Case Study

Qualitative Inquiries by Transitioning to 'Digital Methods': A Case Study on Leaders' Perspectives of Agriculture Research Management by Key Performance Indicators

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Abstract

Strategies redefined and then applied in the process of a research study determine primarily the quality of data/information gathered, and finally, the overall success of that research. This research aims to develop a qualitative study protocol that warrants online-based methodologies to be effectively used for obtaining information from knowledge-intensive entities. A case study was conducted to analyse the metadata of a series of in-person interviews that revealed how the top administration manages the performance of research and development in the commercial agriculture sector in Sri Lanka. The findings and knowledge acquired from the case study was critically analysed in two phases (Phase I = 10, and Phase 2 = 32 interviews including Phase I interviews) to justify and validate the steps of the protocol. The proposed protocol with robust steps in inquiring is expected to advance the knowledge of the researchers/ interviewers on producing better interview experiences in an online environment when a person in the upper echelon of an institute participates as an interviewee. According to the authors' judgment and experience, the protocol proposed is one of the foremost rationalized attempts to establish an informed guideline for conducting qualitative research in similar capacities and environments.

Keywords

Commercial agriculture research, digital interventions, KPI, performance management, qualitative study protocol

Introduction

Qualitative studies through interviews have been recognized as a good research method for discovering deep, rich, and networked knowledge about some theoretical or practical underpinnings of a particular system dynamic or phenomenon under investigation.^{1,2} The data are supposed to be gathered from the experience, meaning, and perspective of a participant in different contexts and are not amenable to counting or measuring in principle.^{3–5} The techniques used in such studies involve a small number of participants of the calibre of key informants, and semistructured interviews used in that context lead to in-depth learning in seeking views on a focused topic.⁶ Furthermore, the recent globalization of research practices has caused qualitative studies to evolve with many value additions such as the inclusion of digital methods in its core implementation strategies to make it more cost-effective, flexible, accessible, and so on.

Based on using a qualitative study method, the authors interviewed 32 research leaders in two phases, 10 research leaders in Phase 1 and 22 research leaders in Phase 2, to find out a system gap in current practices of performance management of research and development (R&D) in the commercial agriculture sector, especially when key

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performance indicators are used in performance management systems (PMS) in Sri Lanka.^{7,8} A literature survey had been conducted earlier to find the key performance drivers that were recognized or showed potential in performance management of research in the context of the commercial agriculture sector and laid the foundation for the above qualitative study.⁷ The qualitative study was conducted in two phases that facilitated comparative study between a sample and the whole population of key informants on performance management of research institutes in Sri Lanka.⁸ The research questions in the qualitative study were formulated to identify the best possible performance strategy and develop a more value-added and customized KPI eco-system for research management in the commercial agriculture sector.^{9,10}

The study described the diverse spectrum of certain cognitions and behaviours in a population of leaders attached to research institutes and revealed many strengths, weaknesses, opportunities, and threats in the present performance management of research institutes, especially in the developing commercial agriculture sector. Further, it provided some evidence for best research practices that could be used to optimize research work and exposed knowledge and insights on how to formulate strategies and policies to address those weaknesses and threats that exist internally and externally.

According to the authors' judgment and experience, the success of these revelations was particularly attributed to the way the interviews were carried out and the strategic interview guide used in the particular qualitative study. Authors assume that the digital methods associated with interview protocol provide solutions for alleviating communication hardships during a crisis, stress, or emotions such as COVID-19 which was experienced by the authors during their research. In that context, physical communication might be inadequate and probably might not reflect the knowledge-based institution's achievement in such a period. In addition, the authors argued that every qualitative research has a unique set of experiences accumulated at each recurrent cycle of investigation (e.g., interviewing and analysis in a qualitative study) and that experience could be used as guidance for the subsequent cycle of the investigation. This warranted revisiting the steps of the protocol and its associated digital interventions in this qualitative research study by analysing the metadata of the protocol to explore its benefits to be used in further studies of similar research fields. While using some of the success stories (e.g., the success rate of acquiring the interviewee's continuous participation, covering the majority of locations, and others) of the survey as examples for justifications, this article would propose a digitally enabled protocol that would assist in interviewing leaders on different perspectives of performance management dynamics of research development for the commercial agriculture sector, when such leaders particularly belong to the upper echelon in the management and involved with top-level decision-making of a research institute. Hereafter, this

article briefs on some concepts relating to qualitative research, interviewing methods, and lastly, how digital methods could be incorporated to formulate a better protocol for conducting interviews under different conditions, behaviours, and environments.

