Applying Modified E-Delphi Technique: Guideline for HR Researchers and Practitioners for Developing Competency Profiles During Covid-19 Pandemic

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Abstract
Competency consists of an employee's knowledge, skills, and abilities, which are vital for maintaining organisational performance. An important tool for competency development would be the application of competency profiles, which should be developed to represent specific professions. Although many research have been conducted across various fields of study, professions, and organisations, the number of guidelines for developing competency profiles for future references is limited. To address this gap, this paper presents a step-by-step guideline for developing employee competency profiles using a modified Delphi technique. However, due to the Covid-19 outbreak, an adaptation of the participatory approach is required using the e-platform. Thus, this paper will narrate a methodological procedure that follows the restrictions and social distancing norms imposed during the COVID-19 outbreak using a platform known as e-Delphi. Future researchers and organisations can use the methodological procedures outlined in this paper to develop and validate employee competency profiles by applying the new normal research approach of using e-Delphi. Researchers and practitioners from other fields of study can also refer to the e–Delphi guideline, especially when dealing with high-stake studies, such as modelling, instrument development, module development, and index development during this global crisis.
Keywords: COVID-19 Pandemic, Modified Delphi Technique, E-Delphi, Competency, Research Methodology, Competency Profile, Human Resource

Introduction
The competency study has its own fans among researchers and practitioners since the pioneering work of McClelland (1973). Until now, competency studies are being conducted across various disciplines (Keshmiri et al., 2019; Santoso & Hassan, 2018; Swank &

Houseknecht, 2019) and by professionals in both the local (Arifin & Rasdi, 2017; Suhairom et al., 2014) and international context (Ravichandran & Mishra, 2018; Swank & Houseknecht, 2019). To manage human resources at a workplace, each profession needs to have specific competency assessment tools that can measure the current levels of knowledge, skills, and abilities possessed by its members. Thus, assessment tools, such as competency profiling, can be used as an input for performance management, as well as for training and development initiatives.

Considering the importance of competency profiles for various human resource functions, the concern is regarding the development procedures, including the selection of methods to identify the required competency elements for a specific profession. A lesson learnt from the COVID-19 pandemic is awareness of the need for practical methods (Rajhans et al., 2020), especially for data collection procedures at the beginning of a research until the final stage. Some researchers have started to use more approachable and convenient methods, with the ability to reach the final stage of research in the new normal research environment, especially related to participatory research. However, many of the qualitative research techniques, including observations, interviews, focus group discussions, and community studies demand direct face-to-face interactions with informants which have become unviable with the COVID-19 outbreak (Liang et al., 2020). This demand has led to additional challenges for the competency profiling developer in adapting to the present crisis.

Thus, this paper will discuss the methodological procedures of the modified Delphi technique, especially for conducting competency profiling studies, with the special interest of motivating researchers and organisations to achieve their intended research objectives. The modified Delphi approach is practical in responding to the COVID-19 situation, where researchers and practitioners, especially in HR, face data collecting barriers. This paper is organised into four sections: (1) introduction to the Delphi and modified Delphi techniques; (2) the procedures for conducting the modified Delphi technique; (3) illustration of the modified Delphi technique; and (4) recommendations for future research perspectives.

Delphi and Modified Delphi Techniques
The Delphi survey technique was introduced in the 1950s by two researchers from The Rand Corporation. A few years later, N. Dalkey and Helmer (1963) further developed this procedure as a tool for forecasting future events using a series of intensive questionnaires interspersed with controlled-opinion feedback.

The Delphi begins with an open-ended questionnaire that is given to a panel of selected experts to solicit specific information about a subject or content. In subsequent rounds of the procedure, participants are instructed to rate the relative importance of individual items and make changes to the phrasing or substance of the items. This process is designed to yield a consensus after a series of rounds (typically three). The modified Delphi technique is similar to the full Delphi in terms of procedure (i.e., a series of rounds with selected experts) and intent (i.e., to predict future events and to arrive at a consensus). The major modification is concentrated at the beginning of the process, which is to select competency elements. The selection of items can be conducted using various resources, such as related competency profiles, synthesised reviews of the literature, and interviews with selected content experts.

The primary advantages of this modification to the original Delphi technique are as follows: (a) typically enhances the response rate for the initial round; (b) provides a solid basis in previously developed works; and (c) reduces the effects of bias due to group interaction, while assuring anonymity and providing controlled feedback to participants (Dalkey, 2011).

The Significance of e-Delphi
The Delphi technique is a popular approach in management study (Aghimien et al., 2020; Elzamly & Hussin, 2016). In addition to its cost effectiveness, the Delphi technique is advantageous in identifying the required competency elements for employees (Swank & Houseknecht, 2019; Turner et al., 2020; Zulkifli, 2016). The Delphi method was found to be the most suitable approach for multiple reasons. For instance, while a participatory method implies that all people will participate equally, given the diverse nature of the experts, Catherine (2003) anticipated multiple challenges.

