

Sage Research Methods: Business

Applying Sequential Mixed-Methods Approaches When Working with Businesses: Insights from Longitudinal Research into the Influence of Business on Sustainable Lifestyles

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Pub. Date: 2023

Product: Sage Research Methods: Business

DOI: <https://doi.org/10.4135/9781529628449>

Methods: Qualitative data collection, Mixed methods, Longitudinal research

Keywords: lifestyle business, behavior change, lifestyles

Disciplines: Business and Management

Access Date: March 31, 2023

Publishing Company: SAGE Publications Inc.

City: London

Online ISBN: 9781529628449

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Abstract

Working with businesses can be complex and equally demanding requiring flexible and rigorous research approaches to ensure sufficient data is captured to fully answer the respective research questions. Sequential mixed-methods approaches allow to combine quantitative and qualitative methods in ways that allow for exploration and explanation. While often multifaceted and resource-intensive, sequential designs such as sequential exploratory and sequential explanatory approaches utilize a wide breadth of data in an attempt to capture the real world in its entirety. The application of both types of sequential mixed-methods designs is presented by drawing on a longitudinal behavior change study with IKEA UK & Ireland, a leading multi-national home furniture retailer. A variety of qualitative data mining techniques were used to collect data including qualitative data from in-depth semi-structured interviews and blog posts, among others. Quantitative data were collected following a pre-post survey design. The case example demonstrates the potential of sequential designs, addressing advantages and potential challenges. It also highlights the need to stay flexible throughout the research process to adapt to changes while applying a rigorous approach to data collection and analysis.



Learning Outcomes

By the end of this case study, readers should be able to:

- Explain the benefits and potential challenges of applying sequential mixed-methods designs
- Identify the key factors and considerations in the process of planning and executing sequential designs
- Learn to apply strategies that allow for a flexible yet rigorous approach to answering the underlying research question

Project Overview and Context

The research underlying the case example was carried out across the UK and Ireland over the course of three consecutive years from 2015 to 2018 as part of IKEA's Live Lagom behavior change project. The research aimed to understand if a private sector actor can operate as

a support system in its customer's attempt to live more sustainable lifestyles at home.

The Live Lagom project employed a co-creative approach between IKEA and their customers supported by the behavior change charity Hubbub to explore avenues towards behavioral changes on a household level. That is, it actively involved project participants and made changes to the project according to customer feedback that was collected at different points throughout the project thus demanding a flexible approach to data collection and analysis to react to changes. Changes included new interventions such as updated or additional workshops as well as changes to the incentives participants received as part of their project participation.

Behavior Change Interventions

To change lifestyles instead of single behaviors alone, the project involved a variety of interventions. This included in-person workshops in the local IKEA store, the provision of products and services, online webinars, and information brochures, among others, following both antecedent and consequence strategies ([Abrahamse et al., 2005](#); [Abrahamse, 2019](#)). Antecedent strategies are introduced before the behavior occurs. This includes goal setting, which involves setting clear goals and making plans to achieve those goals ([Gollwitzer & Sheeran, 2006](#)), information provision strategies and environmental education (e.g., [Hinchliffe, 1996](#)), as well as modeling. Modeling involves showing how others carry out the desirable behaviors and how products can support behavioral changes ([Abrahamse et al., 2005](#)). Consequence strategies are introduced after the behavior in question occurs and aim to reinforce the desired behavior. Examples involve the provision of financial incentives to encourage "desirable" or discourage "undesirable" behaviors ([Maki et al., 2016](#)) and feedback to show people how far they have come in achieving their goals ([Abrahamse et al., 2007](#)).

A central opportunity to facilitate customer engagement is providing customers with opportunities to express their ideas and thoughts as an integral part of a co-creational approach (e.g., [Wagner & Majchrzak, 2014](#)). To provide ample learning and engagement opportunities for co-

creation, a number of in-store, and online workshops were provided. Further opportunities to engage with both other participants and IKEA were offered through a closed Facebook group that participants were invited to join.

During the Live Lagom project, feedback was provided by IKEA and between project participants in person during workshops and online. Although most studies employ only a single type of intervention, research has shown that behavior change interventions are most effective when combining antecedent and consequent strategies ([Abrahamse et al., 2005](#)). In line with this notion, the Live Lagom project included multiple elements tackling a range of different underlying motives to help promote lasting *lifestyle* change across behavioral domains ([Moore & Boldero, 2017](#)). This stands in contrast to the vast majority of behavior change studies that focus on single behaviors in an attempt to control for external factors.

Lifestyle change, however, requires a wider approach combining elements, making it exponentially more difficult to examine driving factors of behavioral changes (or the lack thereof) thus demanding a both flexible yet rigorous approach to data collection and analysis.