Review of Qualitative Research, Surveying by Interviews, and its Applications

Although it is not always explicitly expressed and addressed, qualitative research follows different underlying research paradigms such as constructivism or interpretivism. Therefore, the choice of research methods is usually based on the respective underlying substantive theory or theoretical framework used by the researcher and may need the researcher's selfclarifications on the theory/ methods before they are used in the research.^{1,11} Furthermore, the credibility of the research in particular demands the various nomenclatures in surveying and qualitative studies to be well explicated, justified, and understood before a particular method of surveying and qualitative study is selected as these nomenclatures/methods have become more diverse and heterogeneous, with different underpinning assumptions in the recent past.^{12,13}

Qualitative research can be conducted based on many research methodologies. Figure 1 would be used to provide a basic overview of surveying and data analysis within a particular research approach. According to the chosen research methodology, the researcher selects a surveying tool and makes a research plan to collect data. Then the data obtained from the surveying tool gets into the analysis phase.

Qualitative research, qualitative inquiry, or qualitative study could be expressed as a specific research design that exposes the underlying holistic mechanisms, behaviours, and associations of a system when data associated with such a system is analysed to obtain a deep understanding of why and how things happen in it.^{14,15} In qualitative research, knowledge-intensive data are obtained from a relatively small group of respondents, and that data are processed in a flexible and focused manner to retain the rich meaning contained within that data.16 However, it is different from quantitative research, may serve different purposes, and result in different value additions in different contexts.^{17,18} Therefore, as described in Table 1, researchers may select their research approach by considering the context they research, the data environment they deal with, and the detailed nature of the output they expect from the analysis of data.19

Qualitative Study: Surveying

This article defines and explains the survey of a qualitative study as a systemic data collection method performed on a predefined group of respondents or resources that are available to gain information and insights on various topics of interest.²⁰ Table 2 describes the survey methods that could



Figure 1. Qualitative Research Approaches, Surveying Methods, and Data Analysis Methods.

Table I.	Research	Approaches	Used by	Qualitative	Studies.
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	Research Approach	Principle in Use
I	Grounded theory	Rich data are collected on a topic of interest and theories are developed inductively based on the analysed data.
2	Ethnography	Cultural aspects in an organization are investigated most probably in its natural environment to gain insights into the organization's dynamics.
3	Action research	A simultaneous process of linking theory to practice to achieve particular social change by collaborative participation of researcher and participants.
4	Phenomenological research	The substance of a phenomenon is investigated to understand or explain further by describing and interpreting participants' lived experiences.
5	Narrative research	The narrations or accounts of people are examined to understand their experiences and how they perceive a particular subject to obtain insights into it.

Tab	le 2	. Surveying	Method	s in (Qual	itative	Researc	h.
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	Method	Description
I	Observations	Record audio, video, text, and images of a particular set of activities that are seen, heard or encountered in the domain/field of interest.
2	Interviews	Ask questions from a particular person in conversations and record the responses.
3	Focus groups	Ask questions and generate discussion among a group of people and record their responses.
4	Distributed questionnaires	Distribute questionnaires to a set of people, collect responses, and record their responses.
5	Secondary research	Collect and record existing data in the form of audio, video, text, images, and so on.

be used in qualitative research with different study goals. A research approach may permit one or more data collection methods as appropriate.²¹ Sometimes more data collection methodologies may be engendered from the originally used data collection methodology, for example, interviews may give rise to new interactions or artefacts by observing rather than by conversing.²²

Here onward, this article discusses methods associated with "surveying by interviews" and describes how online methods support such a study.

Qualitative Study: Surveying by Interviews

Qualitative surveys or inquiries by interviewing involve verbal communication between the interviewee and interviewer on a set of predefined questions to produce long-form answers that could be used in an analysis of qualitative research.²³ The questions and the way of questioning are thus supposed to motivate the interviewer to reveal new information and detailed views in the forms of opinions, experiences, narratives, or accounts of a particular area of interest. A qualitative survey may include quantitative questions as well to expose statistical data and combine them with qualitative data to retrieve more valid and value-added robust qualitative information and themes on the topic of interest.^{24,25}

Interviews could be conducted under the following three broad categories.

