). Further, they help to reduce the expenses and effort of research management associated with travel, venue rental, and refreshments (Keen, Lomeli-Rodriguez, and Joffe, 2022). Moreover, using specifically designed online platforms eliminates the need for transcription services, as conversations are automatically recorded and transcribed (Morgan and Lobe, 2015). This reduces the time and effort needed for data preparation and analysis.

In addition, mobile focus groups have the advantage of being a familiar way of communication to many potential participants (Colom, 2022). A defining functionality of WhatsApp is the creation and use of messaging groups, which helps create a sense of community and connection (Church and De Oliveira, 2013). A further advantage of mobile focus groups compared to real-life focus groups is the potential for increased anonymity and a reduced social desirability bias as the participants communicate behind their nicknames (Chen and Neo, 2019). Mobile focus groups are a direct and non-hierarchical communication channel between participants and researchers (Chen and Neo, 2019), and may help foster contemplation of sensitive topics that may cause a barrier to sustainable consumption (Topping, Douglas, and Winkler, 2021). Participants may thus feel more comfortable expressing their opinions and difficulties in an anonymous group setting, leading to more honest and reliable data.

Despite these benefits, some limitations should be considered. One primary concern is potential technical difficulties and the resulting exclusion of less technologically savvy participants. This potential for a digital divide is a limitation when certain populations may not have access to or feel comfortable using mobile devices and

online platforms. This can result in a biased sample that may not represent all the demographics of the target population. Researchers should be mindful of this limitation and consider other methods to ensure inclusivity in their research (Poliandri *et al.*, 2022). Even technically fluent participants may encounter issues with their mobile devices or face challenges navigating the online platform. These issues can disrupt the flow of the discussion and affect the quality of data collected (Poliandri *et al.*, 2022). In addition, some participants may feel a lack of trust regarding digital platforms and have concerns about the security of the services, especially regarding personal or sensitive topics (Kaihlainen *et al.*, 2022). Moreover, text-based online interaction often relies on emojis and emoticons to replace words and convey meaning, making interpretation more difficult (Walther and D'Addario, 2001). Furthermore, the lack of non-verbal cues in mobile focus groups may limit the depth of understanding. In face-to-face interactions, researchers can closely examine individuals' physical gestures, facial cues, and vocal intonations. Conversely, mobile focus groups exclusively rely on written exchanges, potentially resulting in a diminished grasp of subtleties and contextual intricacies (Chen and Neo, 2019).

Furthermore, it should be noted that mobile focus groups are not exempt from ethical considerations. Similar to conventional face-to-face focus groups, ethical concerns such as confidentiality and privacy matters may arise (Sim and Waterfield, 2019). Furthermore, previous studies employing WhatsApp and Messenger as research tools have demonstrated a dearth of attention toward research ethics and data protection, particularly regarding end-to-end encryption (Manji *et al.*, 2021). It is worth highlighting the potential solutions to these issues through the implementation of data safety measures and adherence to ethical protocols, including participant anonymity and informed consent.

In conclusion, in previous research, mobile focus groups present a multitude of advantages as a research methodology, encompassing the circumvention of geographical constraints, enhancement of participant convenience and comfort, and cost reduction. Subsequent sections will explicate further our approach, target demographic, and findings about mobile focus groups.

3. The Target Group and Method

To test the suitability of mobile online focus groups in consumer studies, we organised a focus group study using WhatsApp and Messenger-based platforms with a pre-selected consumer panel in April 2023 in Finland. The focus group was conducted to research and support behaviour change toward sustainable food consumption.

3.1 The Target Group

The focus of this study encompassed a specific subset of individuals referred to as "imperfect" consumers. In the initial stages of our investigation, we successfully identified a group exhibiting restricted tendencies in selecting environmentally friendly or health-conscious food choices yet displaying an increasing inclination towards embracing sustainable and nutritious dietary practices. This group presents a significant knowledge-behavior disparity, rendering them an opportune cohort to examine insights and experiences about the transition toward sustainable and healthy eating patterns.

