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Survey Versus Interviews: Comparing Data Collection Tools for Exploratory Research

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Abstract

The purpose of the paper is to offer a comparison between survey and face to face interviews as tools for data collection in qualitative exploratory research. This study aims at encouraging new researchers to experiment with different data collection tools and then select the one that fits best to the research. Memos documented during data collection served as the basis for analysis. The memos were analyzed using a systematic three-step coding process to identify the challenges and benefits of using each of the two data collection tools. Using content analysis of the memos and field notes that were documented during the research, the author compares the challenges and benefits of each methodology for the selected case study. Interviews, when followed systematically, offer a useful alternative to surveys for exploratory research. This study can be extended to compare other research methodologies as well as further data collection tools.

Keywords

qualitative research, data collection, interview, survey

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Survey Versus Interviews: Comparing Data Collection Tools for Exploratory Research

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The purpose of the paper is to offer a comparison between survey and face to face interviews as tools for data collection in qualitative exploratory research. This study aims at encouraging new researchers to experiment with different data collection tools and then select the one that fits best to the research. Memos documented during data collection served as the basis for analysis. The memos were analyzed using a systematic three-step coding process to identify the challenges and benefits of using each of the two data collection tools. Using content analysis of the memos and field notes that were documented during the research, the author compares the challenges and benefits of each methodology for the selected case study. Interviews, when followed systematically, offer a useful alternative to surveys for exploratory research. This study can be extended to compare other research methodologies as well as further data collection tools.

Keywords: qualitative research, data collection, interview, survey

Introduction

Selection and collection of primary as well as secondary data plays an important role in the research (Adams, Khan, Raeside, & White, 2007). Observations, experimentation, survey, interviews, case studies, diary records offer some methods for collected primary data (Babbie, 2013). This study focuses on using surveys and face to face interviews for collecting primary data. Surveys are popular among new researchers because of the seemingly easy approach and possibility to access a larger group of people online or via telephone (Adams et al., 2007; Babbie, 2013). However, if not designed properly, the results from a survey analysis are equally prone to misinterpretation and misrepresentation as any other research method (Adams et al., 2007; Israel, 2007). Interviews are also common data collection tool. Interviews have been found to be useful in getting a broader understanding of how and why certain things happen and what are the opinions, motivations, interests, feelings of the people involved. Interviews, thus, are a powerful tool and should not be ignored when selecting the right research tool.

While selecting a suitable data collection tool for a new study focusing on technology transfer in the refractory industry, the author was confronted with a choice of selecting either a survey or an interview to start an explorative qualitative project. In the absence of any clear guideline for using a particular data collection tool while pursuing qualitative research in the field of technology transfer, the author conducted a comparative study, collecting data first using an online survey and then using face-to-face interviews. The experiences during both the data collection processes were documented in the form of memos and field notes. The benefits and drawbacks of using interviews as data collection tools versus survey were the main focus of the memos and field notes. On completion of the data collection, the memos and field notes were analyzed. The challenges, benefits, and drawbacks of both the data collection tools were

compared. This study aims at offering a systematic comparison of the two data collection tools to new researchers. Interviews, though time consuming and resource intensive, emerged as a suitable tool for qualitative exploratory research projects.

Background of the Study

Refractories are ceramic products used for lining vessels for molten metals in industries like steel, glass, cement, etc. The author has an academic and professional background in high-temperature-ceramics. While pursuing qualitative research in order to understand the technology transfer process within the refractory industry, it was noticed that there is a lack of qualitative research in this field. Most of the research in the field of refractories focuses on the technical aspects of products and their application, including, for example, chemical and physical analysis of refractory products and their applications. This lack of qualitative research in the field of refractory products was a motivation for this study. This study aimed at understanding the technology transfer in the refractory industry from the perspective of the individuals involved directly in transferring technology. As a first step of the study, an exploratory project was initiated. This involved the researcher getting in the field and collecting relevant data.

Research Question

The goal of the original explorative qualitative project was to study the technology transfer in the refractory industry from Europe to China and India. Two data collection tools, namely, survey and interviews were used to collect the data. This study aims to compare the use of these two data collection tools.

