Journal of Systems Thinking

Delphi Method

A democratic dialectical, consensus seeking open systems approach

Professor Shankar Sankaran,[a,@] Dr. Karyne Ang[b], and Dr. Stewart Hase[c]
a: School of the Built Environment, University of Technology Sydney, Australia
b: UTS Robotics Institute, Faculty of Engineering and IT, University of Technology Sydney, Australia
c: Consulting Psychologist, Iluka, New South Wales, Australia
@: Shankar.Sankaran@uts.edu.au

Introduction

In this chapter the Delphi method, a dialectical and consensus seeking approach, is applied to management research in ambiguous and uncertain situations. The Delphi method is essentially a process in which responses from many rounds of questions are sent to a group of leaders or experts. This happens for several iterations, and the responses are anonymous and also aggregated prior to sharing in each round. Notably, the leaders/ experts alter their response to the same questions after each round - largely due to the responses they have seen from the larger group. In sum, this process is believed to eventually create consensus as to the correct response for each question.

Two case studies are provided to illustrate the use of this method. In addition, [1] has been using a Delphi approach developed by Alan Davies [2] to research organizations for several years based on Fred Emery's open systems theory [3]. Open Systems Theory in its original form had two purposes ([3], p. 623). 'The first is to promote and create change toward a world that is consciously designed by people, and for people, living harmoniously within their ecological systems, both physical and social' and second 'to develop an internally consistent conceptual framework or social science, within which each component is operationally defined and hypotheses are testable so that the knowledge required to support the first purpose is created'. Following open systems theory, consensus seeking approaches have been a particular concern of systems thinking for some time [3,4], especially with 'messy problems in organizations' [5]. In addition, Checkland [6] incorporated involvement of stakeholders in decision-making in Soft Systems Methodology.

The chapter consists of: a brief review of the Delphi method and its historical origins; a description of two case studies in which Delphi has been used as part of a mixed-methods approach in management research; and some thoughts on the future application of the Delphi method.

Literature review

The Delphi technique was first developed by the RAND Corporation and applied in the US defense forces in the 1950s by drawing together expert knowledge in a particular area [7,8]. Since then, the Delphi method has been used, not only for decision-making, but also as a very effective data collection and analysis method in social science research [8–10].

In short, the method is designed to “obtain the most reliable consensus of opinion of a group of “experts” through “a series of intensive questionnaires interspersed with controlled opinion feedback” ([7], p. 458.). While there are a number of variants of the Delphi Method, it involves: a facilitator; the recruitment of an appropriate and unbiased [11] panel of experts in the area under study; anonymity; a number of iterations or rounds seeking consensus of opinion; a question or questions for the panel; and circulation of the responses of each round to the panel with the same question(s) so that the panel can reconsider their joint responses. The number of iterations depends on the aim of the research and the degree of consensus required, but may vary from 3 to 5, with 3 being the most recommended [12].

The key reasons for using the Delphi method are the collection of informed judgment on issues that are largely unexplored, difficult to define and that require thorough analysis. In addition, subjective judgement is required because the research population is diverse, highly contextual and expertise specific, or future-oriented [13,14].

In an extensive review of the literature and experience of using the Delphi method, Landeta (2006) reports that the Delphi method is a highly valid research approach. With respect to the present study, the Delphi method has been used successfully in the investigation of leadership [15–19] and in complex organisational environments [20,21].

Recent developments of Delphi in contemporary practice

Two case studies that used Delphi as part of a mixed-methods research approach are now described in detail.

Case Study 1: Building a leadership framework of NFP organizations providing aged and community care in Australia.

This case study shows how a democratic open-systems based Delphi process was used in the study of leadership development in two faith-based organizations providing aged and community care in Australia. A Delphi process was embedded within a longitudinal research project, which used action research as a meta-methodology to create valuable outcomes together with the stakeholders of the project [22].

Researchers from three Australian universities were involved. A steering committee established for the project included the chief investigator, partner investigators and two external advisors who guided the research. The Delphi process used in the research was facilitated by and based on Davies’ 2009 process.

Prior to conducting the Delphi survey two focus group meetings were held with managers from two participating organizations about their views on developing leadership capability. The following characteristics for good leadership were collected from these workshops:

1. Professionalism;
2. Collaboration and teamwork
3. Judgement and decision making;
4. Communication;
5. Scholarship and teaching ;

6. Management;
7. Leadership; and
8. Advocacy.

This initial activity was followed by a Delphi process in which an expert group (managers from each organization) provided responses formulated by the research team based on an extensive literature review and the results of the previous focus groups. Managers from both organisations were included to ensure that the participants had intimate knowledge of the context and would also 'buy into' any changes that were implemented in their organisations.