The preceding study was based on a segmentation analysis of sustainable food behaviors among 1,000 Finnish consumers. The study used the COM-B modeling approach (Michie, Stralen, and West, 2011) to assess factors influencing sustainable food behaviors and identified four consumer groups. The study found that consumers engaging in sustainable consumption, in general, were more likely also to choose sustainable food protein options and were willing to pay a premium for sustainable products. From the larger segmentation study, 28 participants were selected for a focus group study based on their criteria as "imperfect consumers" from the age group of 18- to 65-year-olds, diverse educational and professional backgrounds, and locations. Later, we excluded four participants who were less active during the first week and did not respond to the assignments and polls.

3.2 The Platform and the Study Design

In the platform (Fig. 1), participants were able to write comments anonymously under nicknames, see each other's comments, and respond to them. Before joining the discussions, the participants received an information letter regarding the purpose of the research and handling of the data according to GDPR (EU General Data Protection Regulation) and were asked for consent.

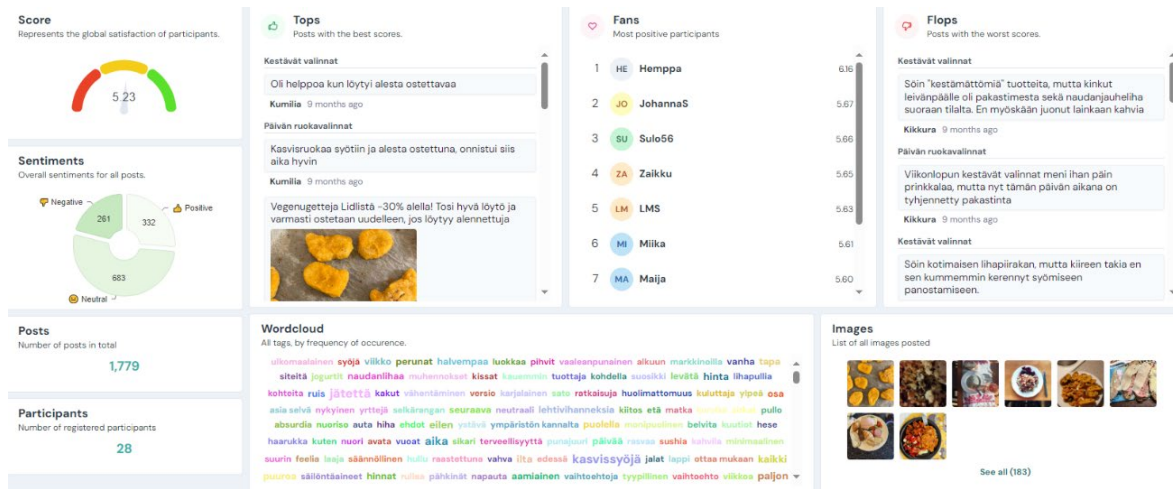


Figure 1: WhatsApp and Messenger-based platforms used for mobile focus group discussion

Initially, a diary study utilizing the WhatsApp platform was conducted to gather data. A total of 24 participants were assigned tasks and instructed to document their daily routines by exchanging images and engaging in activities that promote sustainable eating for two weeks. Subsequently, from this initial group, 20 participants participated in a two-hour real-time online focus group session. The session was moderated by two researchers who ensured the smooth progression of the conversation. Before the commencement of the session, questions were formulated regarding sustainable food behavior, food wastage, and grocery shopping. Furthermore, the facilitators were afforded the chance to delve into intriguing subjects that surfaced during the discussion, thereby posing impromptu questions. The collected research materials underwent a comprehensive analysis guided by thematic examination and descriptive coding techniques, facilitated by the utilization of NVivo software.

4. Findings

4.1 WhatsApp Diary Study

The participants were instructed to respond to topics regarding their food behavior and provide photos of their daily food choices through the online platform for two weeks. Comments and pictures were collected chronologically. The diary allowed to write about participants' priorities to make food consumption more sustainable.

Participants received daily timed reflective questions via WhatsApp. The tasks concerned for instance daily food choices and reflections on how the participants succeeded in following a sustainable diet: "Tell us what you had for breakfast or lunch today. Take a photo. (7 a.m.) Tell us how you managed to make sustainable choices today. What was successful and what was an obstacle? (9 p.m.)"

