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## USE OF DELPHI TECHNIQUE TO DECIDE SUSTAINABILITY CRITERIA

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### Abstract

Sustainability requires deeper understanding and cautious approach to implement. It has far better results when all the stake holders are kept in consideration. The process became complex when many variables get overlapped and researcher want all the variables in resonance to have sustainability. Further if we see sustainability is more qualitative concept rather quantitative. The researcher limitation in all these cases is lack of correct knowledge to reach to conclusion.

Therefore to decide the criteria of sustainability the expert knowledge and opinion is required. But it may be possible that the expert have limited knowledge or have knowledge of sub-field of a study. The possible solution can be appointment of another expert or a panel of experts who will give their opinion on the matter based on the best of knowledge they have. This technique of forming panel of experts and reaching to the consensus is called as “Delphi Technique”.

Delphi Technique is best method of deciding criteria for sustainability provided the experts are from different sub-fields of a study. This is done in order to get fair representation from all the sub-fields.

The objective of this study is to describe why Delphi Technique is better to decide about the criteria of sustainability. This research would be descriptive research and many concepts will be described along with establishing relations among them.

**Key Words:** Sustainability, Delphi-Techniques, Expert

### Introduction to the Delphi Technique

The Delphi Technique is one of the best techniques of ‘consensus-building tool’, which has been applied in a variety of fields including land-use planning, policy making, organizational restructuring, sustainability and tourism to acquire knowledge. This technique was developed by the Rand Corporation in the 1950’s. It is a method for the “systematic solicitation and collation of judgments on a particular topic through a set of carefully designed sequential questionnaires interspersed with summarized information and feedback of opinions derived from earlier responses” (Delbecq, Van de Ven, & Gustafson, 1975). In this technique it is not necessary that participants meet face to face,

thereby making it useful to conduct surveys with qualified people over a wide geographic area. It can be used in planning situations to reach a number of objectives.

1. To determine or develop a range of possible program alternatives.
2. To explore or expose underlying assumptions or information leading to different judgments.
3. To seek out information this may generate a consensus on the part of the respondent group.
4. To correlate informed judgments on a topic spanning a wide range of disciplines.
5. To educate the respondent group as to the diverse and interrelated aspects of the topic (Delbecq et al., 1975).

The Delphi technique is best to achieve consensus through a process of iteration. The process itself is concerned with opinions, ideas and words (Stewart, 2001) and the paradigm of technique is such that consensus is build through a process. The Delphi Technique is said to be particularly appropriate in facilitating decision-making by a number of individuals in environments characterized by antagonistic or strongly opposed political or emotional factions, or when personality differences or intellectual style would be distracting in face to face settings (Cline, 2000; Rosenthal, 1976). The technique is recommended in evaluation studies where conflicts between stakeholders are a disruptive influence, which can become interpersonal and derail the focus of the study (Patton, 1997). Tourism evaluation, operating in a hostile environment with a number of stakeholders, each with their own overriding interests, agendas and areas of emphasis, is thus considered particularly apposite to use of the Delphi Technique.

### **Definition of Delphi**

The Delphi method is based on structural surveys and makes use of the intuitive available information of the participants, who are mainly experts. Therefore, it delivers qualitative as well as quantitative results and has beneath its explorative, predictive even normative elements. The survey in Delphi is based on the two or more than two round, or it can be said that rounds will increase in order to reach consensus. Feedback or summary of last round is given to experts in order to each consensus. Thus, the Delphi method is a 'relatively strongly structured group communication process, in which matters, on which naturally unsure and incomplete knowledge is available, are judged upon by experts', so the definition of Häder and Häder (1995). Wechsler characterises a 'Standard-Delphi-Method' in the following way: 'It is a survey which is steered by a monitor group, comprises several rounds of a group of experts, who are anonymous among each other and for whose subjective intuitive prognoses a consensus is aimed at. In simple words it is defined by whilst McNamee (1985) as 'an interactive and personality free team approach'. After each survey round, a standard feedback about the statistical group judgement calculated from median and quartiles of single prognoses is given and if possible, the arguments and counter arguments of the extreme answers are feedback' (Wechsler 1978). This sounds a bit complicated but the essentials are:

- Panel of expert is formed to conduct survey that can be from wide geographical area.
- There are two or more 'rounds' to reach consensus.
- Starting from the second round, a feedback is given about the results of previous rounds.
- The result of last round is given in order to influence the opinions of the other experts.