Prior to setting up the Delphi process, eight hierarchical levels of participants were determined. Three managers from each level were nominated by the two organizations to participate as experts in the Delphi process. As diverse a sample as possible was assembled.

The levels identified were:
1. Board;
2. CEO;
3. Regional general managers;
4. Specialist executive level managers;
5. Service-level general managers;
6. Service-level middle managers;
7. Directors of nursing/clinical managers; and
8. Faith leaders.

As there was only one CEO in each organization, four additional CEOs familiar with the not-for-profit sector were invited to participate in the first round.

The research team developed an initial call consisting of thirteen questions. An information sheet was provided to the participants that clearly explained the purpose of the survey, the required time involvement and how the results would be used. Respondents were given four (4) weeks to respond to the questions seen in Table 15.1:

No	Question
1	What are the five most essential capabilities for a person to have if they are to provide effective leadership within your present organisation?
2	Of these capabilities, which of them can be acquired by someone who doesn't at first have them?
3	In your experience, which of these important capabilities are most often lacking in your present organisation?
4	In your experience, which personal qualities and behaviours in a leader inhibit their exercise of effective leadership?
5	Reflecting on your own experience of leadership, what are the most effective ways of developing leadership capabilities? Please list at least two or three.

6	What are the most important things your present organisation does that help you and others to exercise effective leadership?
7	What else could your present organisation do (that it doesn't already do) that would help you and others to exercise effective leadership?
8	What does your present organisation do that hinders you and others from exercising effective leadership? Please list at least two or three.
9	What are the most important things you do in your present management role to help your direct reports to develop their leadership capabilities?
10	What have your direct reports done to assist you to develop your leadership capabilities?
11	What differences, if any, are there in the leadership requirements of for-profit and not-for-profit organisations?
12	What differences, if any, are there in the leadership requirements of faith-based and non-faith-based organisations?
13	What else would you like to say about leadership capabilities and their development?

Table 15.1 Delphi Questionnaire.

Seventy-four respondents answered the survey. A majority of the respondents (70%) were leaders/managers from the two organisations. Twenty-percent of the respondents were researchers/academics, and 10% were CEOs from other organisations. Sixty-percent of respondents were male and the largest proportion of respondents aged between 40 and 60 years.

256 responses to question 1 were entered into a spreadsheet as each participant (74 total) was invited to give up to five responses. Duplications in the 256 responses were deleted, reducing the second round of questions to 64 for voting. The reduction in responses was achieved by removing identical or similar responses and choosing one that most widely represented the others. The team did not change any wording in the chosen response and ensured that the whole field of responses was covered. No censorship of ideas occurred. For readability and ease of choice, the list of 64 items was organized into categories by key words, such as communication or vision, for example, and listed contiguously. Additionally, the individual responses that contributed to a final response were made available to the respondents in the second round to ensure transparency. The number of responses that contributed to a category was also entered in a column. During the analysis of the responses, Question 5 was found to be redundant and removed.

Responses were returned to participants for prioritising, each of whom were given a total of ten votes for each question. Each participant could distribute the votes according to the responses they felt were most important and they could place multiple votes on a statement they felt strongly about.

The participants were given two weeks to respond; but for the second round of questions, reminders had to be sent to participants to return their responses. Fifty-three of the 74 respondents complied (72% response).

After the voting, the items that had the highest number of votes were chosen under each question. For example, under question 1 the highest ranked items were:

Q1- What are the five most essential capabilities for a person to have if they are to provide effective leadership within your present organisation?

• Clear communication – ability to communicate vision to all levels of the organisation

• Build and motivate a high-performing team
• Honesty and integrity
• An ability to communicate and establish effective communication systems
• Effective interpersonal communication and listening skills

All responses were tracked and processed individually in a single database, for confidentiality reasons, individual data was not recorded. A key strength of the process was that the team was able to observe where individuals might have changed their views over the two response sets.