This particular study aims to answer the following research questions regarding the use of survey and interviews as tools for data collection:

- a. What are the benefits of using interviews as compared to surveys for qualitative data collection?
- b. What are the challenges of using interviews as compared to surveys for qualitative data collection?

The original explorative research, which motivated this current study comparing surveys and interviews, aimed to answer the following research questions concerning the technology transfer in the refractory industry:

- c. What are the challenges faced in technology transfer?
- d. What works well during the technology transfer?
- e. Which of the two data collection tools, interview or survey, is suitable for further research in the selected field?

Research Methodology

Explorative Research

Formulation of a problem is crucial to any research. An exploratory research is undertaken when the motivation, incentives, triggers etc. of the persons involved in a situation are unknown (Adams et al., 2007). It involves interacting with the stakeholders to gain an initial insight into the subject matter. It is a preliminary step in gaining a new perspective and often

involves putting oneself deliberately in the field to get an initial insight (Stebbins, 2001). Exploratory research is common in social sciences and has been undertaken to study human perceptions in a wide variety of fields, for example, demographic studies (Ghosh & Kshitij, 2016), business research (Setyawan, Isa, Wajdi, & Syamsudin, 2018), health and hygiene (Baumann et al., 2019), natural hazards (Raaijmakers, Raaijmakers, Krywkow, & van der Veen, 2008) etc. Explorative research may be qualitative (Adams et al., 2007), quantitative or even a mix of both (Tortorella, Fettermann, Anzanello, & Sawhney, 2017).

Qualitative Research Methodology

Qualitative research is a method of enquiry aiming to get in-depth analysis of social phenomena in their natural surroundings and setting (Klenke, 2016). Qualitative research has received ample criticism at the hands of researchers following quantitative methods. It has however, also received ample support, provided the data collection and analysis is pursued systematically following the rules of respective qualitative research methodology (Goulding, 2002; Klenke, 2016). Qualitative research often tends to be inductive, uses theoretical sampling and is based on the researchers' perspectives and interpretation of data. These factors differentiate it principally from quantitative research. Qualitative research often focuses on the how and the why of the issue at hand. (Adams et al., 2007) and involves a continuous interaction between the researcher and the research surrounding (Agee, 2009; Edwards & Holland, 2013)

What needs to be emphasized here is the power of asking the right questions. The answers to a qualitative research are as good as the questions that are asked (Keyton, 2006). For this study, questions had to be framed to suit a survey and an interview. The type of questions in a survey being different (Adams et al., 2007; Babbie, 2013), the questions had to be formulated differently.

Survey as data collection tool

Surveys have been used for a long time as a tool for data collection. A standardized questionnaire with closed or open-ended questions is sent to the selected sample of respondents. Surveys find use in descriptive, explanatory as well as exploratory research. Surveys are also suitable for accessing a large number of participants and asking standardized questions. (Adams et al., 2007; Babbie, 2013; Israel, 2007)

The questions used in the survey for the initial study were a mix of open-ended and closed-ended questions. In the case of open-ended questions, the respondents were expected to express their own ideas and experiences. For this, an open text field was provided on the survey form. In the case of the closed-ended questions, the researcher listed the possible answers and the respondents were required to select all the relevant options. Two points had to be considered during the framing of the closed-ended questions, the options for answering the questions had to be exhaustive and mutually exclusive. In the absence of much literature covering the selected research theme, in order to prepare an exhaustive list of options for closed-ended questions, an expert was included in the research. The use of experts as consultants or reviewers in qualitative study has been often cited in literature (Auerbach & Silverstein, 2003). The selected expert has over 25 years of experience in the refractory industry, including especially in the field of technology transfer. With the long-time experience in the refractory industry, the selected expert was able to provide active guidance in the selection of survey questions and also the possible answers for the close-ended questions. The experts experience complimented the aims of the research. The expert was informed of the research aim and was assured anonymity in the publication of research. Same was the case with all the interview participants.