As a direct prediction method based on the expert judgment and expert meeting investigation method, it possesses the following properties:

1. Anonymity: The experts involved with the prediction process do not see each other, remain anonymous and don't know how many experts are involved. This helps to prevent them from influencing and encourages objectivity.

2. Feedback: The survey feedback gives the participants an idea about the main ideas in the group. They can then draw from it information relevant to them, make a new judgment, and then submit it to the group again.
3. Statistical: The expert opinions are processed statistically and a spines graph produced with the expert opinion frequencies arrayed chronologically. The top is the majority consensus (50% experts) representing the prediction team's opinion. The top and bottom quarter percentile (each representing 25% of the experts) represent the prediction deviation.
4. Convergence: Through multiple reverse feedback make the final prediction results

### Types of Delphi

A number of different types of 'Delphi' studies have been identified. Many authors have noticed that Delphi technique is modified according to need and availability of resources. They conclude that while some modifications are useful, others are random and undermine both the quality and credibility of the technique. Hasson et al (2000) report that 'Modified Delphi', 'Policy Delphi' and 'Real-time Delphi' have all been used, although the following categorisation, described by van Zolingen and Klaassen (2003), has broad appeal:

**The Classical Delphi:** This type of study is characterised by five features. They are: anonymity, iteration, controlled feedback, statistical group response and stability in responses among those with expertise on a specific issue. Participants in this type of Delphi have expertise and give opinions to arrive at stability in responses on specific issues.

**The Policy Delphi:** The aim in this situation is not to reach stability in responses among those with expertise but to generate policy alternatives by using a structured public dialogue. Here the Delphi is an instrument for policy development and promoting participation by obtaining as many divergent opinions as possible. It is characterised by 'selective anonymity', iteration, controlled feedback, polarised group response and structured conflict. Selective anonymity may mean that participants answer questions individually but may also come together in a group meeting.

**The Decision Delphi:** This type of Delphi is used for decision making on social developments. Reality is created by a group of decision-makers rather than from the ad-hoc decision of only a small number of persons. Crucial to this type is that decision-makers involved in the problem participate in the Delphi. They are selected according to their position in the hierarchy of decision-makers and the aim is to structure thinking so that consensus can be achieved. The characteristic is 'quasi-anonymity' (where people with expertise are mentioned by name and known to everybody from the beginning but questionnaire responses are anonymous).

In this study we are using the Delphi technique to structure thinking around areas of child well-being so that consensus can be achieved in respect of a national set of well-being indicators. The proposed study will, therefore, adopt the approach of a 'Decision' Delphi.

### Purpose of Delphi technique

The main purpose of adopting a Delphi technique to decision-making is to provide a structured approach to collecting data in situations where the only available alternative may be an anecdotal or an entirely subjective approach (Broomfield and Humphries, 2001). The features of anonymity, iteration with controlled feedback, statistical group response and expert input can facilitate consensus where there is contradictory or insufficient information to make effective decisions (Linstone and Turoff, 1975; Goodman, 1987; Hasson et al., 2000; Snyder-Halpern, 2002). Other group approaches to reaching consensus have been examined but have been found to be less appropriate to the

development of a set of well-being indicators. These include, for example, nominal groups (Carney, 1996), brain-storming (Hasson et al., 2000), focus groups (Morgan, 1997) and analytic hierarchy process (AHP) technique (Lai, 2002) as well as the establishment of working groups.

Delphi technique as a methodology has been in use for almost sixty years and the types of situations where it can be useful have been well described. Although some methodological issues remain outstanding, it is noted that the Delphi technique has been found to be particularly useful in the following situations:

1. The Delphi technique is best suited when the problem does not permit the application of precise analytical techniques but it can be benefited from subjective judgement in a group basis;
2. The experts are from different fields and they are not connect;
3. When the group of experts is too big to interact face to face or non availability of funds to organise a group meeting; and
4. Where ethical or social dilemmas dominate economic or technical ones (Linstone and Turoff, 1975; Gupta and Clarke, 1996).

In the studies of 'Sustainability' understandings may be significantly influenced by expertise, experience or occupational position of participants. There is a significant benefit, therefore, in being able to harness subjective judgements of respondents. Delphi technique has been found to be an appropriate mechanism in sustainability analysis for ensuring that emergent differences between and within key stakeholder groups (that can arise from differences in focus, situation and context) can be accounted for in a systematic way. Indeed, it is difficult to envisage a more appropriate way in which communication between the multiplicities of stakeholders concerned with sustainability can be facilitated.