The diary encompassed several food-related tasks, enabling respondents to report barriers, facilitators, and feelings connected to task completion. We received in all 184 photos from the participants through the platform. Food photos were included in various tasks, such as daily self-assessments (Fig 2), and cooking tasks.

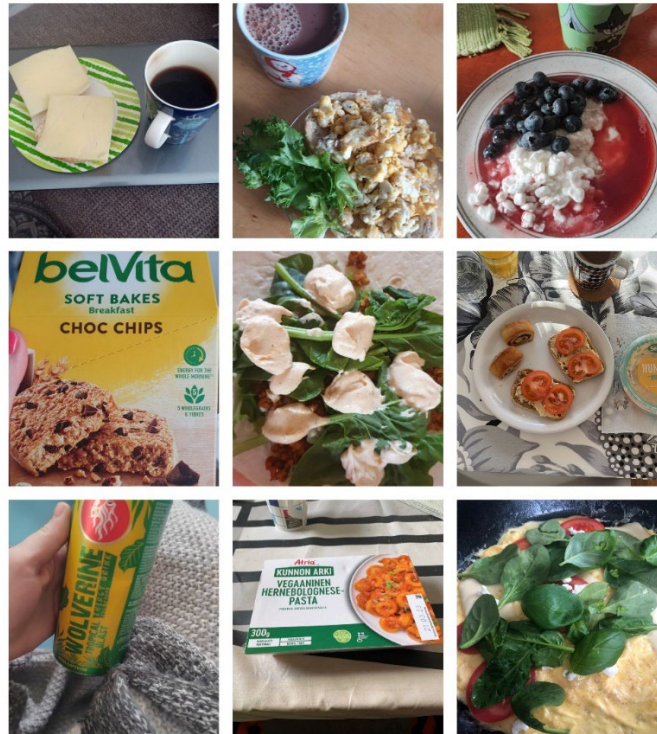


Figure 2: Photos of breakfast/lunch as a part of a sustainable eating WhatsApp diary study

The daily journal format encouraged participants to consider more detailed topics related to sustainable food consumption such as food shopping, and food waste management. At the end of the day, the participants responded to reflective inquiries through WhatsApp and described how they felt about the tasks and if there were some barriers. For instance, in the task of preparing vegetarian food, some participants raised budget concerns:

“The challenge for families is to find affordable dishes that are still tasty.”

Additionally, some participants found vegetarian recipes to be complicated:

“When I searched for vegetarian recipes, many of them were unfamiliar and unappetising.”

To address the lack of non-verbal cues in WhatsApp’s functionality, sentiment analysis was carried out on each task about household cooking activities using NVivo’s autocode function. This analysis captured cues related to emotions associated with the performance of cooking tasks.

In the context of a diary study, WhatsApp was found to offer several notable advantages, despite certain limitations. These benefits included the ability to the opportunity to ask detailed questions about the participants' photos and reflections and engage in real-time discussions, which represented an innovative approach to the collection of consumer insights. In addition, in the diary study, the polls were used to categorise respondents based on their personal goals for sustainable food consumption and the challenges of choosing sustainable foods in grocery stores. Notably, the study revealed that participants were able to develop new vegetarian recipes and successfully incorporate them into their cooking routines. Furthermore, through the polls, we were able to identify potential enablers and barriers to engaging in sustainable food behaviors among the target group, utilising the COM-B behavioral theory (Michie, Stralen, and West, 2011) as a framework to investigate daily reflections on food choices. The polls segmented respondents into groups to understand their motivations and capabilities for choosing sustainable food. The coding of themes provided insights into the challenges faced and the level of success in cooking activities by different types of 'imperfect consumers'. This supported further the creation of personas with Chat GPT.

4.2 WhatsApp Chat Session

During the hour two-hour real-time chat session, we received 400 responses from the participants. This communication was non-hierarchical, evenly distributed among the participants, and open, letting everyone share their views and respond to each other’s messages.