After analysing the voted responses, the most essential capabilities were identified and a descriptor based on responses was established. For example, **communication** was described as --*an ability to communicate and establish effective communication systems, effective interpersonal communication and listening skills, and ability to listen and to understand people at all levels of the organisation.*

The question *How was leadership capability acquired in the two organisations,* yielded interesting results that included:

- Innate, developed at a formative age, or better to buy in than develop internally
- On the job;
- Through self-reflection;
- Through training/education programs/courses;
- By closing the gap between statements made by leaders and their actions;
- Through interpersonal relationships; and
- Mentoring.

The research team analysed the outputs from the Delphi Survey and concluded that recruitment and selection of staff was a key factor, as several (leadership) capabilities were judged as innate. While education and training had been chosen by several respondents (which was anticipated) there was also support for other ways of developing leaders such as on the job training or assignments, self-reflection, and nurturing of interpersonal relationships. Some respondents suggested that top management of the two organisations needed to 'walk the talk' by manifesting their visions and values through their actions.

The Delphi survey was carefully implemented to be democratic (all opinions were included) with the required diversity among experts using a purposeful sample that was relevant to the process.

Recently, analysis of the qualitative data was carried out to extend the findings from the earlier quantitative analysis. The research team revisited and analysed the original qualitative responses collected to triangulate the initial findings from the quantitative survey. A brief description is provided here.[1]

The inputs were analysed using QSR NVIVO (a computer-aided qualitative data analysis software) and the following codes resulted:

1. Features of Leadership
2. Features of NFP
3. For Profit Organization and Profitability
4. For Profit Deficiencies
5. NFPs' Financial Focus

[1] Please contact the authors for additional detail.

6. NFPs’ Mission Focus
7. NFPs’ Mission and Market Tension
8. Person-centred Care
9. Treatment of Staff

The following codes had the most mentions in the nodes created from the analysis in NVIVO: Features of Leadership (20); For Profit Organizations and Profitability (18); NFPs’ Financial Focus (12); NFPs’ Mission Focus (12); and Person-centred Care (15).

The node *Features of Leadership* is most relevant to the findings from the original Delphi analysis on what contributes to effective leadership. So, the statements from this node are examined for similarities and differences from the original analysis.

An example of similarities are highlighted in the following 3 statements:

1. ‘Leadership is required to bring/keep people on board to achieve whatever the organization’s goals are’;
2. ‘Less tangible “carrots” to motivate staff (like money, etc.) – so greater need to lead through motivation, inspiration, building teams and community, and developing intangible rewards, for example.’; and
3. ‘Motivating and leading volunteers’ (These statements relate to the original finding that the leader needs to motivate people and teams in the original analysis.)

An example of different (new) statements include:

1. ‘The leader needs to work effectively in an uncertain environment;
2. ‘Need to both be professional and provide a service or a product’; and
3. Lack in having robust processes and systems to support their leaders [in NFPs] which can lead to frustration’.

Analysis of the qualitative data reinforced some of the original findings. In particular, the need for clear communication and motivation of the staff was noted heavily by respondents in the qualitative and the quantitative data.

Other attributes of effective leadership identified by the qualitative analysis include:

1. The capacity to deal with uncertainty and frustration in an environment that provided little room for monetary rewards.
2. Conflicting views on whether leaders of NFPs needed different capabilities from their counterparts in the For-Profit sector.
3. The need for professionalism, self-belief and competency (to lead).
4. The capability to focus on service, ethos and commitment to the cause of the organization.

Open ended questions captured brief statements that provided additional information on the required capabilities of leadership. They also provided insight into some of the findings from the earlier analysis. Additionally, interviewing managers could have yielded more information and an opportunity to probe some of the answers, but that was not possible in this case.

Note one limitation of the online method used for the Delphi is that it only offered the opportunity for short statements, but it also provided anonymity, which allowed for more candid responses. It is possible that richer data could have been captured for the last three questions of the online survey if the online format allowed respondents more space to input their answers. However, this may have resulted in attrition of respondents, which is a problem often faced with the Delphi method that affects the rigour of the findings. From this perspective, collecting short statements that do not take much time is more efficient when using an online Delphi approach. Overall, the online method used to collect both forms of data satisfied the needs of this study.

The Delphi method can be used to collect data that can be analysed both qualitatively and quantitatively to triangulate or extend/explain the findings.

Case study #2: Multiple stakeholder perspectives of value.