### **Advantages of employing a Delphi technique in the area of Tourism Sustainability**

The aim of the Delphi technique is to achieve consensus between all the stakeholders of tourism (locals, service providers, government, etc) on the destination. The consensus are required to overall development and keep away the conflicts on the destination. It has been reported that the capacity of a group to reach consensus is influenced by:

- A tendency of low status group members to 'go along with' the opinion of group members with a higher status;
- A tendency of a group to exert pressure on its members to conform; and
- A tendency of a dominant group member to exert undue influence on the opinion of the group (Gupta and Clarke, 1996; Fein et al., 1997; van Zolingen and Klaassen, 2003).

Arising from these, the most obvious advantage of guaranteed anonymity in responding to individual questions is that it is likely to encourage opinions that are free of influences from others and is therefore more likely to be 'true' (Goodman, 1987; Snyder-Halpern, 2002). It has been suggested that anonymity encourages experts to make statements on the basis of their personal knowledge and experience, rather than a more 'cautious institutional position' (Gupta and Clarke, 1996). By adopting an iterative approach to data collection through questionnaires and feedback however, the 'collective human intelligence capability' found in groups of people with expertise can be harnessed (Linstone and Turoff, 1975).

Other advantages relate to the use of questionnaires that have the capacity to capture a wide range of interrelated variables and multi-dimensional features (Gupta and Clarke, 1996) and enable a geographically dispersed group of experts to provide their understandings (Rogers and Lopez, 2002). Respondents can complete the questionnaire at their leisure and this reduces time pressures and allows for more reflection and contemplation of response. This, in turn, may increase the number and quality

of contributions and can decrease respondent burden by allowing participation at the participant's convenience. Snyder-Halpern (2002) summarises the 'primary' advantages of the Delphi technique as, "its adaptability to diverse data collection strategies, decreased peer pressure secondary to anonymity and the ease of condensing opinions of many and varied experts into a few precise statements".

### **Disadvantages of adopting a Delphi technique in the area of Tourism Sustainability**

Disadvantages of the Delphic technique have also been identified and authors have questioned the reliability, validity and credibility of this research methodology. Sackman (1975), for example, has noted that anonymity may lead to a lack of accountability because responses may not be traced back to the individual. In addition, it has been suggested that a consensus approach can lead to a diluted version of the best opinion and the result represents the 'lowest common denominator' (Powell, 2003). It could be argued, however, that all approaches (for example, working groups, nominal groups) to gaining consensus run this risk. Others have argued that this approach is time consuming, labour intensive and, therefore, expensive (Fitzsimmons and Fitzsimmons, 2001) although there is not agreement about this. A number of methodological issues arising in respect of Delphi have the capacity to threaten the credibility of the study and these include issues around panel expertise, number of rounds, questionnaire development, analysis and achievement of consensus.

### **When does the use of a Delphi make sense?**

The Delphi method is mainly used when long-term issues have to be assessed. As it is a procedure to identify statements (topics) that are relevant for the future, it reduces the tacit and complex knowledge to a single statement and makes it possible to judge upon. Therefore, the use in combination with other methodologies like scenarios, technology list or others can be interesting. On the other hand, in more complex issues, when the themes cannot be reduced that much or when thinking and discussions in alternatives are the major target, the Delphi is not the method of choice.

For the Japanese policy, it was especially interesting to answer the following question (and this question is also asked by other governments, too, now): How should we proceed with the long-term application-oriented basic research of the hyphenated type? This extension is no mistake; it is really meant long-term application-oriented basic research. This is the research where one does not know what will be found out in the laboratory in the next month or year, but it is research which does not only satisfy scientific curiosity and the enhancement of knowledge. It is research with a definite long-term economic or social perspective. Let me mention climate research, health research, environmental research, sustainable research and so forth.

The Delphi technique could serve different understandings of forecasting or foresight and was probably understood by the users as being relevant for covering technical perspectives, organisational perspectives, but also personal perspectives. The individual could express a distinctly different opinion as compared to the group perspective and this to a differing degree between the technical details under scrutiny. As multiple perspectives are recommended for decision making, (Linstone and Mitroff 1994; Linstone 1998) the Delphi technique seems to have appeal in quite diverse situations which touch the long range scales. As it can be shown in controlled scientific experiments that the position of Delphi estimates is not better than those of other consensus oriented methods (Woudenberg 1991) it must be the communicative force of Delphi approaches that facilitates the switching between different perspectives. Writing down future topics seems to have an immense psychological effect because it transfers implicit to tacit knowledge to the more visible, explicit, and therefore transferable knowledge.

