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The use of Delphi methodology in agrifood policy development: Some lessons learned

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ABSTRACT

Developing policy in the agrifood area is an inexact process, usually relying upon effective integration of opinions from multiple experts from different disciplines, organisational types, and regions/countries. Delphi would appear to have the potential to overcome some of the typical limitations related to soliciting expert opinion and identifying consensus on future activities or options, particularly where relevant experts are dispersed geographically, and international consensus is required, as is the case in this domain. Three case studies, focused on the application of Delphi to emerging policy needs in international or European agrifood policy, are presented here to exemplify the utility of the technique. A number of practical recommendations are drawn from these case studies that may be applicable to other major policy making arenas. Among these recommendations are; that an exploratory workshop to refine round one Delphi questions is essential; that the implementation of "cascade" methodology (utilizing the personal contacts of researchers or members of existing policy networks) appears to increase response rates in subsequent Delphi rounds; and that the policy issue under discussion should be particularly relevant to stakeholders in order to increase participation rates. Further research might usefully focus on developing ways to incorporate measurements of uncertainty associated with stakeholder judgement into quantitative responses, and on establishing how best to utilise such information in feedback in subsequent Delphi rounds. Ensuring how best to inform policy uptake of the outputs of Delphi merits further research in particular.

1. Introduction

Established, emerging, and indeed re-emerging food-borne risks, in particular diseases of production animals and plants, represent serious threats globally. Failure to effectively deal with existing and emerging hazards in the agrifood context may have potentially negative impacts on human and animal health and the environment, in both developed and developing countries [1–3]. The socio-economic functioning of (different groups within) populations may also be adversely affected [4,5]. Direct economic costs may be incurred through impacts associated with health care and time lost from employment, or from veterinary treatments and other mitigating actions, as well as from losses incurred by farmers and industry as a consequence of production stoppages and food and product recalls [6]. Indirect costs may be reflected through the loss of consumer confidence in particular types of food product or specific brands [7], or in industry, tourism, and policy-related governance structures [8]. At the same time, the development of

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agrifood policy is a continuously changing area [9] in particular with respect to increased globalisation of the food supply. This has resulted in more rapid dissemination of (emerging and re-emerging) food-borne risks [10] and rapid spread of animal diseases [11,12]. Furthermore, changing human demographic trends, such as the ageing population and increased population density in urban environments, have created population groups with increased vulnerabilities to the health impact of food risks or zoonoses [13,14]. As a consequence, these issues demand greater policy consideration.

Appropriate agrifood policy, for example relating to successful plant and animal disease control, depends on effective and timely risk detection, identification, prevention, and mitigation, which may require harmonisation of existing knowledge and methodologies to ensure transparent and proactive assessment of risks in the global food production chain. An internationally harmonised risk governance and concerted international effort is needed to develop a strategy for how these measures are to be achieved.

Policy development related to emerging food and animal health risks has made extensive use of the traditional and well-established expert scientific advisory committee model. At a national level, for example, during a crisis situation, such expert advisory bodies may be supplemented by, and report to, national crisis committees, to facilitate more rapid policy responses and action based on national need (e.g. foot and mouth disease in the UK in 2001). This can, however, result in scientific experts being pressed to consider other aspects outside of their fields of expertise, including social and political dimensions that they may not be qualified to address [15] This may lead to perceived or actual spurious scientific legitimation for policy decisions [16,17]. At the international level (EU, FAO, OIE, WHO), a similar approach, involving internationally constituted expert advisory groups, is frequently adopted. However, other complications arise here as the committees may find themselves under pressure from differing, and even conflicting individual national policy responses [18]. This makes the involvement of supranational, or even global, panels necessary for food safety risk assessment and management. International scientific advisory bodies also have to operate within an established system of decision-making and governance, which may affect the independence and impact of their recommendations and advice [19]. This may result in policy makers having some control over 'independent' scientific committees [20]. All these issues raise the question of how to feasibly and validly consult diverse and significant constituencies in order to assess their policy priorities. It would appear that an expert consultation method that is able to deal with a broad range of different experts, that can be applied on a global scale, enabling anonymous responses, and that can deal with (initial) dissensus among experts from different geographical backgrounds is needed.

One such method that would appear to have potential utility in the agrifood domain for identifying policy issues and indicating levels of consensus is the Delphi technique. This approach, as classically construed, involves iterated questionnaires being presented anonymously to experts, with controlled feedback between rounds, and the equal weighting of final round responses to produce a group judgement [21]. Variations of the method exist, in terms of the number of rounds used, whether or not the first round is structured (quantitative) or unstructured (qualitative), whether the process takes place using paper-and-pencil questionnaires or 'online', whether the process is synchronous or asynchronous, and so on, as is the case with an online, real time Delphi [e.g. 22,23]. Delphi has also been combined with other processes to produce multi-stage or hybrid methods (e.g. see [24]). The aims of the approach may also vary, that is, it may be conducted in order to gain expert consensus or, importantly, identify dissensus where this exists (e.g. the Policy Delphi. See Ref. [25]).

Regardless of these variations, however, the emphasis of the method is on maintaining anonymity within the group regarding individual responses in order to ameliorate the potential social and political interactions that often take places within groups and which can prove counterproductive for identifying acceptable problem solutions. This issue may be of particular relevance to the agrifood domain, where personal, professional and even national sensitivities might act as barriers to effective problem solving. Delphi's distributive nature would also appear especially apt for this domain, where the highly dispersed nature of busy experts appears to militate against the traditional stakeholder committee approach that is frequently used, requiring as it does the gathering together of all relevant stakeholders and experts at the same time and in the same place [26]. Another constraint to 'traditional' approaches may be linguistic, as simultaneous translation into multiple languages is likely to be difficult and expensive, if feasible at all. Survey methodology, which solicits answers to key questions of interest, is ideally suited to identifying consensus or disagreement, and surveys can be relatively easily translated, and, through internet application, attract participants with a large geographical dispersion. However, the survey method is limited as it does not allow for any possibility of interaction between participants, or resolution of initial dissensus. Whilst some disagreement may be fundamental, the lack of resolution may emphasise minor differences in opinion, which may be particularly problematic in the policy arena [28]. Delphi involves iterated questionnaires and feedback, and there is an opportunity for problem resolution. In this way Delphi would appear superior to a straightforward survey approach. On the other hand, despite these hypothetical benefits, there are other issues that might interfere with the "ideal" conduct of a Delphi, primarily linked to the nature of relevant participants. For many agrifood policy issues, relevant experts are generally a) highly dispersed (indeed, for some issues there may be a specific requirement for there to be representation from different and specific nations or regions), which may include developing countries in particular, since these may be the origins of novel risks, or suffer disproportionate adverse consequences should the risk occur, and b) from many diverse disciplines, who are unlikely to be members of the same policy network. These factors have implications for how one selects relevant experts (different nations, disciplines, and networks), and conducts the process (in terms of language and presentation of information). These issues will be further discussed later.

Despite of these hypothetical benefits, however, Delphi has not been frequently employed in the agrifood policy area. In this paper, three recent Delphi applications (in which the authors were involved as researchers[1]) are discussed, in order to

[1] L.J. Frewer and M.T.A. Wentholt were involved in all three cases. The other Co-Authors were involved with one or two of the cases.