Section Summary

- Lifestyle change is messy and exponentially more complex than behavior change of single and/or isolated behaviors.
- The behavioral sciences and psychology in particular provide a variety of interventions that have been tested empirically.
- Mixing antecedent and consequent strategies when designing interventions can improve the effectiveness of behavior change among domains and promote wider lifestyle change.

Research Design

To understand what changes occurred and why following the range of interventions, we applied two different

types of mixed-methods sequential designs combining them into a multi-phase sequential design. We did so to first explore underlying processes and develop hypotheses and research questions before testing these in a subsequent, explanatory phase. This was possible through the longitudinal nature of the project across three years.

Mixed-Methods Approaches

Mixed-methods approaches are particularly suited for real-life research projects ([Creswell & Plano Clark, 2017](#)). Whereas quantitative data provide an account of structures in social life and allow to understand “what” is happening, qualitative data provide a sense of process and “why” changes occur ([Tashakkori & Teddlie, 1998](#)).

More generally, the purpose of a mixed methods research is to provide an in-depth understanding of a rather complex phenomenon and inquiry would be limited by using a single-method approach alone ([Creswell & Plano Clark, 2017](#)). In other words, combining qualitative and quantitative findings can add evidence and improve certainty about findings ([Harrison & Reilly, 2011, p. 10](#)). Indeed, mixed methods approaches are increasingly seen as a way to ensure confidence in the conclusions and add further clarification of results from one method with the results of another ([Bryman, 2008](#)). To exploit both the potential and strengths of each of the sequential designs, while responding to the demands of the complex, longitudinal nature of the research endeavor, quantitative and qualitative data were combined through the application of different sequential mixed-methods designs into a *multi-phase sequential design*.

Multi-Phase Sequential Design: Integrating Sequential Exploratory and Explanatory Designs

In the first step, we briefly introduce the multi-phase sequential design discussing key factors when applying the respective design. The multi-phase sequential design provides the overall research design bringing together different sequential designs which are introduced and discussed in a second, subsequent step.

Three studies were conducted to examine whether the Live Lagom project could effectively promote sustainable lifestyle change. Study 1 followed a sequential *exploratory* design, serving as a pilot that allowed us to test of the initial methodology and generate hypotheses. An updated research design was then used during

Study 2. This was eventually replicated in Study 3, which followed a sequential *explanatory* design and, together, functioned as the confirmatory part of the multi-phase sequential design. A fourth purely quantitative study was conducted inviting project participants from all three years to fill in a survey that aimed to examine the longevity of pro-environmental behavior change (see [Elf, 2020](#)).

[Ivankova et al. \(2006\)](#) argue that there are a number of important decisions that need to be made when mixing methods. These include deciding on priority, implementation, and integration of both strands. Priority refers to the researcher's decision to give more (or equal) weight to one or the other. Implementation is concerned with the order of the data collection and analysis. Here, it is usually differentiated between sequence, sequential and concurrent ([Johnson & Onwuegbuzie, 2004](#)). Finally, integration is concerned with the stage (or stages) in which the mixing of quantitative and qualitative methods occurs ([Ivankova et al., 2006](#)).

In the first phase of the Live Lagom project, an *exploratory* sequential design was chosen to explore the underlying phenomena of sustainable lifestyles and to develop hypotheses and further, more nuanced research questions. This provided enough flexibility to add necessary research steps to answer the overall research question. The second phase then followed an explanatory sequential design testing initially developed hypotheses.

The applied multi-phase mixed-methods design de-emphasizes an overly narrow focus on either quantitative or qualitative research. Instead, by subdividing research into exploratory and explanatory methods, quantitative and qualitative data collection and analysis can be brought together under one framework ([Onwuegbuzie & Teddlie, 2003](#)).

Sequential Exploratory Designs

A sequential mixed-methods research design where the qualitative part precedes the quantitative part is called *exploratory* sequential design. The exploratory sequential design aimed to investigate factors that support and/or hinder participants in their pursuit to adopt more sustainable lifestyles and generate wider knowledge. It is a powerful research design that allowed to generate new research questions and hypotheses that were necessary to approach the overall research question further ([Onwuegbuzie & Teddlie, 2003](#)). That is, it allowed new research questions to emerge which were then tested in the subsequent explanatory research phase. It does so by focusing on qualitative findings which are better equipped to create insights into peo-

ple's actual experiences. The process was influenced by an extensive literature review to ground the research endeavor in existing evidence, supporting the research's direction. Due to the complexities of the research project, this was deemed both necessary and useful to address the overall research question.