Moderator: Do you have a favorite waste recipe?

R1: There is very little waste in a two-person household, it is easy to buy and cook food appropriately.

R2: For buttermilk cake, buttermilks, creams, yogurts, fillings...

R3: You can put milk whose date is getting old in the pancakes.

R4: A couple of days ago I made a sauce where I mixed salsa, sweet chili, and ketchup leftovers. You can also try any fillings for the tortillas. It's easy to hide leftovers in oven foods, e.g., with pasta.

R5: We don't have any wastage, the chickens/dog and the cat eat what people leave.

R6: Mash and porridge leftovers for rolls.

R7: Pizza and omelette with salty toppings.

R8: I have used the ResQ application and thus reduced waste.

R9: Pizza or some kind of stew as wastage food. And casseroles. Roots and many vegetables that are near the end date can be well immersed in them.

R10: The pizza is really good.

R11: My favorite pastime is making leftover mashed potatoes into fritters.

R12: Pizza is always a good wastage food.

It is worth noting that through WhatsApp chat we were able to effectively engage also non-tech-savvy groups with clear instructions and providing sufficient response time. To ensure a smooth flow of conversation, we had to consider the pace of slower participants. The semi-structured nature of the platform allowed for the exploration of intriguing topics, and WhatsApp's flexibility enabled repeated assessments that captured changes in attitudes and preferences before and after study., the platform's ability to accommodate wider participation increased convenience for respondents with diverse daily schedules.

One notable limitation identified in the study pertains to the lack of detail in the messages exchanged during the moderated chat session. This limitation posed challenges in terms of effectively managing and analysing the data. The fragmented nature of the conversations on WhatsApp, combined with the presence of multiple messages addressing a single topic, made it difficult to organize and analyse the responses efficiently. To address this challenge, meticulous data preparation was implemented. This involved consolidating significant responses obtained from scattered messages. To facilitate this, a simple crosstab table was created in Excel during the data preparation phase. This table served as a reference, linking the scattered messages to the respective respondents and relevant questions (See Table 1).

Table 1 Example of data preparation procedure in Excel

Username	Comments	1. What would ease food choice and blogs?	2. What type of information would benefit instore?	3. Can you read product labels, for example?	4. Do you have a favourite recipe?	5. Have you tried any plant-based products?	6. Would it be easier to choose sustainable food in	7. Are locally produced food products available	8. How much do your family, friends or relatives
Respondent 1	You would need more	1							
Respondent 1	Yes, I'm apparently	1							
Respondent 1	Children usually sug	1							
Respondent 1	The guidance in the store was		1						
Respondent 1	That's good								
Respondent 1	You can put milk whose date is getting old in the pan				1				
Respondent 1	I've looked at them, but haven't bought them					1			
Respondent 1	We didn't like the tofu either					1			
Respondent 1	Neither do I						1		
Respondent 1	In the Valma store, you can get dairy products, etc., cheaply							1	
Respondent 1	I get eggs from a local hen							1	
Respondent 1	In the summer, we grill with my sister's family at the same time and there have been no problems								1
Respondent 1	I also take leftovers to work the next day								
Respondent 1	Fish is terribly expensive in the store							1	
Respondent 1	We can also have the fish in the lake because no one wants to gut and put them in							1	
Respondent 1	Cats do thank you for fresh fish							1	
Respondent 1	Fiksu Ruoka is often blocked and cannot get the order through							1	
Respondent 1	I go to blueberry in the summer and they are good for children and friends								1
Respondent 1	Well, the wife stays in the raspberry in the backyard								1
Respondent 1	Strawberries are laborious to keep, so they have been left out								1

This facilitated seamless retrieval and examination of the reconstructed comments within the NVivo software tool, without encountering any data gaps. Nevertheless, it is important to acknowledge that the incorporation of time stamps could have potentially mitigated certain obstacles encountered. Unfortunately, the time stamps were not exportable from the discussion platform along with the comments, thereby hindering their inclusion in the analysis.