This case shows how the Delphi method was adapted and incorporated in a multi-methods qualitative research study that investigated how 'value' is perceived by stakeholders in different project portfolio environments. The study was conducted as a PhD thesis at an Australian university. Specifically, the research combined the insights from six organizational case studies with an adapted Delphi approach to explore the notion of 'value' beyond the financial assumptions of value common to current project management practices. Recognising that there are different forms of value, contemporary researchers have called for new research to rethink and broaden how value is conceptualised and understood in project and portfolio management. This includes short and long-term time horizons and emergent value [23–26]. In other words, if project portfolio managers intend to maximize value across the portfolio with stakeholders in mind, then they need to be clear about the types of value that different stakeholders regard as important. This case study captured the views of diverse project stakeholders and attempted to reconcile opposing and contradictory findings as much as possible, in a reflexive yet systematic manner using the Delphi Method.

Research design and methodology

The study applied two different but concurrent qualitative approaches to explore the subjective area of project portfolio value as perceived by multiple stakeholders, namedMethod 1 and Method 2. Method 1 comprised multiple case studies [27] and Method 2 used Hybrid Delphi Expert Panels (HDEPs) inspired by Landeta, Barrutia and Lertxundi [28] who combined face-to-face workshops with anonymous feedback.

Figure 15.1 illustrates the research methodology's structure and process in detail. The multiple case studies (Method 1) comprised six cases in six organizations representing the public, private and non-profit sectors. The case studies were used to collect data about value constructs and PPM decision practices in diverse organizations.

A total of 47 semi-structured interviews were conducted across the cases. Method 1 research participants included project and portfolio members, decision makers and key stakeholders (including customers, suppliers, shareholders, senior managers, staff, government officials and beneficiaries). Other data collected in the case studies included meeting observations, publicly available documents, organizational diagrams and information from websites. Through analyzing the case studies, a model or framework in the form of a 'typology of value perspectives' was progressively developed.

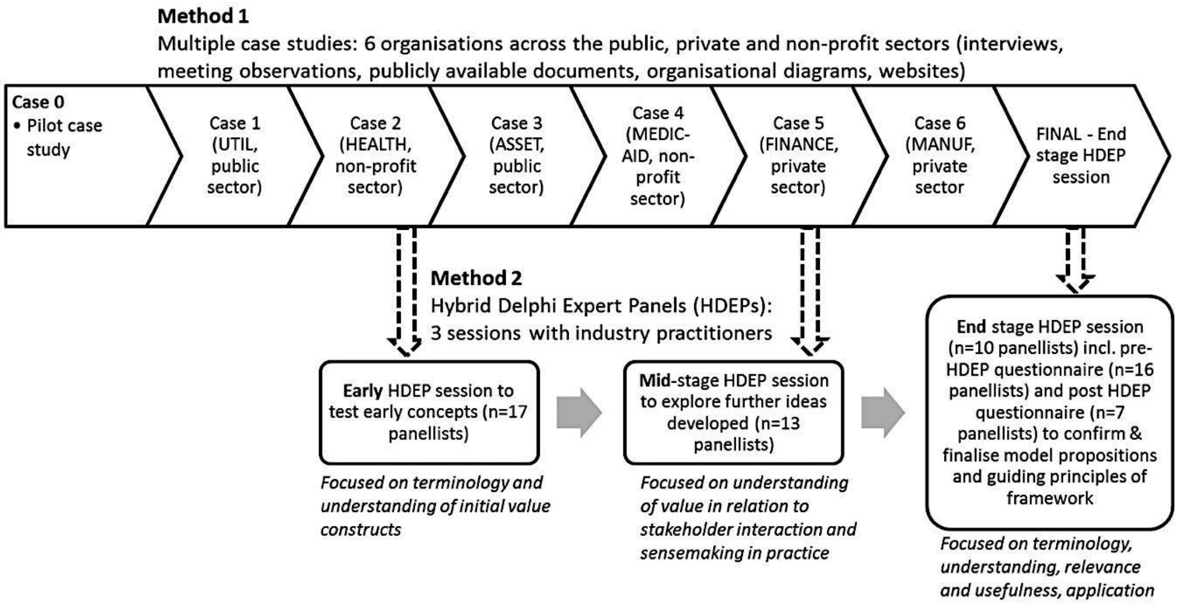

Figure 15.1: Detailed research methodology incorporating case studies and hybrid Delphi expert panels (HDEP).