With a focus on qualitative data collection and analysis, the exploratory phase during the first year of the 3-year project aimed to generate an improved understanding of the "how" and "why" of pro-environmental behavior change and sustainable lifestyle adaption on a household level took place.

During the first phase of the Live Lagom research project, qualitative data were analyzed through the application of thematic analysis ([Braun & Clarke, 2006](#)), while quantitative data analyses included descriptive as well as inferential statistics. To develop an improved understanding of the research phenomena of sustainable lifestyles at home, an initial study used a 'soft version' of action research ([Burns, 2014](#)). This was followed by the before-mentioned thematic analysis of blog posts which project participants provided at three different points during the project (i.e. start, mid-point, and end).

In a third and final qualitative element as part of the exploratory sequential design, data from semi-structured in-depth interviews with a subsample of participants conducted at the participants' homes were analyzed. Drawing on a broad variety of qualitative data allowed the necessary depth required at this exploratory stage of the research. Finally, quantitative survey data collected at the beginning (T1) and end (T2) were analyzed and contrasted with the qualitative findings.

After an integration and interpretation of findings from the qualitative studies, these were then integrated with the quantitative findings to provide additional insights and validity of the findings ([Johnson & Onwuegbuzie, 2004](#)). Following the integration, hypotheses and further research questions emerged which were subsequently tested.

Sequential Explanatory Designs

The aim of the second part of the multi-phase design in years 2 and 3 then was to "explain." Whereas quantitative methods are useful to test hypotheses, *adding* qualitative findings permits more diverse perspectives on the research topic ([Teddlie & Tashakkori, 2003](#)).

In *explanatory* sequential designs (Please note that some authors such as [Johnson & Onwuegbuzie, 2004](#), prefer to use the term “confirmatory” sequential design instead), the quantitative phase precedes the qualitative phase which aims to add further insights to the quantitative findings ([Ivankova et al., 2006](#)). The quantitative part is usually weighted more with qualitative findings aiming to explain the emerging insights further ([Bryman, 2016](#)). That is, the collected data are then analyzed in a sequence in which quantitative results are obtained first and the qualitative data and their analysis add explanatory power to the findings by exploring participants’ views further ([Ivankova et al., 2006](#)). By combining two types of sequential designs the explanatory phase aimed to test the previously developed research questions that emerged during the exploratory phase. We did so through the application of descriptive and inferential statistical analysis.

As mentioned previously, the application of a sequential explanatory design can be an advantage when unexpected findings arise from the initial, quantitative phase ([Morse, 1991](#)).

Research Approach

Financial Incentives and Non-Financial Support

Participating customers were offered an incentive in form of a product voucher (year 1 = £500; year 2 = £300; year 3 = £100) they were able to spend on a range of products that were identified to have to support customers in their ambition to live more sustainable lifestyles.

Following the recruitment, the participants were introduced to an employee of the business working in the local store who functioned as a contact person, and organized and executed workshops over the course of the project.

Data Collection

All samples during the 3-year Live Lagom project were recruited by IKEA through the company’s own loyalty program, IKEA family. As part of the regular newsletter, information outlining the duration and the purpose of the project was communicated inviting members of the loyalty program to fill in a short application form.

Potential participants had to be over 18 years old at the time of the application and needed to live within one hour's driving time from the respective IKEA. This was deemed necessary to make sure that people could participate in in-store workshops and events. No other exclusion criterion was applied.

Over the course of the project three participant samples were recruited (year 1, n = 124, year 2, n = 99, year 3, n = 141) from 20 different locations in the UK & Ireland depending on the IKEA store localities.