Nevertheless, the danger that many persons regard this as 'the future' that 'will come true' cannot be neglected. When the media in Germany used Delphi '98 data for an outlook into the next century, they often made the mistake of arguing that the future will be like it is described in Delphi '98 disregarding

that the decisions of today (or non decisions) have a strong effect on the things to come and that Delphi can only provide 'potential answers' to problems that can already be identified today.

**How to organize a Delphi process?**

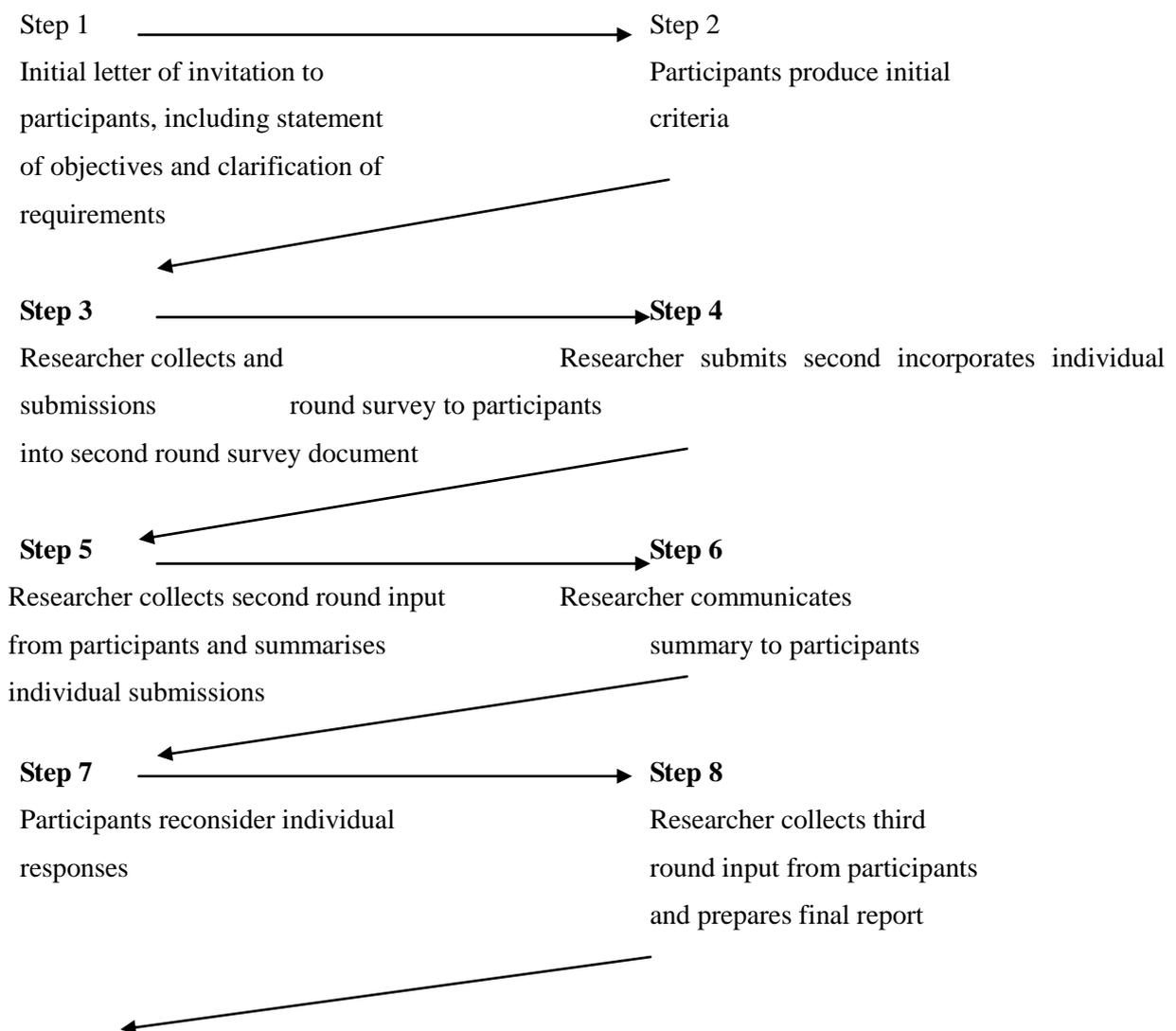
There are certainly different possibilities to organise a Delphi process. Before starting, you should answer the following questions:

- What is the objective of study?
- How many resources (manpower, money...) do researcher have?
- Is Delphi the right choice?
- How can researcher formulate the statements?
- What are questions asked by researcher?