An early, mid and end-stage HDEP (as illustrated in Figure 15.1) sessions were conducted in three case studies (Case 2, 5, and final). Participants from the Method 1 case studies were invited to participate in the Expert Panels for Method 2. Expert panels are useful in generating communication and debate, judgement, evaluation, and providing researchers with opportunities for revision. In each HDEP session, there was at least one participant from the case studies in attendance. This overlap was useful as it helped to provide a bridge between the case studies and the workshops. The expert panel included a mix of scholars and industry practitioners who were engaged in projects, programs or portfolios. Having the diversity in the groups ensured that the outcomes would be robust and flexible enough to meet the needs of multiple stakeholders in different contexts.

In the initial stages, the first HDEP (with 17 panelists) evaluated early concepts about stakeholder perspectives of value from the analyses after Case 2. An example of an early model is depicted in Figure 15.2. Panelists discussed the overall ease of understanding and use of the typology and its relevance.

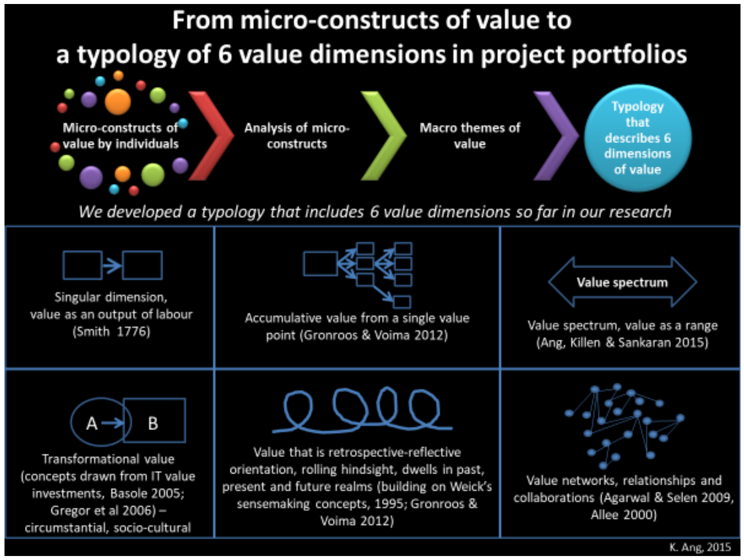

Figure 15.2: Example of model presented for feedback in HDEP 1.

A knowledge gap identified in HDEP 1 led to the question '*How would practitioners therefore engage with stakeholders in order to make sense of what they value?'*, which was addressed in the second HDEP. HDEP 2 (with 13 panelists) was conducted around Case 5 as the mid-stage HDEP. Figure 15.3 shows an example of the revised framework presented to HDEP 2 panelists.

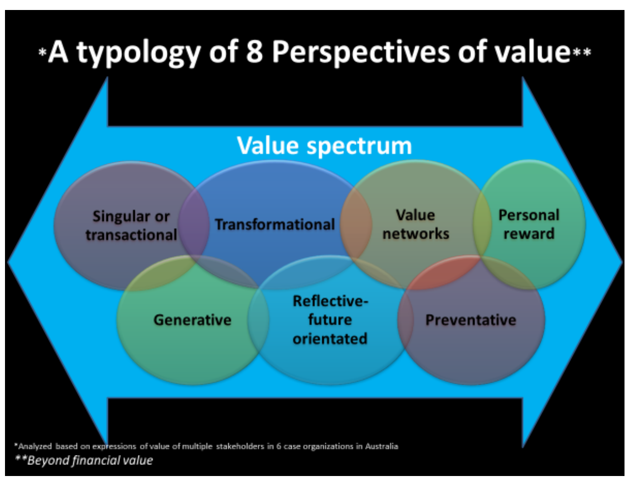

Figure 15.3: Example of revised model tested in HDEP 2.

The third and final HDEP (HDEP 3) was used to test and verify the final typology about stakeholder value perspectives and their practical applications among practitioners once all the case studies were completed (after Case 6). This final HDEP was the most critical session as it consolidated the research findings and added further depth to the research contributions by asking, '*How might having a view of multiple stakeholder perspectives of value help managers in practice?*' and '*How do practitioners make sense of and integrate the typology of value perspectives for decision-making in practice?*'

Figure 15.4 shows the structure for the third HDEP. It incorporated an anonymous online pre-session questionnaire that was completed by 16 expert panelists.