- 1. Physical or in-person surveys
- 2. Phone surveys
- 3. Online surveys

Each method has strengths and limitations when they are compared (see Table 3).

Qualitative Study: Data Analysis

The data obtained in surveys could be analysed through many data analysis methods as mentioned in Table 4. The methods of analysis could be used in an appropriate

Table 3. Strengths and Limitations of Interviewing Methods.

Table 4. Data Analysis Methods in Qualitative Studies.

	Method	Context of Use
Ι	Content analysis	Meanings and relationships are generated by describing and categorizing common words, phrases, and ideas present in qualitative data.
2	Thematic analysis	Qualitative data are categorized, linked, and analysed repeatedly in several rounds to identify and interpret the final set of insights.
3	Textual analysis	The text along with symbols, pictures, and so on, is examined in the context of their language, content, structure, and design to generate new insights.
4	Discourse analysis	How language and communication are used to achieve effects in the specific domain of interest is analysed to reach specific conclusions about that domain.

	Surveying Method	Detail	Strengths	Limitations
I	In-person surveys	Participants' facial expressions and other behaviours are visible to each other in physical conversations with the feelings of physical touch.	Highly interactive as participants know there are no voice exchange barriers or time lags in communication between them. Risks associated with audio or video recording are minimized as they could be rectified immediately and only involve less equipment. Rescheduling is comparatively low as arrangement overhead is high.	Additional equipment and efforts are needed if simultaneous assistance in the form of PowerPoint presentations or drawings is requested during the interview. Additional overheads in arranging the interview such as transportation, room arrangement, and other preparations are comparatively very high. Rescheduling may cause comparatively very high costs in the budget and resource allocations.
2	Phone surveys	Participants' voices could be exchanged without the physical presence	The complexity of communication arrangements between two parties is comparatively low. The communication channel is always available and need not be set up intentionally.	Participants' facial expressions and other behaviours could not be acknowledged. Further questions on cues are limited to vocal clues. Voice exchange barriers or time lags in communication may occur due to faults in electronic devices and the medium of communication. Least interactive method out of the three interviewing methods. Personal commitment and confidence in communication may not be shown properly to make it advantageous to the success of an interview (e.g., interviews may become shorter). Recording the interview is comparatively difficult.
3	Online surveys	Participants' facial expressions and other behaviours are visible along with voice but without feelings of physical touch.	Participants' facial expressions and other behaviours could be acknowledged. Many simultaneous presentation methods such as slide shows and writing on screen are available conveniently. Every visual and audio communication can be recorded with much control by minimum interventions or with one click on the computer. Both parties can participate leisurely in the interview without many physical boundaries or time and budget constraints. Rescheduling could be arranged without much overhead cost to avoid tight schedules.	The communication channel has to be set up and scheduled. Details such as passwords and usernames have to be shared before conducting the interview. The personal touch is comparatively low than in in-person surveys. So many reschedules may cause the study period longer than expected. The quality and strength of the data transferring channel need to be very high.

combination based on the research approach that is selected to obtain the desired result.²⁶

However, the steps of data collection and analysis may become cyclic within a particular research study as revisiting in sampling, data collection, analysis, and interpretation may be needed iteratively to arrive at better conclusions.^{27,28} The iterative data collection and analysis process is crucial and therefore considered carefully in qualitative research when value addition to the themes could be possible in the idea synthesis phase after data analysis. Moreover, according to our view, triangulation or crystallization using multiple datasets, methods, theories, investigators, and so on to address a research question or achieve a more comprehensive understanding of the phenomenon under study may be easily facilitated with such an approach.²⁹

The Example: Qualitative Study on R&D Management in Commercial Agriculture

Many countries have put their effort into improving the commercial agriculture sector considering agricultural growth as one of the keys to poverty reduction.³⁰ This determination is reinforced by a set of initiatives such as "make food systems more efficient, inclusive, and resilient" and "adopt holistic approaches, such as agro-ecology, agroforestry, climate-smart, and conservation agriculture," stated by the United Nations in line with sustainable development goals (SDGs) with particular focus on SDG 2-Zero Hunger in 2030.³¹ The need for such initiatives to be swiftly implemented is further alarmed by the magnitude of threats such as extreme water shortages and droughts discovered by recent studies on food security.32,33 Thus, such initiatives warrant R&D in the commercial agriculture sector to increase food production and its quality. In this context, performance management of research development is quite justified for producing guided research in the commercial agriculture sector. However, some unaddressed concerns in PMS seem to cause some productivity issues in research development for the commercial agriculture sector.

