

A critique of using the Delphi technique for assessing evaluation capability-building needs

This article examines the use of the Delphi technique as part of a Needs Assessment to inform an evaluation capability-building plan within a government department. Besides considering the Delphi process itself, it also raises methodological issues and suggests steps that might be taken in the future.

Introduction

This article focuses on the use of the Delphi technique for a component of a Needs Assessment to inform the development of an Evaluation Capability Building Plan for the Agriculture and Fisheries Group of the Victorian Department of Primary Industries.

It begins with the contextual background to the Agriculture and Fisheries Group and an outline of the evaluation task in order to give the reader an understanding of the organisational environment in which this task has been situated. Concepts of Evaluation Capability Building and Needs Assessment are then introduced. This is followed by a description of the Delphi application and an analysis of the findings. In the next section methodological issues are discussed before conclusions are offered with suggestions for the next steps.

Background

The Victorian Department of Primary Industries

The Victorian Department of Primary Industries (DPI) is a large public sector organisation promoting the sustainable development of primary and energy industries for the benefit of all Victoria. Responsibility for Victoria's agriculture and fisheries sectors rests with the Agriculture and Fisheries Group (AFG) within DPI.

The main purpose of evaluation within AFG is to demonstrate accountability for the use of public funds. However, evaluation is also considered an essential learning tool to inform decisions of investment, as well as program planning, development and implementation (DPI 2008).

AFG recently produced an Evaluation Framework that articulates the organisation's evaluation requirements and expectations. This framework aims to 'contribute to the efficient and effective delivery of outcomes to Victorians by providing a more systematic and rigorous approach to evaluation' (DPI 2008, p. 2).

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The evaluation task

To ensure AFG's evaluation capability is sufficient to meet the requirements of the Evaluation Framework, an Evaluation Capability Building (ECB) Plan has been requested. As an Evaluation Specialist within AFG's Evaluation Unit, with a specific responsibility for ECB activities, I have been allocated the task of developing an ECB Plan.

Associated concepts

Evaluation Capability Building

ECB has been defined as 'the intentional work to continuously create and sustain overall organisational processes that make quality evaluation and its uses routine' (Stockdill, Baizerman & Compton 2002, p. 14).

While ECB is currently undertaken within AFG through mechanisms including a formal evaluation training program, mentoring arrangements, provision of technical advice and resources, and the operation of Evaluation Communities of Practice, these activities are not codified in an ECB Plan, the development of which is an important component of any ECB effort. King (2007) stresses the value of a purposeful, explicit, written capacity-building plan. Similarly, Mackay (2002) lists the preparation of a realistic ECB action plan as a key issue, while the development and implementation of 'a purposeful long-term ECB plan for the organisation' is one of the checklist items provided by Volkov and King (2007). The lack of such an ECB Plan within AFG is a key driver for undertaking an ECB Needs Assessment.

Needs Assessment

Needs Assessment has been defined as:

a systematic set of procedures undertaken for the purpose of setting priorities and making decisions about program or organisational improvements and allocation of resources. The priorities are based on identified needs. (Witkin & Altschuld 1995, p. 4)

Within the Needs Assessment (NA) literature, need is usually defined as the discrepancy between a target state and an actual state (Lee, Altschuld & White 2007; Roth 1990; Witkin & Altschuld 1995).

Based on this definition, the five main components of an NA are: '(1) determining the What Should Be (target) status; (2) ascertaining the What Is (actual) status; (3) quantifying discrepancies between What Should Be and What Is; (4) analysing the causes of discrepancies; and (5) establishing priorities' (Lee, Altschuld & White 2007; Owen 2006; Witkin & Altschuld 1995).

As well as considering different types of need, Witkin and Altschuld (1995) identify three different levels of need, which they relate to different NA target groups. The first level refers to the needs of service recipients. Witkin and Altschuld (1995, p. 12)

stress that valid NAs should be focused on Level 1 as these are the needs of the people for whom the system ultimately exists. Level 2 refers to the needs of service providers. The needs of people in Level 2 relate to the functions they perform. The third level refers to the organisational needs or resources.