Qualitative Part

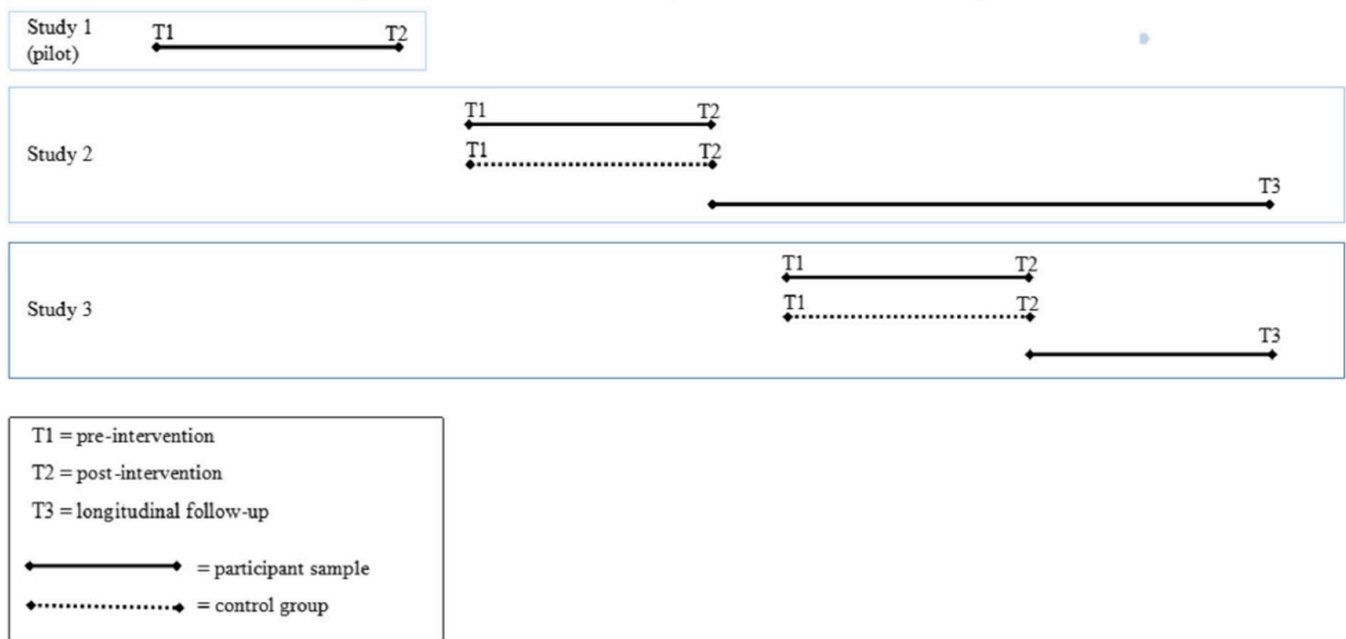
Qualitative data were collected in different forms including blog posts, data from a closed Facebook group, and semi-structured in-depth interviews. Participants were asked to write short blog posts (250-1000 words) that allowed them to reflect on their expectations, experiences, and change processes during their project participation and allow IKEA to gather feedback to follow a truly co-creational approach. Across the three consecutive cohorts, 877 blog posts (80.31% of all possible data points) were collected providing a rich data set necessary to engage in multi-phase sequential designs.

Interviews were conducted 10 months after the official end of the project for cohort 1 and cohort 2, to understand the long-term implications of the project (see [Elf, 2020](#)) and potential behavioral spillover effects ([Elf et al., 2019](#)). Data from the closed Facebook group and additionally qualitative data from open-ended questions were used in a complementary manner were deemed useful.

Quantitative Part

Quantitative data were collected at the beginning (T1) and through a follow-up survey at the end (T2) of each year using Qualtrics. Matched control groups with near identical socio-economic and geographical backgrounds were recruited to examine if changes in behavior, and, attitudes and values, among others, did not occur by pure chance but were linked to the applied interventions. Whereas it is difficult, if not impossible, to control for all external factors in a real-life setting, the recruitment of matched control groups was deemed a minimum requirement to ensure a rigorous evaluation was possible. [Figure 1](#) provides an overview of the quantitative data collection.

Figure 1. Timeline presenting the overall quantitative data collection, adopted from Elf et al., (2020). T3 marks the data collection of the fourth study that explored the longevity of the pro-environmental behavior change. Please note that matched control groups were recruited for year 2 and year 3 but not in year 1.



Section Summary

- The application of a sequential explanatory design can be an advantage when unexpected findings arise from the initial, quantitative phase;
- It is difficult, if not impossible, to control for all external factors in a real-life setting, requiring the researcher to make sufficient arrangements;
- Control groups are often deemed a minimum requirement to ensure a rigorous evaluation.

tion is possible.

Research Practicalities

Practical Considerations

Conducting research outside the lab poses a variety of challenges. Whereas a number of factors such as external, confounding factors can be controlled in the lab settings, field experiments and research endeavors drawing on data from natural settings are often messy. This complex setting requires an equally complex and extensive multi-layered approach to data collection and analysis to grasp the underlying factors driving behavior change to the greatest extent possible ([Baum & Gross, 2017](#)).

However, working with external partners brings an additional layer of complexity that can lead to unforeseen issues. Researcher conducting studies outside controlled lab settings, therefore, need to follow a “what works” approach (and attitude), while aiming to maintain consistency and scientific robustness in the application of their research design. This is important to reduce confounding factors and ensure a consistent approach to data analysis and data interpretation is given which, in turn, allows for valid findings and generalizability.

Below, we briefly outline a few practicalities that were considered at different stages in the planning and final implementation of the research project.