Performance management in a research institute is supposed to address many concerns with the vigilant participation of its role players such as leaders, researchers, stakeholders, and the society within its research culture.9 However, R&D institutes may not be able to understand or integrate the macro perspectives such as SDGs into their R&D efforts, and hence PMS may collect data and measure operational outputs, namely across verticals, hierarchy, and at an institutional level. This may cause their outcome not to be focused on global outlooks especially when key performance is considered.34,35 These concerns should be carefully managed with the guidance of the top management of a research institute as well as by policy interventions and deployed properly to below levels through good management practices monitored by a PMS in place. Here, how leaders' behaviour interacts with the performance drivers and the whole team in achieving those targets along with the vision of the research institute is appraised on the performance of the research outcomes. Therefore, research leaders are supposed to participate in active performance management, including supervision of those tasks within and beyond organizational design.³⁶ Thus, the objective of the survey was to explore the experiences, meanings, and perspectives of the leaders with a PMS that integrates all the role players of the research development process. Given this, the survey results were analysed to get the big picture of the current performance management of R&D practices of research institutes in Sri Lanka.

Digital Interventions for Facilitating Qualitative Studies

When a qualitative study is conducted, the investigator gets an opportunity to deal with many learning outcomes of the research methodology and this knowledge provides good guidance for similar kinds of future qualitative studies. The authors use the case study method to investigate their qualitative study methodology which was further strengthened by the digital interventions. Encouraged by the findings of the appropriateness of qualitative study methodology which was facilitated by digital methods, the authors detail a protocol that can be used to conduct similar kinds of qualitative studies.

Methodology

Theoretical Framework

This study employed a multiple-case study approach³⁷ to understand an appropriate protocol for conducting qualitative studies with leaders who represent the upper echelon of knowledge-intensive organizations such as R&D institutes. According to Yin,³⁸ case study can be considered as an empirical inquiry that investigates a phenomenon in its reallife context. This justifies the author's selection of the "case study" research methodology in defining an appropriate protocol by using metadata from a set of real-life interviews. The authors used a slightly modified multiple-case study approach which consists of a two-stage conceptual framework as depicted in Figure 2. The purpose of this modification is to add more depth to the study under consideration.

The qualitative study was carried out in two phases at different time schedules with the same objectives as outlined in section "The Example: Qualitative Study on R&D Management in Commercial Agriculture" and details of those two phases are described in Appendix A. Therefore, the metadata of the case study belongs to two sets of interviews of the same qualitative study. This permitted the authors to propose a protocol at the end of analysing the sample of 10 interviews based on the authors' observations and experience employed in "Case Study Observational Research" after the analysis of the sample (n = 10 interviews).³⁹ Stage two of the case study was completed by



Figure 2. Conceptual Framework of the Case Study to Develop a Qualitative Protocol.

analysing the metadata or evidence obtained from all 32 interviews of the whole population of research institutes to validate the proposed protocol that is supposed to be facilitated by online methods. The rigour of the methodology used in this case study is more persuasive through the use of both the sample and population that allowed comparison of the protocol at two different stages in two different ways. Here onwards, the protocol steps are described and discussed with advantages that they have offered over traditional approaches.

Methodology in Check: A Protocol to be Practiced in Qualitative Research

A protocol in qualitative research may not be as rigid as may be in the case of quantitative research. This is because of the inherent openness and flexibility of qualitative research that usually does not make it adhere to predetermined and fixed strategies. Therefore, one of the authors' intentions in proposing the following protocol is to allow and facilitate the adaptations and refinements in various research processes/methods/steps based on lessons learned from earlier steps.

The qualitative research study on the role of performance management led by leaders and particularly through KPIs in developing better research for the commercial agriculture sector was predominantly based on the grounded theory with some shares of phenomenological and narrative research methods. It used surveying by the online interviewing method to collect data and thematic analysis method to analyse the data. The protocol proposed for a similar kind of qualitative study is described in Table 5. How that protocol was used in this research is detailed in Appendix A (online).