The formal organisation of a Delphi process

As mentioned before, the usual way is a combination of methods as especially the topics have to be formulated, a process that already needs methods like creativity procedures or can even be combined with scenarios or future workshops. In the following, a more 'standard' procedure is described. It starts with the organisation of the process as such.

A schematic representation of the process followed in the implementation of the Delphi Technique follows.



Step 9

Final report circulated to participants

**Fig. 1.** Adapted from Raine, Jerry P. (1992). Also Dunham, 1998; Lang, 1998; Linstone et al, 1975, Delbecq et al, 1975, Moëller et al, 1994; Weaver, 1969).

The first step is to found a steering committee (if you need one) and a management team with sufficient capacities for the process. Then expert panels to prepare and formulate the statements are helpful unless it is decided to let that be done by the management team. The whole procedure has to be fixed in advance: Do you need panel meetings or do the teams work virtually. Is the questionnaire an electronic or a paper one? This means, that logistics (from Internet programming to typing the results from the paper versions) have to be organised. Will there be follow-up work-shops, interviews, presentations? If yes, these also have to be organised and pre-pared. Printing of brochures, leaflets, questionnaire, reports have also be considered. The last organisational point is the interface with the financing organisation if this is different from the management team.

### **Who is an expert? (To analyse situation in Tourism Sustainability)**

This question sounds trivial but it is not. Most sociologists of science assume that there is a positive relationship between involvement in a research area and assessments of it and that this relationship derives from the tendency of researcher to select problems in areas where there is high pay-off for successful solutions and career. The tendency to overrate fields in which a person works may be termed 'bias'. Not only a tendency toward positive bias for fields in which researchers have been active was found, but also that this bias is stronger in less innovative sub fields.

As in all surveys, the sample in the end needs to be large enough to draw conclusion, therefore the number of answers per topic has to be high enough. The sample as such also has to be selected and additionally to the already mentioned criteria, the sample mix should comprise e.g., persons from different age cohorts, sector groups, etc. Often, female participants are under-represented, which is always a problem that has to be dealt with. Lobbying should be avoided or dealt with (e.g. involve the same number of persons from the different lobby groups).

How many participants do you need? That depends on the number of topics, the fields, the expected response or participation rate and other issues. If a small Delphi in a computer groupware room is used, the sample will be very small. If a national foresight with a specific representativeness is asked for, many persons are needed and it is often attempted to achieve about 100 answers per topic. But this also depends on the country: In a small country, you cannot expect so many experts in the field. And in some future oriented fields, there are only a few persons available, even in large countries. To involve the general public in such an endeavour is generally possible, but then, the questions have to be rather simple and easy to understand. In Internet surveys, it is very difficult to hold the control on the sample, this should also be taken into account.

### **Data Collection Process**

Once the participants were identified, three rounds or phases were used to collect data in response to a series of questions. Delbecq, et al. (1975) wrote, Delphi is essentially a series of questionnaires. The first questionnaire asks individual to respond to a broad question. (Delphi questions might focus upon problems, objectives, solutions, or forecasts.) Each subsequent questionnaire is built upon responses to the preceding questionnaire. The process stops when consensus has been approached among participants.

Here an example of three round questionnaires is taken which seems fairly typical of many studies. Consensus or trends towards consensus were documented at the conclusion of round 3.

### Round 1

In the round 1 responded are suppose to answer open ended questions. The questions are such designed where all the fields and sub-fields touched. The responded should answer in elaboration in order to express ideas.

Now, second question arises how many open ended question are enough. The question should cove border aspect of research. The question can range from any number between 10 to 15.

### Round 2

Responses to the first round were categorized or grouped by frequency or similarity of response in order to reduce the number to a manageable level but yet keeping the essential meaning of the responses. Participants were asked to rate the categorized responses from round 1 on a scale of 1 to 5, with 1 being “strongly disagree” and 5 being “strongly agree.”