Data to determine the ideal state of evaluation capability within AFG was collected using the Delphi technique with participants from Level 1 and Level 2 target groups, that is, both recipients and providers of evaluation services in DPI. The information generated is intended to help focus the remaining data collection activities. This component of the NA is the subject of the next section of this article.

Establishing the 'what should be' state using the Delphi technique

Choice of Delphi

The Delphi technique is recognised as an appropriate method for eliciting information for an NA (Cricher & Gladstone 1998; Garavalia & Gredler 2004; Jones & Hunter 1996; Owen 2006; Witkin & Altschuld 1995). It has been described as 'a consensus method providing a means of harnessing the insights of appropriate experts to enable decisions to be made' (Jones & Hunter 1996, p. 46), and 'used not only to determine consensus but also to enhance consensus building' (Witkin & Altschuld 1995, p. 194).

The Delphi technique is an iterative process involving a series of survey rounds with the same panel of 'experts'. Each round is informed from responses from preceding rounds. While the rounds can continue until consensus is approached or achieved, most Delphi processes involve three or four rounds (Cricher & Gladstone 1998; Garavalia & Gredler 2004; Jones & Hunter 1996; Witkin & Altschuld 1995).

The technique was selected for this component of the ECB NA because of its advantages in enabling a large group of geographically dispersed, time-poor participants to be contacted cheaply by email, avoiding the organisational constraints and expense of bringing them together physically. Administration by email allowed rapid turnaround, while providing participants with anonymity, equal status and equal opportunity to participate. It also avoided some of the disadvantages associated with face-to-face meetings, such as personality influences or individual dominance (Cricher & Gladstone 1998; Garavalia & Gredler 2004; Jones & Hunter 1996; Witkin & Altschuld 1995).

Method

Definition of problem

The Delphi technique was used in the first stage of this ECB NA to gain consensus of informed opinion on the ideal state of evaluation capability within AFG.

Selection of participants

Potential participants were selected on the basis that they had expertise in evaluation or had a stake in its use within AFG. Participation was invited from those who receive evaluation capability services (Level 1 target group), and from those who provide evaluation capability services (Level 2 target group), resulting in a potential participant pool of 80 (47 Level 1 and 33 Level 2).

Development of initial question

The following question was developed to generate opinions from participants about the ideal state of evaluation capability for this NA.

What would strong evaluation capability within DPI's Agriculture and Fisheries Group look like?

Round 1

After piloting, an email inviting participation, explaining the NA, outlining the Delphi process and requesting responses to the question was sent to the potential participants.

Participants were asked to provide as many opinions as they thought appropriate, expressing each in a separate brief sentence or phrase. Opinions did not need to be developed or justified at this stage. Responses were required by return email within three days.

Analysis of Round 1 responses

Responses from Round 1 generated a total of 107 opinions, which were analysed following the procedure suggested by Witkin and Altschuld (1995, p. 196). I, as the Delphi coordinator initially reviewed the data, and clustered similar ideas together into emerging themes. I then named themes, and wrote a brief statement describing the essential nature of each theme. The analysis was repeated independently by two evaluation practitioner colleagues who were familiar with the concept of ECB and by another colleague unfamiliar with ECB but experienced in qualitative data analysis.

Following discussion of differences produced from these individual analyses, the number of final themes was reduced to 10. The 10 statements that best described the essence of the majority of opinions within each theme were created. These statements, presented in Table 1 provided the basis for Round 2.

Round 2

Participants were presented with the 10 statements generated from Round 1 and provided with 10 points to allocate. They were required to use whole numbers, use all 10 points, no more than 10 points, and were invited to allocate their points however they chose, according to which of the 10 statements they believed were most important for a strong evaluation capability in AFG. Space was provided for optional comments justifying their points allocation decisions.