Results and Discussion

The qualitative research described here sought solutions for better performance management of productive research development in the commercial agriculture sector.^{7,8} It thrived in a new normal environment where physical contact of interviewing and other methods of physical communication were discouraged.

In the early feasibility study of this research, the authors of this article thought of using physical interviewing in their qualitative research as it, proven by years, guarantees the best possible healthy relationship between interviewer and interviewee, an essential requirement of obtaining good perspectives from elite persons. However, with some adjustments to the pandemic in early 2021, authors witnessed that social distancing caused many countries to adopt online methods frequently with evident confidence in their research studies and better results, although it was sporadically shown some popularity even before the COVID-19 pandemic.^{40–43}

Here, the authors argue that online methods would exist as a less resource-intensive strategy based on their ability to make many quick communications and connections in an experimental environment and unwanted engagements to be discontinued easily without wasting many resources. Furthermore, online methods would provide a good solution for maintaining the flexibility of the requirement in real-time by addressing the uncertainty of planning how many respondents will be needed beforehand. Authors further argue that by using online techniques, the credibility and completeness of the interview guide/interviewer's approach may be immediately and comparatively enhanced through member reflections obtained through online facilities as such methods provide real-time preliminary findings to be

Table 5. Protocol for Qualitative Research on Leaders' Perspectives on PMS of R&D.

	Protocol of the Qualitative Research
Protocol Steps	Actions/Recommendations
	START OF THE PROTOCOL
IDENT	FICATION OF BACKGROUND AND RATIONALE OF THE STUDY
State the title of the research	A concise title would serve the purpose with much clarity.
State the investigators	Name the parties who conduct the study.
State the sponsor/ funder	Name the involved parties.
State the research objectives	A few objectives are stated so as not to deviate from the intended purpose. However, new and
	unanticipated findings may occur at the end to add more value to the study.
Identification of research gap	Identify the possible important area that has not yet been investigated and has a potential for improvement through new insights.
Identification of research problem	What are the issues and concerns to be investigated in that research area to obtain new insights?
Identification of research	What are the questions that should be asked to find answers or solutions to the research
questions	problem?
	PLAN AND DESIGN PHASE
Determine a qualitative	A qualitative research approach may be chosen based on the research questions, the nature of
research approach	the data to be analysed, and the expected details/answers from the analysis.
Determine the data collection method	Based on the scope and nature of the sample, the best possible approach to access and deal with that sample should be determined.
Determine data analysis	The nature of the data in analysis and the extensiveness and profundity of the expected answers
method	from such analysis should be considered.
Select interviewers	A professional that respects the interviewee and engages skilfully in the interview with qualities such as agile thinking and so on
Select the type/criteria of	Criteria for selecting interviewees should be determined by the research questions to be
interviewees/institutes	answered and the scope and depth to be covered by those answers.
Draft the questionnaire	The questions in the questionnaire are not necessarily the same research questions but should reflect the essence of research questions effectively without missing any part of the scope
	supposed to be covered.
Determine the sample size	A sufficiently large and varied sample that would provide the amount of data with expected
Determine the sampling	The nature and scope covered by the sample data and its ability to represent the whole data
method	of the population under consideration would indicate how the informants of that sample data should be selected
Plan the study period	The sequence and duration of all study periods are stated.
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Finalize the questionnaire/	Content wording structure and order of questions should be checked by third parties for their
interview guide	accuracy, understandability, legitimacy (including ethicality), purpose, and completeness.
Construct the survey tools	Tools such as Google forms could be built and used for quick processing, easy handling, and efficient recording of data
Invite interviewees	Interviewees are invited through a proper letter of invitation
Confirmation from interviewees	Consent may be taken from interviewees before the interview.
Schedule the interviews	The interview should be scheduled based on an agreed time and location, and the detail should
	be informed in advance to the participants.
Conduct the interviews	Interviewing could be started as soon as the first interviewee gives his/her consent and agrees on
	an interviewing time.
End the interviews	After some sufficient period, the interviewing process reaches an end.
	DATA ANALYSIS PHASE
Screening and initial preparation of the data	If necessary, recorded data should be transcribed into textual data.
Format the data	Identities within the text are removed by ethical considerations of the study. Data should be
	processed for clarity with minimal alterations.
Finalize the analysis tools	Originally planned analysis formats/tools/software may be revisited and adjusted according to the new budget constraints and availability of such resources.