Interview as data collection tool

An interview is an interactive form of data collection as compared to a survey (Adler & Clark, 2014). In an interview, the questions are asked directly by the researcher. An interview may be face-to-face, via phone or nowadays even online with or without videos. Interviews, whether face-to-face, or online, often offer more personalized exchange of information, as compared to surveys. When initiating new research projects, interviews have been recommended as one of the suitable data collection tools in the literature (Adams et al., 2007). This was the reason why this data collection tool was selected for the intended exploratory research.

In this study face-to-face interviews were carried out. This offered the possibility of explaining the intent of the research personally. Moreover, it was possible to add explanatory comments and ask additional questions for increased clarification. The research questions had a general structure, focusing on the how and why of technology transfer and therefore did not require the involvement of an expert for designing the list of questions.

Memos and Field Notes

Memos and field notes are the first reflection of the researcher to be documented during or just after the data collection (Birks, Chapman, & Francis, 2008). These serve as a tool for collecting the immediate observations, ideas and thoughts of the researchers, in the field or even after an interview. The memos and field notes include the date, location, and then include any observations that were not explicitly recorded in the data collection. This may be few words to long texts, and may even include sketches (Montgomery & Bailey, 2007).

Field notes are the written records of the observation made during fieldwork (Phillippi & Lauderdale, 2018). Field notes are best recorded immediately and create a record of the study over time.

Memos, on the other hand, are a documentation of the thinking and reasoning process of the researcher once the field notes are recorded (Phillippi & Lauderdale, 2018). Field notes may form the basis of the memos and eventually memos reflect the researcher's thought process in connecting and interpreting the data recorded in the field notes (Montgomery & Bailey, 2007; Phillippi & Lauderdale, 2018). Goulding (2012) highlights the urgency of writing the memos, as soon as an idea strikes so as not to lose the initial momentum of thoughts.

For the current research, memos were made after each interview and survey response. In the case of survey, the author documented the feedback of the research participants and own impressions of the collected responses. For example, each survey participant requested detailed description of the research aim and the meaning of the questions in the questionnaire and this fact was recorded in the memos.

Qualitative Content Analysis

Qualitative content analysis offers a tool for analyzing large volumes of data systematically (Stemler, 2001). It follows an inductive reasoning process (Zhang & Wildemuth, 2009). Content analysis can be used to analyze qualitative data from different sources, like interview transcripts to researcher's own observations (Kohlbacher, 2006; Zhang & Wildemuth, 2009). It is important to convert all data in form of written text wherever possible. Content analysis involves a process of understanding and analyzing the underlying themes in the collected text (Bell & Bryman, 2007). It involves a step-by-step coding process. The coding should revolve around the focus of the research (Hsieh & Shannon, 2005), in this case the research questions for the current study. The identified codes are the first level of

analysis. These codes are then clustered in concepts in the second level of analysis. The third step in the analysis is where the concepts are clustered in more abstract and generalized categories leading eventually to theory building. A quantitative analysis focuses on reliability, validity and generalizability. On the other hand, qualitative content analysis focuses on credibility, coherence and transferability of the results (Auerbach & Silverstein, 2003). The content analysis should allow the readers a balance between transparency and interpretation. Transparency in this case means that the method of analysis should be clearly explained so that readers may follow it. Interpretation in this case means that the author should clearly highlight own interpretations so that readers may follow the author's personal and theoretical understanding of the phenomena at hand. The credibility of the results may be checked by using the support of an external reviewer or consultant. The transparency of the analysis may be checked by a clear description of the analysis process and of the tools involved. The readers should be able to follow the sequence of thought and interpretations made during the analysis (Mayring, 2004; Urrutia-Badillo, Lopez-Cabrales, & Valle Cabrera, 2018). The transferability of the analysis may be offered by a clear description of the analysis process that enables other researchers to make transferability judgements for their research (Zhang & Wildemuth, 2009).

For the current research, the memos and field notes recorded during and after the research were analyzed using three step content analysis. Before the interview and the survey, the participants were informed of the aim of the research. The participants were informed that all precautions would be taken to safeguard the personal details and each participant individually agreed to support the research with the interviews and survey. The final study was shared with the research participants and none of the participants expressed any objection to the information used in the study. The researcher has taken care to avoid using the details of the company and departments where the research participants work in order to safeguard their identity. In the case of University of Applied Sciences Burgenland in Austria, as the current study does not reveal any personal information and poses no risk to the participants, the study does not require any additional ethical oversight.