TABLE 1: STATEMENTS PREPARED FOR ROUND 2

Number	Statement
1	AFG should be able to show it is delivering social, economic and environmental benefits for the community of interest.
2	Each Project Assessment Group should be responsible for resourcing evaluations.
3	Evaluation capability should be distributed across AFG Divisions with leadership provided by a core group of evaluation specialists.
4	AFG should have an accessible store of evaluation information, including previously collected data and examples of tendering documents, evaluation plans and reports.
5	AFG should have clear guidelines detailing organisational expectations for all aspects of evaluation.
6	AFG should have streams of timely evaluation information being used continuously by decision-makers at all levels of the organisation.
7	AFG should have ongoing evaluation capability building in a variety of forms including technical advice, support materials, training, Communities of Practice, mentoring and supportive organisational structures.
8	AFG should be using a variety of forms of evaluation at different levels of the organisation to suit different purposes.
9	Evaluation should be valued at all levels of AFG.
10	AFG should have a core of evaluation specialists to advocate for evaluation, build capability and provide support for all staff across the organisation.

All 80 original invitees were offered the opportunity to participate in Round 2. As before, they were requested to respond within three days.

Analysis of Round 2 responses

Points allocated and the number of people allocating points to each statement in Round 2 were totalled, and the 59 additional comments received were collated.

Round 3

Invitations to participate in Round 3 were restricted to the 25 who had responded to Round 2. They were each emailed an individualised questionnaire presenting group results, collated comments, and their own points allocation for comparison. Participants were requested to repeat the points allocation process after taking the Round 2 results into account. They were reminded that they were free to change their 'vote' based on the group results, or to 'vote' the same way as they did in Round 2. Space was again made available

for comments to justify decisions, and as before, responses were required within three days.

Analysis of Round 3 responses

Responses from Round 3 were totalled and changes to points allocation were analysed. Consensus was approached regarding which three statements were rated the highest, and which three were rated the lowest by both Level 1 and Level 2 respondents. This supported the decision that further Delphi rounds were unnecessary.

Summary and reporting of findings

A brief summary of the results of the Delphi process was emailed to all of the original 80 invitees. This included a table showing Round 2 and 3 percentage points allocation for each statement, and the statements re-ordered to reflect their importance. The email also thanked respondents for their participation in (or their observation of) the process before explaining the next steps in the full ECB NA.

Findings

Response rates

Table 2 shows response rates for each of the Delphi rounds.

A response rate of 25 per cent was achieved for Round 1. Because all members of the initial sample were eligible to participate in Round 2, 11 new participants entered the Delphi process at this stage, and six of the Round 1 participants dropped out. This produced a response rate of 31 per cent for Round 2. Only those who participated in Round 2 were eligible for Round 3. A further six dropped out, leaving a response rate of 76 per cent. Overall,

24 per cent of the initial sample completed Round 3. Twelve participants completed all three rounds, seven completed Rounds 2 and 3, 14 completed Rounds 1 and 2, and four participated in Round 2 only.

Participation

Table 3 shows a further breakdown of participation in each round by target group level. It is interesting to note that Level 2 participants, those who provide evaluation capability within the organisation, participated at almost double the rate of those from Level 1, who receive evaluation capability services.

Scoring

Table 4 shows percentage points allocated for each statement from Round 2 and Round 3. The table shows that the ‘voting’ for the top two statements firmed up in the third round, providing confidence that there is general agreement among participants that they consider these two issues the most important. Statement number 1 was rated third highest in both rounds, while statements 8, 9 and 2 were rated the lowest in both rounds.

Agreement

Figure 1 shows a breakdown of Round 3 points allocation by target group level. It clearly reveals a lack of agreement between the two levels regarding their view of the importance of different statements. For example, statements 4, 7 and 10 received much greater support from Level 2 participants than from Level 1 participants. Conversely, statement 8 was supported more by Level 1 participants than by Level 2 participants. These differences are masked if only the total points allocated to each statement are considered.