(Table 5 continued)

	Protocol of the Qualitative Research
Protocol Steps	Actions/Recommendations
Feed data into analysis toolsData are fed into formats, tools, or software to prepare it for analysis by using them.Prepare and arrange the data suitable for the data analysisBased on the data analysis method, data are arranged, rearranged, tagged, grouped, catego and so on.	
Analyse data Data is analysed using formats, tools, or software.	
Generate insights	The tools or software would generate insights.
	TAG THE PROTOCOL
Version	State the version.
Changes done State the changes of the previous version.	
Estimated total duration	Estimate the total time required to finish the qualitative research.
	END OF THE PROTOCOL

(Table 5 continued)

presented to the participants for their input and elaboration for improvement of subsequent interviews.

The authors' success in using online methods by following the above arguments, made it imperative to think of more strategies that could assist qualitative research practices to be transitioned into online environments in a more generalized context without compromising the quality and robust practices of physical interviews. Therefore, with the success of the developed protocol in the research study, the authors thought of revisiting it to expose how it would help the methods in qualitative research to smoothly transition into online environments without failures, especially in some given scopes. The authors' experience, findings, and recommendations on using online methods comfortably in the processes associated with the qualitative study, data collection, and data analysis are explained here with an emphasis on the strategies that make it a success.

Online Methods in Data Collection: Letting Physical Presence Immaterial

The authors would describe what happened in the data collection process by explaining how some requirements to be satisfied by physical interviews became immaterial in online methods. Justifications and validations for the proposed protocol based on authors' observations and experience at the end of Stage 1 (sample of 10 interviews), and metadata analysis at the end of Stage 2 (population of 32 interviews) respectively are detailed in the following sections.

The Flexibility of Online Methods in Adopting Ethics in Interviews

Building good rapport between the interviewee and interviewer was very important in this research.^{44,45} A potential interviewee would be defined as one who does not reject an interview invitation for some reason but requests more time to let know their availability for the interview. It took some time, patience, and several times of pre-interview

communications to convince the importance of this study, assure privacy in the study, and ultimately get them to agree to the interview. During the interviews, the interviewer was required to consider ethical challenges when online methods were used. The revelation of the interviewee profile was avoided by turning off the video in this example research and it turned out advantageous in maintaining a high-quality Internet connection during the interviewes. Furthermore, good rapport between the interviewee and interviewer before the interview, and the interviewee was more informed about the interview, making the offmode video during the interview more immaterial. Thus, the authors believed that the part of the study to be revealed by exposing facial expressions was comparatively immaterial to their study.

Justification 01 for proposed protocol: By feeling the flexibility of online communications, leaders request more time to let know their availability for the interview.

Justification 02 for proposed protocol: The revelation of the interviewee profile was avoided by turning off the video in this example research and it turned out advantageous in maintaining a high-quality Internet connection during the interviews.

Minimize Personal and Professional Interference in the Interview

Leaders are usually provided with the best possible infrastructure in their offices that facilitates online communication effectively despite where they are located. As professionals, interviewees of this study were equipped with good Internet facilities even at home to be used in good online communications.

Justification 03 for proposed protocol: Easily and abundantly available good Internet facilities made leaders feel that they could easily have a very comfortable time with online interviews.

			Maximum No. of Schedules	Minimum No. of Schedules
No. of	Total No. of Interview	Average of Schedules	Cancelled for Any	Cancelled for Any
Interviews	Schedules Cancelled	Cancelled Per Interviewee	Interviewee	Interviewee
32	91	3	7	2

Table 6. Cancellation of Interview Schedules after Consent Was Obtained from the Interviewee.

This, in turn, resulted in them trying the best time for their interview, and many schedules were cancelled as mentioned in Table 6 before agreeing on one good interview time.

However, this cancellation did not cause much overhead in the interviewing process as all scheduling and cancellations were a matter of an online transaction. It gave the added advantage of providing the best time for the interviewee to participate in the interview. Additionally, telephone communications that occurred in this regard allowed the interviewer to build a better rapport with the interviewee. This made the equity issue of online interviews—increasing opportunities in participating some and excluding others—no longer a valid concern in this type of qualitative research.⁴⁶

Validation 01 for proposed protocol: Cancellation of interview schedules did not cause much overhead in the interviewing process as all scheduling and cancellations were a matter of an online transaction.