Data Collection

Participants

During the time period spanning the study, all participants for the research were working in the refractory industry, across different locations in Europe. All participants were employed by the same multinational corporation headquartered in Austria. The participants had several years of experience, ranging from 3 to over 20 years in the field of technology transfer in the refractory industry. The participants had held responsibilities including project management, product management, production management, among others, in their experience in the refractory industry.

Survey

The data collection using survey and interviews followed the qualitative research methodology (Babbie, 2013). The online survey was created using Google Forms online website. It is a free online service and offers a user-friendly visual layout. The link for the online survey form was sent to the survey participants per email. A total of 16 persons were identified for the survey. The link was sent to the 16 survey targets and 14 responses, all complete in all respect, were received. This corresponds to a response rate of 87.5%, however it should be considered that the small sample size was due to theoretical sampling and the exploratory nature of the project. While most of the participants filled the survey form

themselves, three participants contacted the researcher to have a discussion about the intent of the research and each question in the questionnaire.

The questions in the survey were classified as per (Brace, 2008). Table 1 lists this classification.

Table 1
Survey Questions and their classification

Question Number	Question	Open or Close Ended	No. Of Options while answering	Purpose
1	Have you been involved in technology transfer in the refractory products?	Close Ended	Dichotomous	Screening
2	Which technology transfer are you referring to?	Open Ended	Open Text	Main Questionnaire
3	How long have you been involved in refractory technology transfer?	Pre-Coded Open Question	Multiple Choice	Main Questionnaire
4	What kind of technology was transferred?	Pre-Coded Open Question	Multiple Choice	Main Questionnaire
5	How was the technology transferred?	Pre-Coded Open Question	Multiple Choice	Main Questionnaire
6	What worked well in the technology transfer?	Pre-Coded Open Question	Multiple Choice	Main Questionnaire
7	What were the challenges faced in the technology transfer?	Pre-Coded Open Question	Multiple Choice	Main Questionnaire

Source: Created by author

Dichotomous questions offer a possibility of answering between affirmative or negative to the question. The single dichotomous question asked in the survey served as a screening question to identify the persons who were directly involved in the technology transfer and therefore were relevant for further analysis. Open ended questions are those where the interviewer is free to write his or her thoughts without any prompting by the author. Closed ended questions are those where the question lists a set of options and the survey participant has to choose one or more of the given options. In this case, there is no option for free text. Pre coded open questions are the ones where the question lists a set of possible answers and additionally offers a field for free text. Pre coded open questions offer the possibility for free text, in case the researcher has missed any possible option. Additionally, these questions offer

a certain consistency between all survey responses, which is difficult in the case of open-ended questions (Brace, 2008).

All questionnaires were received complete in all respects and were then used for the analysis.

All 14 survey participants were directly involved in the selected field of study (i.e., technology transfer in the refractory industry). Therefore all 14 survey responses were valid for the analysis. 11 out of 14 survey participants had an experience of 4 or more years in the field of technology transfer in the refractory industry. The technologies transfers covered a broad spectrum of refractory products and application from blast furnace tapholes in the iron production to isostatically pressed refractory products used in the continuous casting of steel. The five pre coded open questions were filled by the participants, where all participants selected more than one response. Few participants also used the open text field in these questions, highlighting the suitability of the selected question-type.