Sampling and Validity

A sample determines the extent of the generalizability of research findings. The importance of a robust sampling strategy is well-document (e.g., [Teddlie & Yu, 2007](#)). As expected, in the case of the Live Lagom research as a longitudinal real-life project, a number of factors occurred outside our control of us as the researcher. For instance, whereas we designed the research approach, IKEA UK & Ireland maintained sole

control over the applied sampling strategy opting for a purposive sampling strategy.

The participant samples were recruited through IKEA's IKEA family loyalty program on the basis of location, a good spread across age ranges and a short application form. Following a first filtering by an external data management company, the provisional sample was further screened by the IKEA Sustainability team. In this sampling approach, no particular attention was paid to generalizability and other potentially important factors such as the national representativeness of the sample or other socio-economic factors. These decisions were made on the basis of practicality and were deemed necessary to ensure that a strong engagement with participants was possible.

Ethical Considerations

As with all research involving humans, ethical approval from the respective university Ethics Board was sought to guarantee thorough ethical conduct was considered at all stages. The two main ethical considerations we dealt with were i) the fact that IKEA provided a financial incentive to all participating households, and ii) our aim to conduct interviews in the participants' homes. Whereas the former is common in social science research requiring careful consideration of potential ways this influences findings, the latter demands the provision of participant information sheets and consent forms to warrant against risks for both participants and researchers alike. Following ([Burns & Bush, 2014, p. 138](#)), the respective researcher informed the interviewees prior to the start of the interviews that participants i) can stop the interview at any time, ii) are free to ask any questions at any given time, and iii) request the contact information of the principal investigator. In addition, participants were able to request transcripts of their interviews. Moreover, through the diverse sample, we carefully prepared for interviews. All interviewers received ample training and interviews were practiced prior to the data collection.



Section Summary

- Unforeseen issues can occur in natural, real-life settings.
- Following ethical guidelines throughout the research process (including the ethics approval from your respective institution) are of key relevance when working with humans.

- A sample has to allow you to do what you set out to do. That is, it needs to be relevant to the research question and context in which it takes place and collects meaningful data within the respective realm.

Method in Action

Applying Complex Research Designs

Combining quantitative and qualitative data collection and analysis is often difficult and requires a number of both practical and ethical considerations ([Ivankova et al., 2006](#)). To maneuver involved difficulties, ([Creswell & Plano Clark, 2017](#)), suggest that four factors deserve specific attention when mixing methods; namely: timing, weighting, mixing, and variants. Therefore, a number of key decisions have to be undertaken. For instance, one has to decide the level of interaction between quantitative and qualitative approaches including the order and the timing of data collection and analysis, and which (if any) strand is prioritized.

In our research, we followed suggestion that within sequential designs, it is not necessarily required to attribute more weight to the preceding method. This decision was made since our data were collected from the same participant samples. Notably, by adding either qualitative or quantitative insights, the research extends its breadth and range of inquiries through the use of different methods for different components ([Bryman, 2016](#)).

After revising these factors, the researcher needs to decide which mixed-methods design is best suited to answer the research question. Here, it is important to remember that, as stressed by [Bryman \(2016\)](#), every mixed methods research design needs to be explicit about its appropriateness to the research question. A number of primarily practical factors informed the choice of methods. For example, IKEA's decision to include an academic partner was taken at a late stage of the planning process, which allowed for a limited time to review existing literature *prior* to the start of the project. We, therefore, opted for an exploratory approach as a response to the existing research demands ([Booth et al., 2008](#)) during year 1 to provide the necessary flex-

ibility and allow us to systematically combine mixed-methods approaches.

Responding to the complexity and inherent practical nature of the research, we decided to utilize an applied pragmatist approach as a guiding research approach. This allowed the mixing of quantitative and qualitative data explicitly supporting the “what works” design to answer the overall research question. It also follows [Creswell and Plano Clark \(2017, p. 6161\)](#) who recommend that “[b]eing responsive to new insights is an important aspect of mixed methods research” while it is also important for researchers to design their study with *at least* one clear reason as to why they are planning to combine methods. Similarly, [\(Braun and Clarke \(2006\)\)](#) noted that many mixed methods studies make use of multiple reasons for mixing methods and that new, additional reasons may emerge during the process.

The main reason for the application of a broad, yet systematic mixed-methods approach was the research’s aim to examine *lifestyle* change instead of single, isolated behaviors alone. As mentioned before, this comes with a number of issues such as confounding variables that can add noise to data.

Overall, the extensive research design allowed for sufficient flexibility to maneuver the complexities of the natural, real-life setting. However, issues can occur. For instance, no control group was recruited in the first year due to the late addition of the academic research partner.