### Round 3

The purpose of this round was to determine if there was a consensus. Responses from the round 2 were analyzed by determining the mode for each response. Participants were asked to review their response against the modal response and respond again using the same rating scale, and add any comments regarding the responses.

### **Final Analysis of Data**

Responses from round 3 were then analyzed to determine if there was a consensus by looking at the responses and their modes.

### **Survey Instruments**

The survey instrument containing the questions listed should be provided in the appendix along with the questionnaire in round 1 of the Delphi technique. This survey instrument was developed by the researcher in discussions with committee members and other researchers. Questionnaires for Delphi rounds 2 and 3 developed from the responses to Delphi round 1 must also be kept in appendix.

**Validity:** These instruments (questionnaires 1, 2, and 3) reviewed by other researchers to establish the face validity (do the questionnaire items appear to measure what the instrument purports to measure?). The purpose of a review is to improve the questions, format, and the scales (Creswell, 1994).

**Reliability:** In addition to validity, these instruments were tested for reliability, that is, limitations in replicating the study. Creswell (1994) wrote, “Statement about the researcher’s positions the central assumptions, the selection of informants, the biases and values of the researcher enhance the study’s chances of being replicated in another setting”. These assumptions, selection, process, and so forth are documented. Other researchers were asked to comment on this documentation and modified the instruments and supporting documentation where it was necessary.

**Confidentiality:** Responses to the Delphi questionnaires were treated with complete confidentiality so that no one influences the expert’s opinion.

### **Implementation**

The second problematic point remains the interface to implementation. In some surveys, it is already enough to provide some results in form of graphics or statistical analyses as 'information about the

future'. But how can the 'results' further be used? New foresight processes are more than just providing data and results. As the providers of foresight results and the users, which means the decision makers are in most cases not the same persons, there remain the difficulties of

1. Bringing them together
2. Linking the needs of the users and the concepts of the methodologies very early
3. Making potential users aware of the possibilities (marketing) so that they have the choice
4. Establishing mechanisms of transfer
5. Delivering results that are useful
6. Involving persons who have the power to decide and implement.

Until now, the use of foresight results in any countries was based on ad hoc activities. There are different possibilities. One of the most interesting was the use for an evaluation of the Fraunhofer Society by an international panel (SWOT analyses). The different ways of implementation were very useful and there were a lot of them, especially by companies, but a more strategic approach would certainly bring more results.

### **SOME RECOMMENDATIONS BASED ON PREVIOUS STUDIES**

The major recommendation is to clarify the objectives of the foresight approach at first. The second point is to check if a Delphi is the right choice and if there are enough resources for a Delphi (rarely possible without the combination of creativity methods and those for the formulation of statements). If you considered all pros and cons, and you decide to conduct a Delphi, then consider at least the following:

- What should be the breadth of the study?
- How many and which fields should I ask for?
- How will the organisation be? Who manages the process?
- Who will be invited to participate (active or non-active)?
- What results can be expected?
- What are the questions asked?
- How is the questionnaire designed?
- What kind of analysis need to be possible?
- How do you intend to implement the results?
- Will there be follow-up activities (public relations, publications, workshops, presentations, conferences etc.)?

These questions should be considered as early as possible.

Delphi is a very interesting tool, especially for analysis of sustainability. Delphi has its advantages and disadvantages that are described in this paper but the major danger is – as in all Foresight processes to regard the results as facts because they are presented in the form of data. They are working tools and although information about the future are provided and worked out, the future cannot be predicted and will always be different from what you expect.

### **Conclusion**

The Delphi technique provides those involved or interested in engaging in research, evaluation, fact-finding, issue exploration, or discovering what is actually known or not known about a specific topic a flexible and adaptable tool to gather and analyze the needed data. Subject selection and the time frames for conducting and completing a Delphi study are two areas which should be considered carefully prior to initiating the study. The additional precautions concerning low response rates, unintentionally guiding feedback, and surveying panelists about their limited knowledge of the topic

rather than soliciting their expert judgments should also be built into the design and implementation of the study. The Delphi technique has and will continue to be an important data collection methodology with a wide variety of applications and uses for people who want to gather information from those who are immersed and imbedded in the topic of interest and can provide real-time and real-world knowledge.