Validation 02 for proposed protocol: Provide the best time for the interviewee to participate in the interview.

Validation 03 for proposed protocol: The equity issue of online interviews—increasing opportunities in participating and excluding others—is no longer a valid concern in this environment.

Cope with Technological Difficulties and Resource Constraints

For years, many researchers explained some drawbacks of online methods, although some issues have been resolved in recent past to a great extent with the advancement of Internet technology, readily available robust software, sophisticated communication infrastructure, and so on.⁴⁷ The limitation of participation due to lack of Internetenabled devices, lack of quality Internet connections that facilitate online video platforms, cost incurred on high data usage and limited access, and knowledge of video conferencing technology and its usage are among the most frequently mentioned hindering factors. However, the following factors and approaches made these issues immaterial in this qualitative research.

- 1. The leaders were already using the best technology, especially in the research institutes.
- 2. Their day-to-day life would depend much on Internet communications.

3. Shared online platforms (e.g., adopted, customized, and self-adjusted Zoom platform for the education system in Sri Lanka) made quality and amount of data always available in online communications.

Therefore, in the planning stage, researchers made a special effort to get the free service of shared online platforms to conduct interviews.⁴⁸

Justification 04 for proposed protocol: Issues regarding technological difficulties and resource constraints are at a minimum level at the sufficient amount of facilities and knowledge available with the research leaders.

Evading Geographical Barriers and Widening the Sampling

Online platforms usually facilitate evading geographic barriers and substantially widening the sampling.⁴⁹ As this research dealt with the performance of commercial agriculture research, references to the commercial agriculture sector were collected from data obtained through Google forms associated with obtaining the consent of leaders of the research institutes for interviews. Figures 3–8 provide a sketch of sector representation of participants' age, position, gender, title, expertise, and what type of research institute they were involved with respectively.

However, some background knowledge of research institutes was immaterial to the interviewer, as such knowledge would not be used directly in the research study. However, if needed, such information had been expected to be automatically coined with what the interviewee revealed about performance management of research development. Without an interviewer's foot in many research institutes, the interviewer was able to conduct 32 interviews in 24 research institutes located throughout Sri Lanka and covering approximately half the area of the country as depicted in Figure 9. Researchers only missed six research institutes that were originally planned due to nonresponse from them.

Justification 05 for proposed protocol: Consent of research leaders distributed over the country is easily and timely obtained through Google Forms to initiate interview plans quickly. It further facilitated the visualization of the sector representation in real time.

Validation 04 for proposed protocol: It allows to evade geographical barriers to reach half of a country and widen the sampling to cover the whole population.



Figure 3. Participation of Interviewees According to Age Groups.



Figure 4. Participation of Interviewees According to Position.



Figure 5. Gender Representation of Interviewees.



Figure 6. Participation of Interviewees According to Their Title.



Figure 7. Interviewees According to Their Expertise.



Figure 8. Institutes Distribution According to the Subject of Research.



Figure 9. Location of Research Institutes where Interviewees of the Qualitative Research Belonged.

Online Methods that Facilitate Data Collection Suitable for a Good Analysis

It would be useful to see how the qualitative research described in this article dealt successfully with issues that were highlighted in the conclusions of a research study carried out by Davis and his team.⁵⁰ It states that although online methods appeared to increase the likelihood of obtaining the desired sample, responses were typically

shorter, less contextual information was obtained, and relational satisfaction and consensus development were lower. However, the study on perspectives of topmost leaders on performance management of research institutes revealed different results with responses of sufficient length, enough contextual information, and high satisfaction and consensus development due to the reasons mentioned below.

Although pre-interview conversations suggested that leaders were very busy people in their day-to-day tasks and

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	Attribute	Value	Remarks
I	Estimated average effective interview time (minutes)	45	3 for preparatory explanations, 12 for asking questions, and 30 for answering questions.
2	Total interviews	32	The number of interviews conducted so far.
3	Total effective interview time (minutes)	1,503	After removing time for informal introductions and afterword discussions of the interviews.
4	Actual average effective interview time (minutes)	47	Average interview time after removing informal introductions and discussions.
5	Total analysed interview time (minutes)	1,359	After removing time for informal introductions, preparatory explanations, and afterword discussions of the interviews.
6	Average analysed interview time (minutes)	42	Total analysed interview time/total interviews.