These challenges may include, but are not limited to the experts' varied geographical locations, differences of opinions due to variation in experiences and practice settings, as well as patterns of clinical and optical setup, conflicts and biases due to perceived seniority in the profession. The Delphi method has helped several studies overcome these challenges and successfully achieve their objectives (R.M. et al., 2016; Rajhans et al., 2020). By using the e-Delphi technique, the need for travelling and meeting in person can be eliminated, as the panellists could give their inputs from their own location using the Internet (Rajhans et al., 2020).

Furthermore, they would not be required to take the time off work or give up their professional practice for the duration of the study, as the synchronised pattern of responses using the Internet would allow them access to shared templates, and enables them to give their inputs via emails, at a time which they find convenient. Thus, appropriate scientific output can be achieved with minimal usage of scarce resources at hand (Rajhans et al., 2020).

Methodological Procedures of e-Delphi Technique
Number of Participants
The size of a Delphi panel may be as small as three members and as large as 80 (Grisham, 2009; Mullen, 2003). It is important to select people who are knowledgeable in their field of study and are willing to commit themselves to multiple rounds of questions, or interactions on the same topic (Grisham, 2009). Based on the researcher's justification and since everyone is facing challenges to travel, the numbers should not be barriers for data collection activities.

Criteria for Delphi Panel
Researchers should identify competent Delphi panel to gain quality input and output of their study. Adopting appropriate prequalification criteria for the selection of participants would allow the coordinator the chance to harness individuals with substantive knowledge in the area being investigated, commonly known as a 'panel of informed individuals' (Day & Bobeva, 2005; Powell, 2003; Xia & Chan, 2012). The selection exercise could be as simple as possible or complex, but the objective is to identify experts in the field of study, and thereby, improve the quality of the results and outcomes of the study.

Platform for Data Collection
The entire e-Delphi procedure can be conducted through online modes or platforms; thereby, eliminating the need for anyone to personally meet or travel for the purpose of a study (Rajhans et al., 2020). Researchers can use any preferred and convenient approach, such as google forms to receive consensus among participants. Centralised drive or storage can be used to manage all information relevant to the study. Communication activities should be performed via email (Rajhans et al., 2020).

Conducting A Needs Study
Conducting a high stakes study, such as competency profiling, requires the researchers to comprehensively outline the research procedures, including the importance of the study. Thus, a needs analysis must be conducted to identify the needs of the study, examine the problem, study feasibility, as well as offer suggestions to address the problem (Huei et al., 2019; Nornazira et al., 2015).

Literature Reviews
At this stage, researchers can choose the best approach for the purpose of identifying competency. Previous researchers have used systematic reviews (Varndell et al., 2020), systematic literature reviews (Schulze & Bals, 2020), scoping reviews (Rajhans et al., 2020), and bibliometric analysis (Garfield, 1955) to identify the required knowledge, skills, and abilities for a specific profession. Justification to choose these techniques should be on the basis of the ability to identify new and required elements to represent the profession. The quality and validity of the competency profiles rely on the overall procedures involved, starting with the initial or preliminary study.

First Round of Delphi Technique
> In the first round of Delphi technique, open-ended questions can be used to identify the required competency elements for a specific profession. Participants are required to comment on the knowledge, skills, and abilities proposed by the researcher. Comments received from the participants will be reviewed by the researcher or team members to prepare a draft for the next phases.

The round 1 outputs need to be returned to the participants. Panellists need to rate these outputs using the "Likert scale" (strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree) rating approach to indicate their level of agreement towards a competency element or item. A consensus level needs to be set prospectively, as there is no agreed upon consensus level in the literature (Keeney et al., 2006; Powell, 2003). Keeney et al (2006) argued that the importance of the topic can guide consensus level, suggesting that 100% consensus may be desirable for life or death issues, while 51% may be appropriate for preferences (Powell, 2003). In addition to rating the competency statements, panellists will be specifically asked to comment on areas where they disagree with a competency statement.

Second Round of Delphi Technique
The competencies from round 2 need to be sent to the participants to receive comments, and to suggest or modify the competency items. All of these outputs will be used by the researcher to improve the descriptors for readability from the direct quotes from the panellists in order to give some direction in understanding the competency. The following Figure 1 illustrates