TABLE 2: RESPONSE RATES BY ROUND

	Round 1	Round 2		Round 3	
Commenced Round 1	20	14		12	
Commenced Round 2		11		7	
Totals (n=80)	20	25	Total (n=25)	19	Overall Response rate
Response rate	25%	31%		76%	24%

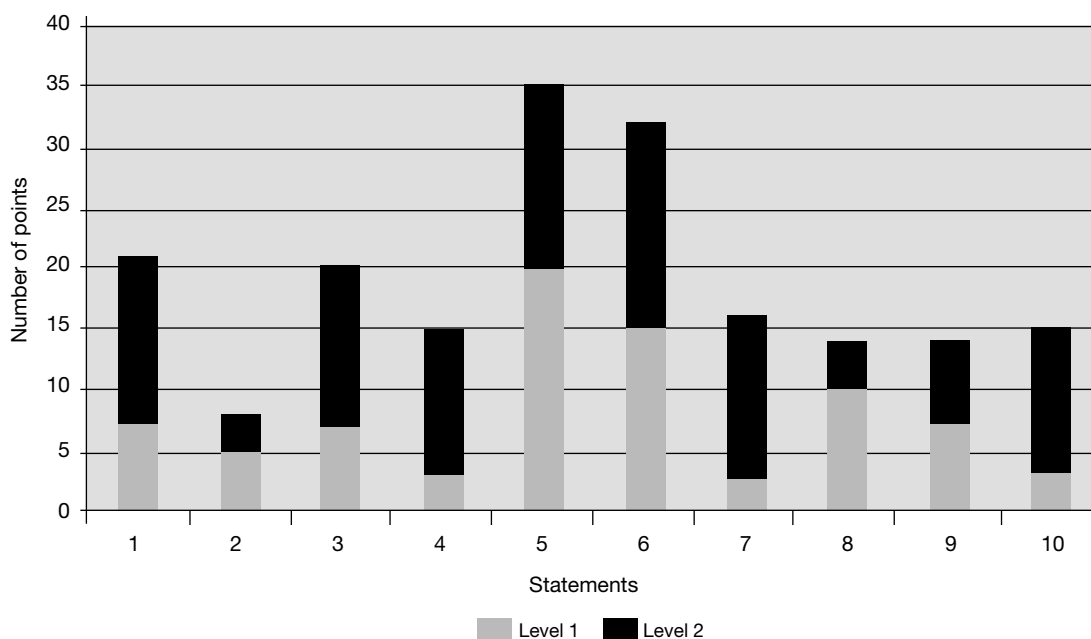
TABLE 3: PARTICIPATION IN EACH ROUND BY LEVEL

Level	Round 1	Round 2	Round 3	Overall Response rate
Level 1 (n=47)	8	11	8	17%
Level 2 (n=33)	12	14	11	33%
Totals (n=80)	20	25	19	24%

TABLE 4: RESULTS FROM ROUNDS 2 AND 3

Number	Statement	R2 % points	R3 % points
5	AFG should have clear guidelines detailing organisational expectations for all aspects of evaluation.	13.2	18.4
6	AFG should have streams of timely evaluation information continuously being used by decision-makers at all levels of the organisation.	12.4	16.8
1	AFG should be able to show it is delivering social, economic and environmental benefits for the community of interest.	11.6	11.1
3	Evaluation capability should be distributed across AFG Divisions with leadership provided by a core group of evaluation specialists.	10.4	10.5
7	AFG should have ongoing evaluation capability building in a variety of forms, including technical advice, support materials, training, communities of practice, mentoring and supportive organisational structures.	11.2	8.4
4	AFG should have an accessible store of evaluation information, including previously collected data and examples of tendering documents, evaluation plans and reports.	9.6	7.9
10	AFG should have a core of evaluation specialists to advocate for evaluation, build capability and provide support for all staff across the organisation.	10.4	7.9
8	AFG should be using a variety of forms of evaluation at different levels of the organisation to suit different purposes.	8.8	7.4
9	Evaluation should be valued at all levels of AFG.	8.0	7.4
2	Each Project Assessment Group should be responsible for resourcing evaluations.	4.4	4.2