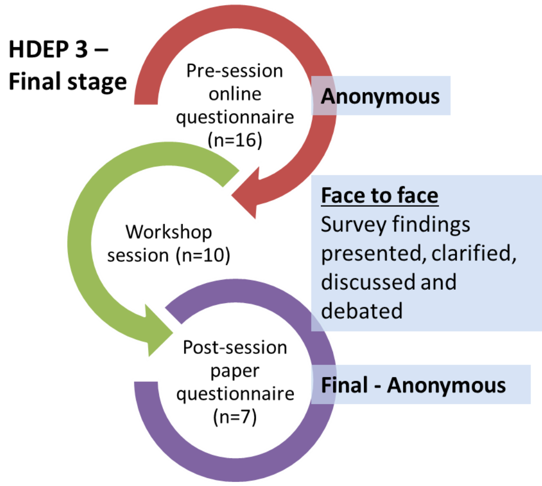

Figure 15.4: Structure (process) for HDEP 3.

This was followed by a face-to-face discussion session (10 panelists) and an anonymous post-session paper questionnaire (7 panelists). The pre-session questionnaire responses provided a catalyst for discussion during the two-hour face-to-face HDEP workshop session. An example of an output from the survey that was discussed is in Figure 15.5.

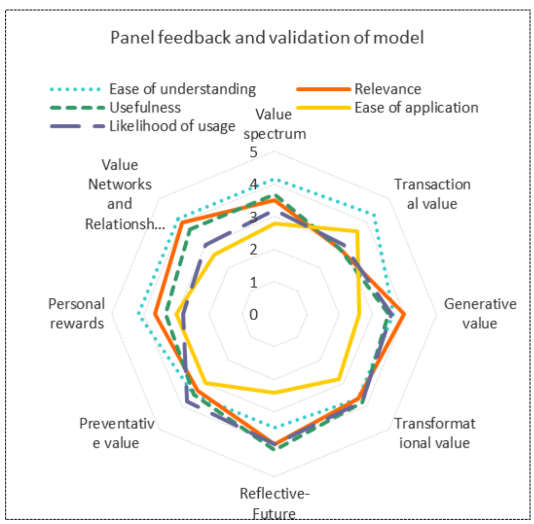

Figure 15.5: HDEP 3 Pre-session anonymous feedback of the model.

At the end of the workshop, participants voluntarily completed an anonymous post-session paper questionnaire to rate the typology in terms of understanding, usefulness, relevance, and likelihood to use. They also provided comments about what might be relevant or useful, with a focus on applying the typology of value perspectives in their own practices. Figure 15.6 and Figure 15.7 provide excerpts from the anonymous survey.

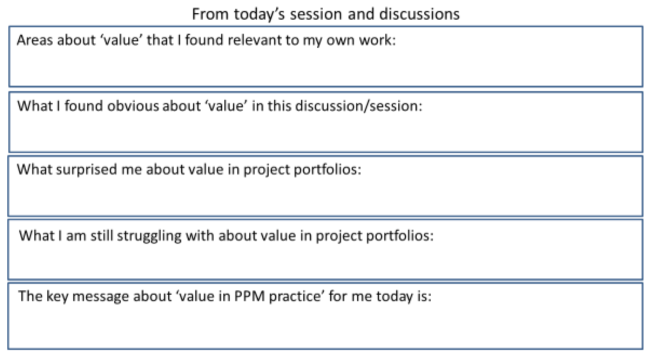

Figure 15.6: HDEP 3 Anonymous feedback about the insights.

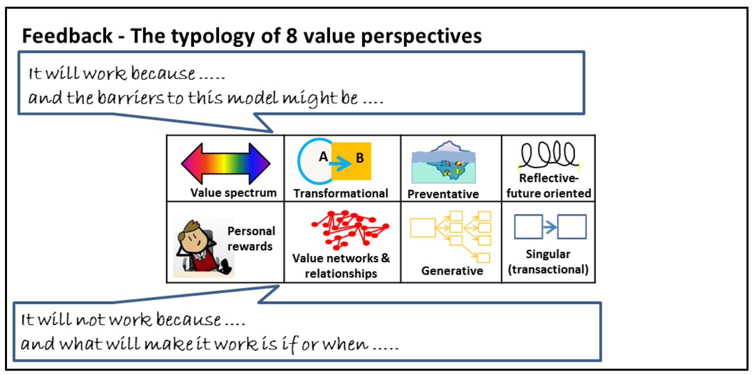

Figure 15.7: HDEP 3 anonymous qualitative feedback on the model.