Moreover, one important consideration when applying a systematic mixed-methods sequential design is its resource intensity. This is perhaps, even more, the case when following a longitudinal approach with consecutive samples. Analyzing data is time-consuming and requires attention to detail. Tight deadlines, new cycles of recruitment of new participant cohorts and other commitments that can occur in projects working with partners from other sectors with different rhythms and ways of working can lead to insufficient time to reflect on emerging findings and to allow for the necessary devotion to data collection and analysis. It is advisable to plan ahead and make sure that enough time is given.



Section Summary

- When applying a mixed-methods sequential design, one has to carefully decide the level of interaction between quantitative and qualitative approaches including the order and the timing of data collection and analysis, and which (if any) strand is prioritized.

- Any mixed methods research design needs to be explicit about its appropriateness to the research question.
- A pragmatist “what works” approach can help overcome issues in the process and guide the research.

Practical Lessons Learned

Every research project offers a large number of lessons. We cannot include all the lessons from our research project here, so we have selected those that are most important.

Mixing Methods: Making Time, Planning Ahead

The application of a sequential mixed-methods designs can be of advantage when unexpected findings arise. This is only one of many reasons why applying mixed-methods designs is particularly suited for real-life research projects. However, there are downsides to it and can be time-consuming.

For instance, the Live Lagom project drew on multiple elements to help promote lasting *lifestyle* change across behavioral domains. To capture the wider lifestyle changes a wider approach is required combining different elements, making it an exponentially more time-consuming undertaking. To ensure you dedicate enough attention to the often multifaceted data collection and analysis, and necessary reflective practice, you need to make sure to plan ahead and allow for sufficient time for the periods where quantitative and qualitative data are analyzed and, eventually, brought together under one framework.

More generally, a mixing of methods de-emphasizes an overly narrow focus on either quantitative or qualitative research but deserves careful planning and execution. As argued previously, the mixing of methods needs to have a reason. The reason for the choice of the methods must be clear, and logically coherent and ensure that the different approaches are complimentary.

Working with Businesses: Achieving Impact While Maintaining Academic Rigor?

Whereas once (or: still?) known for complex studies that were locked deep into the abyss of the infamous academic ivory tower, recent years have seen an increasing focus on demonstrating positive impact. Impact can come in different forms but is frequently divided into societal, including economic impacts and positive environmental impacts.

One way to achieve this ambition is through the application of multi, inter, and/or transdisciplinary approaches, as described throughout this study, and through the active engagement with actors from the private sector and third sector ([Elf, 2020](#); [Oliveira et al., 2022](#)).

However, maintaining a systematic and rigorous approach is not easy and you might be urged to accelerate or follow some shortcuts to stay within the set timelines. This is certainly more common in the private sector which often follows tight deadlines and underlying logic that might differ from purely academic research. Notwithstanding different approaches and even potentially occurring power discrepancies within academic-business partnerships, any responsible researcher should follow the dogma “quality over quantity.” While this might seem somewhat surprising when applying a wide, complex mixed-method design that draws on a number of different approaches, it must not shift the focus away from quality and academic rigor. Indeed, doing a lot badly, is still bad. A potential solution to power dynamics is to choose the right positioning. One needs to make sure that the quality of your data is not only good enough but of generally high quality (e.g., validity) to answer your research question(s) and/or test your hypotheses. To ensure the necessary academic rigor is possible, it might be advisable to take on the role as a “critical friend.”

A critical friend is involved in the research but remains a healthy distance to help minimize bias in the research. Moreover, as argued throughout this contribution, working with partners across sectors requires a great deal of flexibility and resilience, and operating as a ‘critical friend’ can potentially help in this process. Flexibility is required to respond to changes in a timely and efficient manner, maintaining focus and rigor while acknowledging the partnership and the resulting greater complexity. Indeed, complexity needs to be actively embraced. Research in natural settings is often, if not always, more complex, dynamic, and unpredictable demanding resilience to deal with unforeseen circumstances. While this is often resource-intensive, it is necessary to advance important insights and contribute to the advancement of scientific inquiry, and, indeed, can

be hugely rewarding. Notably, although no method can ensure a successful research outcome, it is perhaps impossible to overstate the importance of the choice and execution of an appropriate method to ensure that impactful, complex, and equally, rewarding research is possible.



Section Summary

- Complex studies demand from the researcher to carefully plan ahead and to make sufficient time to collect and analyze data and integrate findings subsequently.
- Becoming a critical friend can allow for the necessary distance to conduct the research in an unbiased and systematic manner.
- Any researcher should follow the dogma 'quality over quantity' to make sure that the focus does not shift away from quality and academic rigor when working with businesses.

Conclusion

In this contribution, we have laid out how a multi-phase design allows dealing with the complexities and unforeseen issues occurring during research projects in real-life settings conducted in partnership with private sector actors.