FIGURE 1: ROUND 3 POINTS ALLOCATION BY LEVELS



Consensus

Figures 2 and 3 show percentage points allocation for Round 2 and Round 3 for Level 1 and Level 2 participants respectively. Four of the eight Level 1 Round 3 participants allocated their points differently from Round 2, and almost all of those changed points were drawn to statements 5 (*AFG should have clear guidelines detailing organisational expectations for all aspects of evaluation*) and 6 (*AFG should have streams of timely evaluation information continuously being used by decision-makers at all levels of the organisation*).

Ten of the 11 Level 2 Round 3 participants changed their points allocation. Statements 5 (*AFG should have clear guidelines detailing organisational expectations for all aspects of evaluation*) and 3 (*Evaluation capability should be distributed across AFG Divisions with leadership provided by a core group of evaluation specialists*) benefited most from the changes, although in general the changes were more dispersed across a greater number of statements than was the case for Level 1 participants.

Discussion

The purpose of this Delphi process was to gain agreement from an informed panel on the ideal state of evaluation capability within AFG. Jones and Hunter (1996, p. 47) distinguish between two forms of ‘agreement’. One form is the extent to which each respondent agrees with the issue under consideration, and the other is the extent to

which respondents agree with each other. Overall consensus was approached for the three most important issues, and for the three least important issues, showing a reasonably high level of agreement by respondents with overall importance of the issues. Differences that emerged between Level 1 and Level 2 respondents, however, indicate lower levels of agreement between respondents. It will be important when developing an ECB Plan aiming to address identified evaluation capability discrepancies that the different perceptions of service providers and service receivers are taken into consideration, while at the same time remaining focused on the needs of those for whom the service ultimately exists.

The following three statements were rated by respondents to be the most important:

Statement 5	AFG should have clear guidelines detailing organisational expectations for all aspects of evaluation.
Statement 6	AFG should have streams of timely evaluation information continuously being used by decision-makers at all levels of the organisation.
Statement 1	AFG should be able to show it is delivering social, economic and environmental benefits for the community of interest.