Reflections and contributions

The original Delphi technique involved multiple rounds of remote and anonymous feedback from experts [29] about practice-related problems [30]. This research applied a multiple data collection method in the form of semi-structured interviews and organizational material collected from the case studies, and expert panel discussions and anonymous questionnaires (through HDEPs) to triangulate and enhance the quality of its research contributions. The expert panels in this example were given the opportunity to discuss, test, feedback and refine propositions about value perspectives from their own expert viewpoints to ensure their practical relevance and contribution to the field of PPM research [31]. This is in line with the encouragement from researchers to engage with practitioners to evaluate and validate what might be relevant or useful in the framework propositions [32]. The reflexive and iterative qualitative inquiry approaches applied in this study contributed to a system of refinements, checks and balances, combining as they did through the case studies with feedback from the HDEPs to ensure the rigor of the research. This helped ensure that the final research outcomes were more clearly understood, useful, relevant and contributed to both theory and practice.

These case studies provide examples of the use and adaptation of the Delphi method-- in that expert panelists progressively tested and validated the qualitative insights generated from the case studies. They engaged with real-world practitioners to check that conceptual (academic) insights gained would also contribute to practice. It also provides an empirically valid hybrid approach to the classical Delphi method, by combining multiple face-to-face expert panel discussions with anonymous responses from the expert panels.

Conclusion

This chapter demonstrates that the Delphi technique, when modified for use with widely distributed groups using online tools, is highly effective in obtaining data in social science research. It is transparent, iterative, and provides the opportunity for participants to respond to the researcher's analysis of their data, democratic, consensus seeking, and co-operative. It is of particular value to open systems thinkers, in particular, who seek to engage stakeholders in decision-making in organizations and communities. While Delphi is not widely used in systems research it is hoped that this chapter will add one more method to the repertoire of systems thinkers and researchers who are looking for democratic ways to build consensus in systemic research.

References

1. Sankaran S, Illingworth B, Shaw K, Dick B, Davies A, Cartwright C. Using Delphi as a democratic research method facilitating involvement to investigate leadership capability development in Australia. Annual Conference of the European Academy of Management. EURAM; 2013.

2. Hase S, Davies AT. The misuse of knowledge: Getting beyond the dark side of the organisation. In: Xu J, James P, Sankaran S, Milne T, editors. Enhancing organisational capability through knowledge management. Southern Cross University Press; 2009.

3. Emery M. The current version of Emery's open systems theory. Systemic Practice and Action Research. 2000;13: 623–643. Available: https://idp.springer.com/authorize/casa?redirect_uri=https://link.springer.com/article/10.1023/A:1009577509972&casa_token=HTrweGt7mTQAAAAA:LrdqpmwAZoG2_-wSpKQSUA_7AeKODAW4ajrOsXt7gIecb1iq4kK-JBgWir-x5x1B3frAcq0VwCd9dEF9

4. Emery M, Purser RE, Emery, Goldsmith M, Beckhard R, Re P. The Search Conference: A Powerful Method for Planning Organizational Change and Community Action. Wiley; 1996. Available: https://play.google.com/store/books/details?id=SYsTAQAAMAAJ

5. Ackoff RL. The Future of Operational Research is Past. J Oper Res Soc. 1979;30: 93–104. doi:10.1057/jors.1979.22

6. Checkland P. Systems Thinking, Systems Practice. Wiley, 1981.

7. Dalkey N, Helmer O. An Experimental Application of the DELPHI Method to the Use of Experts. Manage Sci. 1963;9: 458–467. doi:10.1287/mnsc.9.3.458

8. Landeta J. Current validity of the Delphi method in social sciences. Technol Forecast Soc Change. 2006;73: 467–482. doi:10.1016/j.techfore.2005.09.002

9. Diamond IR, Grant RC, Feldman BM, Pencharz PB, Ling SC, Moore AM, et al. Defining consensus: a systematic review recommends methodologic criteria for reporting of Delphi studies. J Clin Epidemiol. 2014;67: 401–409. doi:10.1016/j.jclinepi.2013.12.002

10. Rowe G, Wright G. The Delphi technique: Past, present, and future prospects — Introduction to the special issue. Technological Forecasting and Social Change. 2011. pp. 1487–1490. doi:10.1016/j.techfore.2011.09.002

11. Keeney S, Hasson F, McKenna HP. A critical review of the Delphi technique as a research methodology for nursing. Int J Nurs Stud. 2001;38: 195–200. doi:10.1016/s0020-7489(00)00044-4

12. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. J Adv Nurs. 2000;32: 1008–1015. Available: https://www.ncbi.nlm.nih.gov/pubmed/11095242

13. McKenna HP. The Delphi technique: a worthwhile research approach for nursing? J Adv Nurs. 1994;19: 1221–1225. doi:10.1111/j.1365-2648.1994.tb01207.x

14. Ziglio E. Gazing Into the Oracle: The Delphi Method and Its Application to Social Policy and Public Health. Jessica Kingsley Publishers; 1995.