the overall methodological procedure of the modified e-Delphi technique, consisting of phase I (selection of expert panels), phase II (first round Delphi), phase III (second round Delphi), and phase IV (final stage).
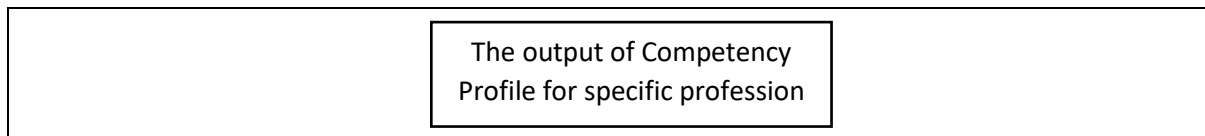
The output of Competency Profile for specific profession
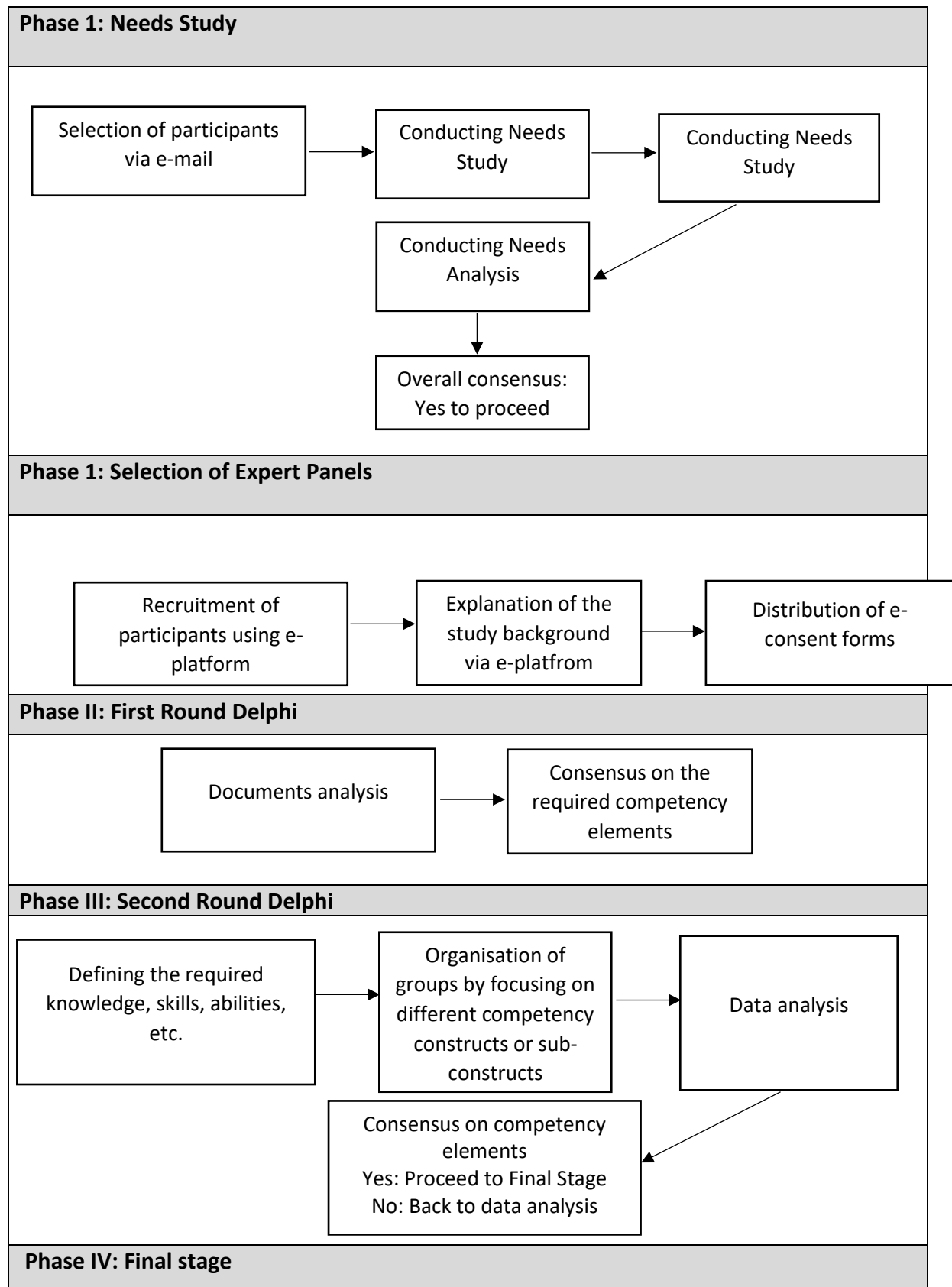
Figure 1. Procedures to conduct the modified E-Delphi technique

Discussion

This paper has highlighted several important points related to the modified Delphi technique. As shown in Figure 1, several phases are involved in this technique, which comprises phase (1), phase (2), phase (3), and (phase 4)**.** These phases are important parts of the methodological framework of the research, since they include the procedures for competency identification, until the successful development of competency profiles for a specific profession. Phase 1 involves a needs study, recruitment of participants, and distributing consent forms. In phase 2, the study will continue identifying the required knowledge, skills, and abilities through the participants' consensus. In phase 3, all the inputs from the participants will be further improved by the researcher and team members to improve the contents of the profiles. The inputs will be resubmitted to the participants for the purpose of finalising the contents. The final phase will include the final output of the competency profiles developed through the modified e-Delphi technique.

Conclusion and Future Research Perspectives

This paper has discussed the methodology of the modified Delphi technique, in the context of competency study. It is expected that future researchers across multidisciplinary studies would be able to apply this method and procedures for data collection. As previously mentioned, this method is more practical when experiences during the COVID-19 pandemic are taken into account. The diagram illustrated in Figure 1 has been developed to guide future researchers and organisations when identifying the required competency elements for a specific profession based on the phase-by-phase procedure. Researchers are welcomed to share their own experience in using this technique, especially during and post-COVID-19 pandemic.

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