FIGURE 2: PERCENTAGE POINTS ALLOCATION FOR ROUND 2 AND ROUND 3 BY LEVEL 1 PARTICIPANTS

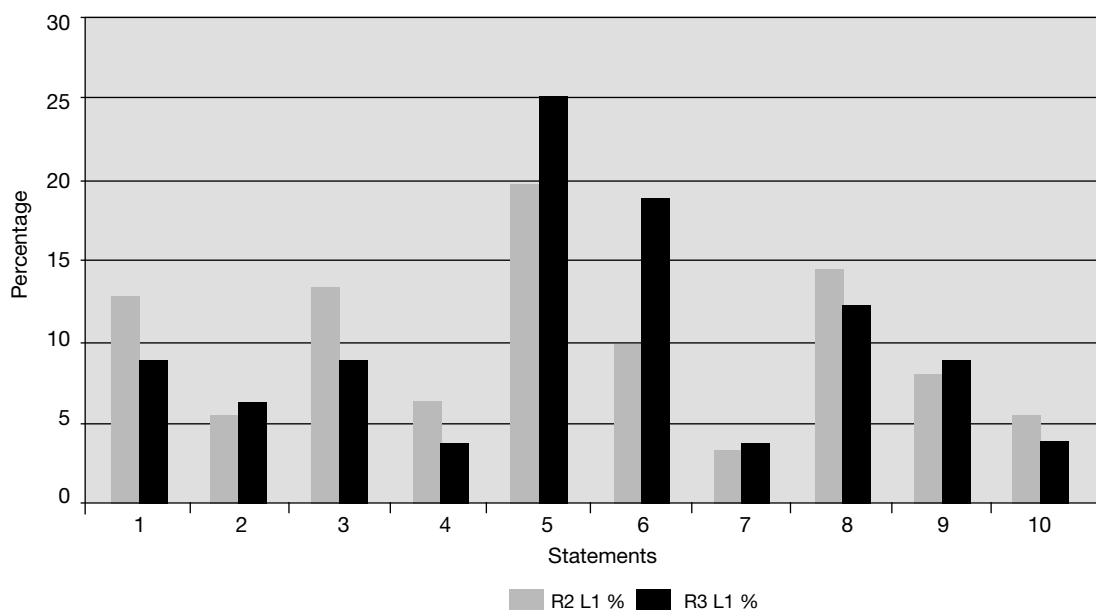
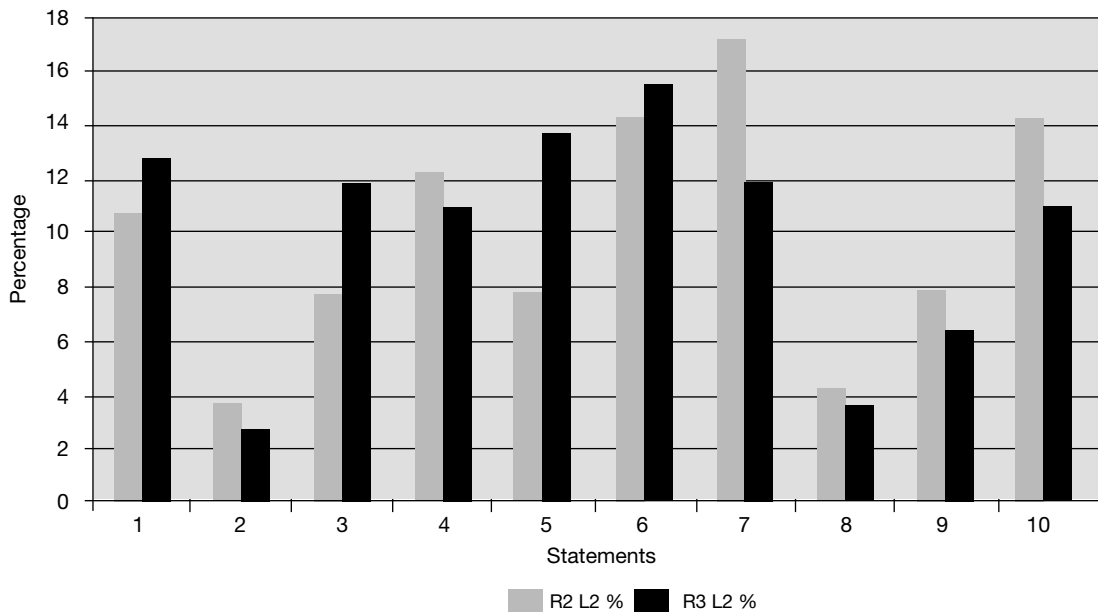


FIGURE 3: PERCENTAGE POINTS ALLOCATION FOR ROUND 2 AND ROUND 3 BY LEVEL 2 PARTICIPANTS



However, these preferences cannot be understood fully without reference to the comments provided by respondents to justify their points allocation. For example, the highest rated statement called for clear evaluation guidelines. This statement received 25 per cent of Level 1 points, and 13.6 per cent of Level 2 points. Two comments about this statement were provided by Level 1 respondents, and they both referred to AFG’s recently developed Evaluation Guidelines, with one claiming they were comprehensive, and the other questioning the clarity of expectations they contain. Furthermore, three of the four comments provided by Level 2 respondents recognised the benefits of guidelines, but cautioned against them being too rigid or too prescriptive. This qualitative information will be an important aid to interpreting the quantitative ‘voting’ results, and care must be taken to ensure this further level of understanding is incorporated into the design of the proposed ECB Plan.