4.3 Further Analysis with Large Language Models

Incorporating large language models (LLM), like Chat GPT, can be utilised for enhancing the complexity of research findings alongside human reasoning of discovered rationales. The LLM has been found to improve the objectivity of human reasoning in topic coding and content analysis when studying qualitative data (Bano *et al.*, 2024). In the focus group study, LLM was used alongside NVivo to validate the manually coded topics by respondents' answers with basic prompting to contextualise the questions in the analysis (Tai *et al.*, 2023). This provided an additional layer of quality assurance to guarantee precise coding procedures that are typically conducted by comparing the discovered topics between researchers. If gaps or incomplete components were identified, the LLM's capabilities were utilised to generate new topics, thus refining the analytical framework to a higher degree. Incorporating LLM aided in refining the creation of detailed personas, which are fictional representations of segments of actual people within a population (Pruitt and Grudin, 2003) (Fig.3).



Figure 3: Example of persona descriptions of three types of imperfect consumers using AI tools (Chat GPT 3.5) to provide insight into the barriers and enablers of sustainable food behavior

5. Discussion

In our study, the WhatsApp platform helped to collect a comprehensive dataset and materials to form nuanced consumer insights. The integration of WhatsApp as a communication tool allowed for real-time discussions and diary-style reflections, which has been applied to previous research on the topic (Chen and Neo, 2019). WhatsApp provided a more straightforward and ubiquitous sharing of insights and instant inclusion of photos of daily food choices and cooking activities, compared to specifically designed, asynchronous discussion platforms (Kymäläinen, Seisto, and Malila, 2021). Despite its limitations, WhatsApp proved to be a valuable tool for gathering consumer insights on barriers preventing sustainable food choices. WhatsApp focus groups allowed immediate and continuous interaction between the study participants and the researchers, enabling an intimate exploration of consumer attitudes and behaviors. This direct and non-hierarchical communication fostered a sense of comfort and openness among participants, leading to authenticity and candidness.

However, it is essential to note that materials acquired through WhatsApp focus groups may be less verbose and extensive than traditional face-to-face or video focus groups. Further, while emoticons are a common feature in contemporary digital interactions and conversations (Walther and D'Addario, 2001), they may pose

challenges to the analysis of the material, particularly when it comes to text-based coding, categorisation, and software-based analysis. Researchers must be cautious in interpreting and analysing the briefest messages and the non-verbal cues, as they may not always accurately reflect the intended meaning of the participants, especially out of context. In addition, the fragmented nature of messages can pose challenges and extra effort to manage research data in further analyses.

Another limitation of WhatsApp focus groups, which is also found in previous studies, is the potential for the digital divide, particularly with older or less technologically savvy individuals. This can lead to difficulties in participation and potential bias in the sample (Colom, 2022). Even though WhatsApp-based focus groups may be inaccessible to some groups, we found that also non-tech-savvy groups can successfully participate if they are given enough time to respond and clear instructions. However, it should be noted that our research is limited to Finland, where the digital divide between the population is not significant and thus the results could be different in other countries.

Moreover, WhatsApp focus groups necessitate careful question route preparation when employing them as a research method to produce high-quality research materials. Clear and concise questions are easy to understand and respond to in the short-message medium. The absence of visual cues and non-verbal communication in mobile focus groups may require additional clarification and guidance from the researchers to ensure that participants fully understand the questions and can provide meaningful responses.

5. Conclusion

In conclusion, mobile focus groups offer a promising approach to qualitative consumer research. They provide convenience, flexibility, and the potential for more authentic and unbiased responses. By leveraging the benefits of mobile and digital technologies, researchers can gather rich and varied data that can lead to deeper insights into consumer attitudes and motivations. While there are limitations to consider, mobile focus groups have the potential to enhance the field of qualitative consumer research and contribute to a better understanding of consumer behavior. However, researchers must be mindful of the limitations of using mobile technology, such as the reliance on emojis and emoticons, potential technical issues, and the need for careful question route preparation and supporting those participants, who are not as technically savvy and may need more time to participate in the conversation. By understanding these limitations, researchers can harness the benefits of mobile and WhatsApp-based focus groups to generate valuable insights into future research on sustainable consumption.

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