The goal was to provide researchers engaging with businesses and other actors from different sectors with insights and guidance on how to design, conceptualize, implement, and validate sequential mixed-methods research designs and deliver those. Drawing on our longitudinal research, this contribution sets out to help others conduct research in more rigorous ways, embrace complexity and produce meaningful study outcomes.

The main conclusion lies in the fact that research with businesses conducted in real-life settings is complex and demands an equally complex and extensive multi-layered approach to data collection and analysis. When deciding which research method to use, the design of the study has to be decided with at least one clear reason why combining methods is desirable or even necessary. Indeed, it is difficult, if not impossible, to control for all external factors.

While there are many benefits to applying sequential mixed-methods designs such as better evidence and im-

proved certainty and understanding, the exponentially greater complexity requires constant reflective practice and thorough planning processes paired with a great level of flexibility and resilience. Adapting to changes in the research setting is often necessary and might challenge the applicability of the whole or parts of the respective phase of a sequential design. Here, a healthy mix of academic rigor and a pragmatist ‘what works’ approach can support the successful application of the chosen methods.

Adapting such an approach is equally equipped to deal with partners that often employ different approaches and logic and might not understand the need for academic rigor.



Classroom Discussion Questions

1. What are the key factors that could influence the data collection and analysis when working with businesses? Consider if they are controllable and could be prevented or are usually beyond the researcher’s control.
2. When is it advisable to apply a sequential mixed-methods design? Please consider the advantages and disadvantages as outlined in the case study.
3. What are the common pitfalls that can occur when applying a complex, often time-consuming research design such as sequential mixed-methods designs?
4. Why can issues occur when working with businesses and other actors from different sectors?
5. What can be considered of key relevance when conducting research with human participants?



Multiple-Choice Quiz Questions

1. Which type of sequential design is best equipped to cover the whole research process?

- a. A sequential explanatory design with the quantitative data collection and analysis

preceding the qualitative part since the research questions were clearly defined at the beginning.

Incorrect Answer

Feedback: This is not the correct answer. The correct answer is B.

b. A multi-phase sequential mixed-methods design that combined a sequential exploratory design followed by a sequential explanatory design that allows one to understand the research context better and develop research questions and hypotheses before testing them.

Correct Answer

Feedback: Well done, correct answer

c. A qualitative comparative case study was design to compare the different participant's cohorts to understand which changes occurred over the course of the overall project.

Incorrect Answer

Feedback: This is not the correct answer. The correct answer is B.

2. What are the key benefits when combining quantitative and qualitative methods?

a. Complimentary insights that can explain complex human behaviors and are achieved through the different natures of inquiry, allow to development and/or hypotheses and answer research questions while improving validity and generalisability.

Correct Answer

Feedback: Well done, correct answer

b. Researchers remain focused because they are not bored by either purely qualitative or quantitative approaches.

Incorrect Answer

Feedback: This is not the correct answer. The correct answer is A.

- c. It allows working with other people that have different experiences and thus decreases the workload each has to do.

Incorrect Answer

Feedback: This is not the correct answer. The correct answer is A.

3. What are the three key issues that occur when applying multi-phase sequential designs when working with businesses (and that are reported in this study)?

- a. Complexity, time-intensity, potentially competing logic between the researcher(s) and the business.

Correct Answer**Feedback:** Well done, correct answer

- b. Complexity, cost, and lack of the business's understanding of the research process and its value.

Incorrect Answer**Feedback:** This is not the correct answer. The correct answer is A.

- c. Cost, time intensity, and businesses's lack of ethical considerations when working with people

Incorrect Answer**Feedback:** This is not the correct answer. The correct answer is A.

References

- Abrahamse, W. (2019). *Encouraging pro-environmental behaviour: What works, what doesn't, and why* (1st ed.). Academic Press.
- Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2005). A review of intervention studies aimed at household energy conservation. *Journal of Environmental Psychology*, 25(3), 273–291. <https://doi.org/10.1016/j.jenvp.2005.08.002>
- Abrahamse, W., Steg, L., Vlek, C., Rothengatter, T., & Rothengatter, J. A. (2007). The effect of tailored information, goal setting, and tailored feedback on household energy use, energy-related behaviors, and behavioral antecedents. *Journal of Environmental Psychology*, 27(4), 265–276. <https://doi.org/10.1016/j.jenvp.2007.08.002>
- Baum, C. M., & Gross, C. (2017). Sustainability policy as if people mattered: Developing a framework for environmentally significant behavioral change. *Journal of Bioeconomics*, 19(1), 53–95. <https://doi.org/10.1007/s10818-016-9238-3>
- Booth, W. C., Colomb, G. G., & Willaims, J. M. (2008). *The craft of research* (3rd ed.). The University of Chicago Press.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Bryman, A. (2008). The End of the Paradigm Wars? In P. Alasuutari, L. Bickman, & J. Brannen (Eds.), *The SAGE handbook of social research methods* (pp. 13–26). SAGE Publications Ltd. <https://doi.org/https://doi.org/10.4135/9781446212165>
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
- Burns, D. (2014). Systemic action research: Changing system dynamics to support sustainable change. *Action Research*, 12(1), 3–18. <https://doi.org/10.1177/1476750313513910>
- Burns, A. C., & Bush, R. F. (2014). Dealing with field work. In *Marketing research* (7th ed., pp. 268–276). Pearson.
- Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.).