Meanwhile, the following three statements were rated by respondents as least important:

Statement 8	AFG should be using a variety of forms of evaluation at different levels of the organisation to suit different purposes.
Statement 9	Evaluation should be valued at all levels of AFG.
Statement 2	Each Project Assessment Group should be responsible for resourcing evaluations.

Comments provided for these statements also assist in understanding their apparent importance ratings. For example, statements 8 and 9 each received 7.4 per cent of all points allocated, indicating a low opinion of the importance of these issues. However, many comments provided for these statements indicated that respondents considered these issues to be ‘self-evident’, ‘stating the obvious’, ‘goes without saying’ and a ‘bit of a motherhood statement’, suggesting the issues are still considered inherently important.

Conclusion

It must be stressed at this point that the information generated through the application of the Delphi technique is only the first step in a full NA. The importance rankings of the ideal or ‘what should be’ state of evaluation capability in AFG, together with the clarifying comments provided, will help to focus the next phases of the NA. The actual, or ‘what is’ state will need to be determined for the highest scoring issues in the first instance and any discrepancies between actual and ideal states identified. For example, AFG’s recently developed Evaluation Framework is intended to provide clear guidelines detailing organisational expectations for all aspects of evaluation. How well the Framework currently provides clarity of expectations while allowing desired flexibility can be tested through discussions with both management and evaluation practitioners.

Reasons for identified discrepancies will then be investigated. Using the example of the Evaluation Framework, it might be determined that the desired level of clarity is lacking, or awareness of the Framework among managers might be low. Once

reasons for the discrepancies are better understood, treatments can be prioritised and incorporated into the proposed ECB Plan.

Methodological issues

Development of the initial question

Witkin and Altschuld (1995, p. 195) point out that developing the initial question for the first Delphi round can be a difficult exercise because it needs to capture the imagination of participants, generating intensive thought and interest. For the ECB Delphi, a number of example questions from the literature were reviewed to assist formulation of the opening question, which became: *What would strong evaluation capability within DPI's Agriculture and Fisheries Group look like?*

The 'visioning' form of question was deliberately chosen to generate considered responses. The wording of the question avoided any reference to 'need' in an attempt to minimise confusion between needs and wants, a common problem with NA that has been identified in the literature (Altschuld & Witkin 2000; Gaber 2000; Lee, Altschuld & White 2007; Owen 2006; Reviere et al. 1996; Scriven 1990; Titcomb 2000; Witkin & Altschuld 1995).

Another reason for not using the term 'need' was to minimise the likelihood of respondents thinking immediately of solutions rather than concentrating on the ideal state as requested. This confusion commonly occurs in NAs when 'need', used as a noun to describe the gap between actual and target states, becomes confused with 'need' used as a verb to indicate what is required to fill the gap (Witkin & Altschuld 1995).

While some of the opinions generated in response to the opening question suggested solutions, most described an ideal state. Feedback received by the Delphi coordinator from one of the respondents supports the claim that the question did generate intensive thought.

It's a good question because I want to say things about the organisation valuing evaluation—not just espoused but actual, and supply matching demand, but what would it look like, what would be happening to demonstrate that this is the case? (Email received 14 October 2008)

Analysis of data from Round 1

Round 1 generated 107 opinions, which were clustered into 10 themes from which 10 statements were developed. Because of the potential arbitrary nature of this process, efforts were made to test and validate results with both evaluation practitioners and non-practitioners. The resultant 10 statements were, however, fairly broad, expressing ideal goals with high desirability. The nature of the statements greatly influenced the design of Round 2, which in turn influenced the final number of statements.