## **References**

- Broomfield, D. and Humphries, G.M. (2001) 'Using the Delphi technique to identify the cancer education requirements of general practitioners', *Medical Education* 35 928-937.
- Carney, O., McIntosh, J. and Worth, A. (1996) 'The use of the nominal group technique in research with community nurses', *Journal of Advanced Nursing* 23, 5, 1024-1029.
- Cline, Alan. (2000) 'White Paper: Prioritization Process Using Delphi Technique', Carolla Development. Retrieved from the World Wide Web, [www.carolla.com/wp-delph.htm](http://www.carolla.com/wp-delph.htm), 10th April 2001.
- Creswell, J.W. (1994) *Research Design: Qualitative and Quantitative Approaches*, London: SAGE.
- Delbecq, A. L., Van de Ven, A. H., & Gustafson, D. H. (1975). *Group techniques for program planning*. Glenview, IL: Scott, Foresman, and Co.
- Fein, J.A., Lavelle, J.M., Ginsburgt, K.R. and Giardino, A.P. (1997) 'A methodology maximize resident input in improving a pediatric rotation' *Arch. Pediatr. Adolesc. Med.* 151 840-844.
- Fitzsimmons, J.A. and Fitzsimmons, M.J. (eds.) (2001) *Service management: Operations, Strategy and Information Technology* (4th Edition) Boston, McGraw-Hill.
- Goodman, C.M. (1987) 'The Delphi technique: a critique', *Journal of Advanced Nursing* 12 729-734.
- Gupta, U.G. and Clarke, R.E. (1996) 'Theory and Applications of the Delphi Technique: A bibliography (1975-1994)', *Technological Forecasting and Social Change* 53, 185-211.
- Häder, Michael and Häder, Sabine (1995): *Delphi und Kognitionspsychologie: Ein Zugang zur theoretischen Fundierung der Delphi-Methode*, in: *ZUMA-Nachrichten*, vol.37, 19. November 1995, p. 12.
- Hasson, F., Keeney, S. and McKenna, H. (2000) 'Research guidelines for the Delphi survey technique', *Journal of Advanced Nursing* 32(4) 1008-1015.
- Lai, V.S., Wong, B.K. and Cehung, W. (2002) 'Group decision making in a multiple criteria environment: A case using the AHP in software selection', *European Journal of Operational Research* 137 134-144.
- Linstone, H. A. (1998): *Multiple Perspectives Revisited*, IAMOT Conference, Orlando.
- Linstone, H. A., Mitroff, I.I. (1994): *The Challenge of the 21st Century: Man-aging Technology and Ourselves in a Shrinking World*, Albany: State University of New York Press.
- Linstone, H.A. and Turoff, M. (eds.) (1975) *The Delphi Method Techniques and Applications*. Massachusetts, Reading: Addison-Wesley.
- McNamee, P.B. (1985) 'Tools and Techniques for Strategic Management', Oxford: Pergamon Press.
- Morgan, D.L. (1997) *Focus Groups as Qualitative Research*. 2nd Edition. London: Sage.
- Patton, M. Q. (1997) *Utilisation-Focused Evaluation*, 3rd edn, Thousand Oaks, California: SAGE Publications.
- Powell, C. (2003) 'The Delphi technique: myths and realities', *Journal of Advanced Nursing* 41(4) 376-382.
- Rosenthal, E.J. (1976) 'Delphi Technique' in Anderson, S. (ed) *Encyclopedia of Educational Evaluation*, San Francisco: Jossey-Bass: 121-122.
- Sackman, H. (1975) *Delphi critique* Lexington Books, Massachusetts, Lexington.

- Snyder-Halpern, R. (2002) 'Indicators of organizational readiness for clinical information technology/systems innovation: a Delphi study', *International Journal of Medical Informatics* 63 179-204.
- Stewart, J. (2001) 'Is the Delphi technique a qualitative method', *Medical Education* 35 922-923.
- vanZolingen, S.J. and Klaassen, C.A. (2003) 'Selection processes in a Delphi study about key qualifications in Senior Secondary Vocational Education', *Technological Forecasting and Social Change* 70 317-340.
- Wechsler, Wolfgang (1978): *Delphi-Methode, Gestaltung und Potential für betriebliche Prognoseprozesse*, Schriftenreihe Wirtschaftswissenschaftliche Forschung und Entwicklung, München.
- Woudenberg, F. (1991): An Evaluation of Delphi, in: *Technological Forecasting and Social Change*, vol. 40, pp. 131 – 150.