15. Choi M, Yoon HJ, Jeung C-W. Leadership development in Korea: a Delphi study. Asia Pacific

Journal of Human Resources. 2012. pp. 23–42. doi:10.1111/j.1744-7941.2011.00001.x

16. Fletcher AJ, Marchildon GP. Using the Delphi Method for Qualitative, Participatory Action Research in Health Leadership. International Journal of Qualitative Methods. 2014;13: 1–18. doi:10.1177/160940691401300101

17. Geisler BP, Widerberg KF, Berghöfer A, Willich SN. Leadership in health care: Developing a post‐merger strategy for Europe's largest university hospital. J Health Organ Manag. 2010;24: 258–276. doi:10.1108/14777261011054608

18. Senaji TA, Metwally E, Sejjaaka S, Puplampu BB, Michaud J, Adedoyin-Rasaq H. LEAD - Leadership effectiveness, motivation, and culture in Africa: Lessons from Egypt, Ghana, Kenya, Nigeria, and Uganda. Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l'Administration. 2014. pp. 228–244. doi:10.1002/cjas.1298

19. Wang W-N. Community College Leadership in Taiwan: A Delphi Study. Procedia - Social and Behavioral Sciences. 2013;93: 659–664. doi:10.1016/j.sbspro.2013.09.257

20. Grisham T. The Delphi technique: a method for testing complex and multifaceted topics. International Journal of Managing Projects in Business. 2009;2: 112–130. doi:10.1108/17538370910930545

21. Shadid WK. A framework for managing organizations in complex environments. Constr Manage Econ. 2018;36: 182–202. doi:10.1080/01446193.2017.1343483

22. Dick B, Sankaran S, Shaw K, Kelly J, Soar J, Davies A, et al. Value Co-creation with Stakeholders Using Action Research as a Meta-methodology in a Funded Research Project. Proj Manage J. 2015;46: 36–46. doi:10.1002/pmj.21483

23. Cicmil S, Williams T, Thomas J, Hodgson D. Rethinking Project Management: Researching the actuality of projects. Int J Project Manage. 2006;24: 675–686. doi:10.1016/j.ijproman.2006.08.006

24. Laursen M, Svejvig P. Taking stock of project value creation: A structured literature review with future directions for research and practice. Int J Project Manage. 2016;34: 736–747. doi:10.1016/j.ijproman.2015.06.007

25. Martinsuo M, Killen CP. Value Management in Project Portfolios: Identifying and Assessing Strategic Value. Proj Manage J. 2014;45: 56–70. doi:10.1002/pmj.21452

26. Winter M, Andersen ES, Elvin R, Levene R. Focusing on business projects as an area for future research: An exploratory discussion of four different perspectives. Int J Project Manage. 2006;24: 699–709. doi:10.1016/j.ijproman.2006.08.005

27. Yin RK. Case Study Research: Design and Methods. SAGE; 2013. Available: https://play.google.com/store/books/details?id=FzawIAdilHkC

28. Landeta J, Barrutia J, Lertxundi A. Hybrid Delphi: A methodology to facilitate contribution from experts in professional contexts. Technol Forecast Soc Change. 2011;78: 1629–1641. doi:10.1016/j.techfore.2011.03.009

29. Linstone HA, Turoff M. The Delphi Method. researchgate.net; 1975.

30. Powell C. The Delphi technique: myths and realities. J Adv Nurs. 2003;41: 376–382.

doi:10.1046/j.1365-2648.2003.02537.x

31. Ang KC, Killen CP, Sankaran S. Value constructs in multi-stakeholder environments that influence project portfolio decision making. In Annual Conference of the European Academy of Management 2015 Jun 17. European Academy of Management. Available: https://opus.lib.uts.edu.au/handle/10453/36281

32. Rikkonen P, Kaivo‐oja J, Aakkula J. Delphi expert panels in the scenario‐based strategic planning of agriculture. Foresight. 2006;8: 66–81. doi:10.1108/14636680610647156