Sage.

Elf, P. (2020). Tripartite partnerships: Promoting sustainable consumption in the context of Brazil. In W. L. Filho, A. M. Azul, L. Brandli, A. L. Salvia, & T. Wall (Eds.), *Partnerships for the goals* (pp. 1–13). Springer International Publishing. https://doi.org/10.1007/978-3-319-71067-9_126-1

Elf, P., Gatersleben, B., & Christie, I. (2019). Facilitating positive spillover effects: New insights from a mixed-methods approach exploring factors enabling people to live more sustainable lifestyle. *Frontiers in Psychology*, 9, <https://doi.org/2699>. <https://doi.org/10.3389/fpsyg.2018.02699>

Elf, P., Isham, A., & Gatersleben, B. (2021). Above and beyond? How businesses can drive sustainable development by promoting lasting pro-environmental behaviour change: An examination of the IKEA live lagom project. *Business Strategy and the Environment*, 30(2), 1037–1050. <https://doi.org/10.1002/bse.2668>

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. In *Advances in experimental social psychology* (Vol. 38, pp. 69–119). Academic Press. [https://doi.org/10.1016/S0065-2601\(06\)38002-1](https://doi.org/10.1016/S0065-2601(06)38002-1)

Harrison, R. L., & Reilly, T. M. (2011). Mixed methods designs in marketing research. *Qualitative Market Research*, 14(1), 7–26. <https://doi.org/10.1108/13522751111099300>

Hinchliffe, S. (1996). Helping the earth begins at home the social construction of socio-environmental responsibilities. *Global Environmental Change*, 6(1), 53–62. [https://doi.org/10.1016/0959-3780\(95\)00113-1](https://doi.org/10.1016/0959-3780(95)00113-1)

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3–20. <https://doi.org/10.1177/1525822X05282260>

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14–26. <https://doi.org/10.3102/0013189X033007014>

Maki, A., Burns, R. J., Ha, L., & Rothman, A. J. (2016). Paying people to protect the environment: A meta-analysis of financial incentive interventions to promote proenvironmental behaviors. *Journal of Environmental Psychology*, 47, 242–255. <https://doi.org/10.1016/j.jenvp.2016.07.006>

Moore, H. E., & Boldero, J. (2017). Designing interventions that last: A classification of environmental behaviors in relation to the activities, costs, and effort involved for adoption and maintenance. *Frontiers in Psychology*, 8, <https://doi.org/1874>. <https://doi.org/10.3389/fpsyg.2017.01874>

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing Research*, 40(2), 120–123. <https://doi.org/10.1097/00006199-199103000-00014>

Oliveira, V. M., Elf, P., Correia, S. É. N., & Gomez, C. R. P. (2022). The role and potential of tripartite partnerships to promote strong sustainable consumption in the context of Brazil: An evaluation of possibilities and risks. *Local Environment*, 27(1), 112–130. <https://doi.org/10.1080/13549839.2021.2013787>

Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. In A.Tashakkori & C.Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 351–383). Sage.

Tashakkori, A., & Teddlie, C. (1998). Mixed methodology: Combining qualitative and quantitative approaches. In *Mixed methodology: Combining qualitative and quantitative approaches*. Sage Publications, Inc.

Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioural sciences. In A.Tashakkori & C.Teddlie (Eds.), *Handbook of mixed methods in social & behavioural research* (pp. 3–50). SAGE Publications Ltd.

Teddlie, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research*, 1(1), 77–100. <https://doi.org/10.1177/1558689806292430>

Wagner, C., & Majchrzak, A. (2006). Enabling customer-centricity using wikis and the wiki way. *Journal of Management Information Systems*, 23(3), 17–43. <https://doi.org/10.2753/MIS0742-1222230302>

Wagner, C., & Majchrzak, A. (2014). Enabling Customer-Centricity Using Wikis and the Wiki Way. *Journal of Management Information Systems*, 23(3), 17–43. <https://doi.org/10.2753/MIS0742-1222230302>

<https://doi.org/10.4135/9781529628449>