Interview

For the face-to-face interviews, the participants were initially contacted personally or per telephone. The purpose of the research was explained in short and an appointment for the interview was fixed. A total of 8 persons were contacted for the interview and all agreed to participate in the personal face to face interviews. Before the interview, a guideline of major questions was then sent out via email. It was mentioned in the introductory emails that the questions were not fixed and were to serve only as a guideline for the discussion. On the day of the interview appointment, the intent of the interview was explained once again to the interviewees. The participants were informed again that the interview audio would be recorded, and the anonymity of the participants will be respected. Then a casual discussion was started. The interviewees in this study were all native German speakers. The interviewer is multilingual, with German as a foreign language. The interviews were conducted in German to capture the best responses and avoid losing information. The interviews lasted between 20 minutes to about 40 minutes. The difference in the duration of the interviews was because of the personalities of the interviewees and not because of reluctance in answering. Some participants chose to go in detail, include examples and stories to highlight their answers, while some answered the questions concisely. Following is the list of the questions asked:

- a. How long have you been involved with knowledge and technology exchange?
- b. In which field was the knowledge or technology transferred?
- c. Which challenges did you face during the knowledge and technology exchange?
- d. What worked well in the technology and knowledge transfer?

After the face-to-face interviews were completed, the audio recordings were transcribed. The content was analyzed following open coding (Auerbach & Silverstein, 2003; Strutzel, 1968). The open codes were then clustered in concepts, that covered the overall sense and intention of the included codes. The concepts were then clustered into more abstract categories, that offered a sense of generalization and theorization over all included concepts (Charmaz, 2015; Goulding, 2002). Over the eight interviews, 60 codes were identified, these were clustered into 15 concepts. The clustering of concepts yielded 4 categories, that were then used for theory building.

Memos and Field Notes

Recording memos and field notes was the important data collection step for this study. The memos and field notes helped collect the impressions of the researcher during and after the previously explained data collection tools (i.e., survey and interviews). The interviewer took care to record the reaction of the interviewees and survey participants, feedback from the research participants, and own opinions and reflections. In total, 24 memos were collected:

- a. Field notes for each interview, in total eight
- b. A memo after the completion of all interviews
- c. Field notes for each survey participant, in total fourteen
- d. A memo after the submission of all responses

The memos and field notes ranged between few words to a few lines. An example of a field note taken by the author after the interview is shown below:

June 4, 2019

Leoben, Austria

It was an informative interview. Use technology and knowledge transfer/exchange instead of just technology transfer. China culture positive. Calling the participant beforehand was a good idea! Ask probing questions - look in literature. "Safety" was not on my list of options of positives in China in the survey! More personal interaction.

Word Count: 56

Initially written by hand, later transferred to Microsoft Office Word Software

As memos and field notes were documented fast to avoid missing out any information, more focus was on recording all thoughts and less on grammar, which also fits to the method described in the literature (Corbin & Strauss, 2015). The documentation was initially done by hand and later using Microsoft Office Word Software. An example of a memo recorded after the survey response, comparing the experience with the interview and survey, is shown below:

October 10, 2019

Leoben, Austria

...Survey - Difficult to design the questionnaire without using support from an expert. I wouldn't have included all points that were mentioned in the survey. If the expert wouldn't have helped, wouldn't have got anywhere near it. The expert was very necessary for explorative survey - options for close ended survey questions. How to be sure that the list is exhaustive. Using the option "other" in pre-coded open questions was reasonable as several participants used this option.

Missed out on the personal aspect. All participants required a call or personal discussion, whatever was easily possible, to discuss the intent of the research. Some even asked to go through the complete questionnaire so that they understand the meaning and implications.

Google Forms was a user-friendly online tool. Every change that was made was reflected immediately in the survey forms, over the online link sent via email. The online tool also analyzed the results quantitatively, which was good for a few questions (e.g., how many participants work for longer than 3 years in technology transfer). Not helpful in qualitative content analysis.

Feedback from participants that personal touch missing. All very helpful. Easy to contact target participants who were travelling to or working in foreign countries. Easy to make the questionnaire in multiple languages. No need for translation - saves time. Surveys can be used for a high number of participants. In this case, due to the exploratory nature of the project, only 16 persons were identified as target, of these only 14 replied... Word Count: 217 Initially written by hand, later transferred to Microsoft Office Word Software

An example of a memo comparing the experience with the survey and interview recorded after completion of an interview is shown below:

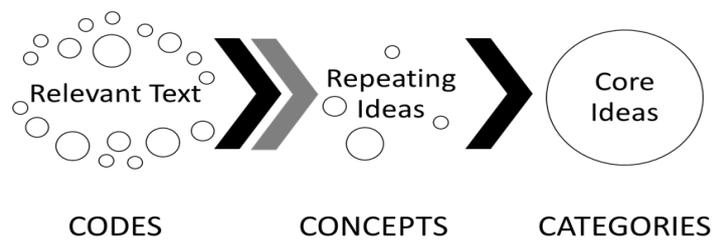
*October 10, 2019
Leoben, Austria
...Interview - time consuming but well worth it. Personal interaction Could ask probing questions that were not initially planned. Deeper insight. Can be expensive if I need to travel to interviewees. This was not the case this time, but the researchers show keep that in mind. Good to make rapport with the research participants. All participants offered to help if needed in future. The audio recording was not a problem this time. Everyone agreed to it. However ethical issues should be considered very carefully. All participants were informed of anonymity and were ok with it. Keep a backup audio recording device, once the recording device stopped working, good that I had a backup device. Line by line transcription is hard work! Lot of time needed. Read literature - not always 100% transcription needed. Multiple audio analysis can be used as well. German to English translation of whole transcript can take further a lot of time. Only codes, concepts and categories in English. If the number of interviews would be higher, this analysis would take much longer. About 10 hours per interview! To compare, my experience with interview was positive, informative for small number of research participants... Word Count: 224*

Analysis

For this study, the twenty-four memos and field notes were analyzed to answer the research questions guiding this study.

The text recorded in the twenty-four documents was analyzed using qualitative content analysis (Mayring, 2004; Smith, 2000; Stemler, 2001). The complete text from the memos was analyzed using three level coding process. In the first level of the coding, the text was analyzed for all new ideas called codes. In the second step of the analysis, the codes, based on their characteristics, were clustered in concepts. In the third level of the analysis, the concepts were grouped into more abstract categories. Figure 1 shows the steps involved in the three-step coding process.

Figure 1
Simplified model of the three-step content analysis



Source: Created by author

During the analysis, it is important to revisit the research questions so as not to lose focus (Auerbach & Silverstein, 2003). The three steps of the analysis are explained in the sections below.

First step analysis – creation of codes

In the first step of analysis, all the text elements, words or phrases, relevant to the two research questions were collected. From the 24 documents, including twelve memos and twelve field notes, a total of 210 codes were created. When creating codes, it was not known where the analysis would lead as the text reveals the details step by step in each of the analysis step (Auerbach & Silverstein, 2003). Considering the memo recorded after the survey listed in section 4.4 of this paper, following 9 codes were created:

- *Difficult to create questionnaire*
- *If the expert wouldn't have helped, wouldn't have got anywhere near it*
- *Missed out on personal aspect*
- *All participants require a call or personal discussion*
- *Easy to contact target participants who were travelling to or working in foreign countries.*
- *Easy to make the questionnaire in multiple languages*
- *No need for translation - saves time*
- *The online tool also analyzed the results quantitatively, which was good for a few questions (e.g., how many participants work for longer than 3 years in technology transfer).*
- *Not helpful in qualitative content analysis*
- *Surveys can be used for a high number of participants*

Another example for the 9 codes created by the first step analysis of the memo recorded after the interview listed in section 4.4 of this paper is as follows:

- *Time consuming but well worth it*
- *Personal interaction*
- *Could ask probing questions that were not initially planned*
- *Deeper insight*
- *Line by line transcription is hard work*

- *Lot of time needed*
- *German to English translation of whole transcript can take further a lot of time.*
- *About 10 hours per interview*
- *To compare, my experience with interview was positive, informative for small number of research participants...*

Second step analysis – creation of concepts

The second step of the analysis was the selection of repeating ideas, also known as concepts (Auerbach & Silverstein, 2003). Once the relevant texts or codes were collected, it was noted that there were repeating ideas using similar or different words but expressing the same idea. In total 65 concepts were created from the 210 codes, showing that there were several repeating ideas. Considering the codes listed in the section 5.1, some of the concepts that were created by analyzing the repeating ideas are as follows:

- *Survey - if the expert wouldn't have helped, wouldn't have got anywhere near it*
- *Interview - time consuming but well worth it*
- *Survey - can be used for a high number of participants*
- *Survey - easy to contact target participants who were travelling to or working in foreign countries.*
- *Interview - personal interaction*
- *Interview - suitable for smaller group of participants*
- *Interview - line by line transcription hard work*
- *Interview - deeper insight*
- *Survey - all participants require a call or personal discussion*

Third step analysis – creation of categories

At the third step of the analysis, a general direction starts emerging from the selected codes and concepts. The third step involves the identification of themes, also known as categories (Auerbach & Silverstein, 2003). In this step, the 65 concepts from step two of the analysis were organized into a total of 9 categories. These categories were generated so as to address the two research questions. The themes or categories generated after the analysis of all the 65 concepts are listed in table 2.

Table 2
Research Questions and Categories

Research Question	Category
1. What are the benefits of using interviews as compared to surveys for qualitative data collection?	<ul style="list-style-type: none"> ▪ Cheap ▪ Fast ▪ Detail oriented ▪ No need of external expert. The interview participants act as experts. ▪ Better personal connection to participants ▪ Possibility of getting research relevant information that was not expected or considered at the beginning of the study
2. What are the challenges of using interviews as compared to surveys for qualitative data collection?	<ul style="list-style-type: none"> ▪ Time consuming due to transcription, travel ▪ Less flexible in terms of place and time selection ▪ Expensive

Results

This study analyzed the benefits and challenges of using interview as compared to survey as data collection tools for an explorative qualitative research project. The interviews offered a faster and cheaper data collection as compared to the survey. As compared to survey, the interviews offered a deeper insight into the research topic. There was no need for an external expert to prepare the research questions as it was possible to ask probing questions during the interview and the personal touch made the communication detailed and better as compared to surveys. The details revealed during the face-to-face interviews were often new, unexpected by the researcher and therefore considered useful, especially in the case of an explorative project. Interviews, however, also posed few challenges as compared to the survey during this study. The audio recording had to be transcribed and that was time consuming. In case of face-to-face interviews, where travel was involved, that led to additional time and cost, making the interviews expensive as compared to the survey. Another challenge was the reduced flexibility in terms of time and place. In case of survey, the participants were free to choose where and when they answer the questions. In case of the interviews, the time and place had to be decided based on the availability of the interviewer and the interviewee as well their location and associated travel. For the current study, the travel costs in case of the interviews were minimized by planning the interview schedule such that the interviewer and interviewee were in the same location. In the absence of travel costs, the comparative benefit of face-to-face interviews as compared to surveys was increased. After the analysis, the author would recommend the use of interviews as data collection tools for the explorative qualitative research. The benefits of interviews in revealing new information, in the case of the current study, outweighed the challenges of the interviews, especially with regard to time required for data collection and analysis. A survey may be recommended as a data collection tool after the first analysis using interviews is completed in case of exploratory research. After the first analysis, the researcher has already some insight into the topic and in the opinion of the author, is then better prepared to prepare and administer a survey.

Conclusion and Discussion

This study compared the use of interviews and survey as data collection tools for an exploratory qualitative research (Babbie, 2013). New researchers are often faced with the challenge of selecting a suitable data collection tool and analysis method for the research. Surveys are often used because of their flexibility and low costs, whereas interviews are often time consuming. This study compares the two data collection tools systematically. Recording memos during and after data collection facilitated documentation of researcher's views and experiences during the study. These memos served as data for the content analysis. From this study the researcher would recommend the use of interviews as data collection tool for exploratory qualitative research. The information revealed during the interviews was helpful in getting insights in the field of technology transfer. The interviews also offered the chance to ask probing questions, get to know the research participants personally and that benefits the current as well as future research. This study also aims to encourage new researchers to experiment with different data collection tools in order to understand which tool fits best to the research. The data collected using the tools differ in several aspects and offer different benefits and challenges. This study can further be extended to other data collection tools like focus group studies or even to secondary data. Furthermore, this study can be extended to other industries and topics when pursuing explorative research. The data collected from the different data collection tools can be also compared to study the insights offered by the different data

collection methods and to assess whether the data collected is overlapping or offers new and different information.

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