Table 7. Int	erview Time	e of Participants.
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were ready to finish interviews (physical interviews) quickly, the duration of the completed interviews proved otherwise as mentioned in Table 7.

The authors thus witnessed how leisurely they participated in the online interviews and how the video conferencing facility provided a conducive environment for them to express their ideas much more freely with comparatively fewer timebound issues and minimum distress or disengagement.

Answers were recorded against open-ended questions in the interview guide with some probing questions. A few closed-ended questions helped interviewees to recall their memory of the actual situation of their research institutes and it facilitated more experience to be added to their detailed answers.

Recordings were edited by removing introduction parts that might contain the identity of the interviewee. These edited voice recordings were transcribed into text by using AI-enabled software.

Justification 06 for proposed protocol: Leaders of the research institute participated leisurely in the online interviews and the video conferencing facility provided a conducive environment for them to express their ideas much more freely with comparatively fewer time-bound issues and minimum distress or disengagement.

Justification 07 for proposed protocol: AI-enabled software is so quick that within a matter of time, edited voice recordings were transcribed into text.

Responses of research leaders are of sufficient length, with enough contextual information, and high satisfaction and consensus development.

Behavioural Strategies to Improve Data Collection

Encourage Participants to Self-Explain the Question and Answer

Other than questions, the interviewer may be reserved to use minimum words in explaining the questions so as not in falling to trap of bias in expressing the interviewer's views on the subject. Online PowerPoint presentations would always be on the screen during the interview not to make the questions out of sight of the interviewee. Here interviewer may help the interviewee to self-explain and understand the question in his/her own words by allowing the interviewee to rephrase the question with their expertise. This strategy helped minimum intervention by the interviewer, a better understanding of what was asked, and better explanations for the questions.

Allow the Interviewee to Use Experience with His/Her Preferred Subjects

In interviews, with so much experience, leaders may sometimes express some of their experience of the subject according to the judgment of the interviewer. While cautious about the judgment, the interviewer may better allow this to some extent as far as it does not harm the flow of the interview. In addition, it may make interviewees feel easy to come to a relevant subject at a later stage with more confidence, self-analysis, and insights. The kind of reconciliation of thoughts here would make them feel a moral obligation towards the well-being of research practice, culture, and ultimately society and consider their contribution to the research as a social responsibility.

Justification, Validation, Limitations, and Future Research

As detailed in sections "Online Methods in Data Collection: Letting Physical Presence Immaterial," "Online Methods that Facilitate Data Collection Suitable for a Good Analysis" and "Behavioural Strategies to Improve Data Collection," authors found 7 justifications for proposing their protocol after analysis of the sample of 10 interviews in Stage 1. Stage 2 provided 5 validation points based on the metadata of the whole population of 32 interviews. However, the protocol proposed within this study contains several other steps that may require or can be further substantiated with more justifications and validations for their effectiveness when online/digital methods are associated with them. This requires further research on what and how new digital methods/interventions could improve similar protocols. Furthermore, qualitative studies in the domain of R&D performance may benefit from a mix of both qualitative and quantitative data in any organization with a very focused outcome and targets with a negligible element of doubt across the organization. In such a scenario, it will be interesting to see how this proposed protocol can be effectively used in a digital environment to obtain more quantitative data as well.

Conclusion

With the advantages of leaders of research institutes being naturally adaptive to ethical, technological, and social requirements of online interviews, the qualitative research inquiring about leaders' perspectives on performance management of the research development process has shown more justification for adapting online interview methodology rather than physical interviews, especially in periods like new normal. Online methods have thus shown many advantages in response to rapidly changing socio-technological contexts and expansions of traditional modes of research with new tools and strategies.

Therefore, with careful design principles and sufficient attention to ethical, technical, and social considerations, qualitative research with similar characteristics could significantly benefit from online methods, especially on the part of online interviewing. In this context, the proposed protocol for the qualitative research facilitated through online methods would play a significant role in future research of a similar kind.

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Supplementary Material

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