Design of Round 2

Witkin and Altschuld (1995, p. 135) warn that when category scales are used to rate importance of socially desirable items that have high face validity, clustering at the high end of the scale often occurs. This makes establishing priorities from the result very difficult. To avoid such clustering, they recommend methods that force choices from respondents rather than those that invite ratings of each individual item. Because of the nature of the statements that emerged from Round 1, a variation of the Budget Allocation Method (Witkin & Altschuld 1995, p. 136) was used. This involved forcing respondents to choose through their allocation of 10 points in response to the question: *Which of the following 10 statements do you believe are most important for a strong evaluation capability in DPI's Agriculture and Fisheries Group?*

Decision to confine the Delphi to determine the 'ideal' state

It was originally my intention to use the Delphi technique to determine both 'ideal' and 'actual' states for the ECB NA. Discrepancies between the two states would then be quantified, analysed for causes, and then prioritised for treatment in an ECB Plan. Initial question designs were investigated, and a preferred design employing category scales addressing importance and current performance on items generated was proposed. Similar methods applied in NA are presented by Lee, Altschuld & White (2007) and by Rodski Survey Research (2005).

However, upon closer reading of Witkin and Altschuld (1995), I was dissuaded from taking this course of action. In relation to interpreting data from discrepancy questionnaires, Witkin and Altschuld (1995, p. 60) warn: 'Too often, however, comparisons are made on noncomparable items, such as importance of an objective versus perceived achievement'. Discussing the disadvantages of the NA written survey, Witkin and Altschuld (1995, p. 129) caution that: 'It is usually not an appropriate vehicle for directly determining discrepancies, that is, by seeking responses simultaneously to "what is" and "what should be" questions'. This warning is repeated later in the same book: 'We do not usually recommend a two-response format for surveys (judging "what is" and "what should be" on the same instrument)' (Witkin & Altschuld 1995, p. 142).

Heeding the warnings given above, it was decided to confine the purpose of the ECB Delphi to determining the 'what should be' condition of evaluation capability within AFG. The actual state and subsequent discrepancies will be assessed using different methods. It was only after this decision was taken that I discovered the following statement by those same two authors in a later book:

Well-constructed NA surveys contain (at a minimum) double-scaled items that ask for ratings about current and desired status, in accord with the definition of need (the measurable discrepancy between ...). With two scores for each item, it is possible to calculate a numerical discrepancy or an index of need. (Altschuld & Witkin 2000, p. 53)

Whether or not the correct decision was taken remains to be seen.

Next steps

Using the Delphi Technique, a broad range of opinions has been generated from an 'expert' panel to determine the ideal or 'what should be' state of evaluation capability within AFG, and preliminary priorities have been established. The next task will be to test this information against recommended best practice ECB from the literature to ensure all 'essential' ECB elements are included in the priority list, and to incorporate recommendations from relevant previous NA studies.

This 'testing' will be undertaken in an attempt to overcome identified weaknesses of the Delphi technique. Jones and Hunter (1996, p. 52) warn of the danger of the Delphi technique deriving collective ignorance rather than wisdom. A similar warning is offered by Critcher and Gladstone (1998, p. 443) who caution that '... what appears to be a high level of consensus might also be interpreted as the lowest common denominator of opinion'. These same authors remind the practitioner that '... the Delphi method is an aid to decision making and not a substitute for it' (Critcher & Gladstone 1998, p. 443).

Once 'reality' tested, the information generated from the Delphi process will be used to focus data-gathering activities for establishing the actual or 'what is' state of evaluation capability within AFG. Existence of, and reasons for, discrepancies will then be identified. Methods other than the Delphi technique will be used for these steps. This is consistent with recommendations from the NA literature that more than one type of data collection method should be used for NA to ensure that a variety of viewpoints are considered, to capture a broad understanding of identified discrepancies, and to distinguish between a need and a want better (Gaber 2000; Owen 2006; Rouda & Kusy 1995; Waterman 1990; Witkin & Altschuld 1995).

Final steps required for the completion of the ECB NA include deciding which identified needs should be given priority for action, followed by the development of an ECB Plan to address the needs. The selection and design of treatment strategies will need to be undertaken in close consultation with the evaluation audiences identified earlier. This step is described by Altschuld & Witkin (2000) as a major challenge but a necessary component of NA.

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