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Internet-Based Delphi Administration: The Evolution of Methodological Best-Practices for Tourism Research

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ABSTRACT

In the last 30 years, there has been increasing application of the Delphi technique in the tourism research domain and with it has come the identification of methodological advantages and disadvantages. With the recent availability of Internet-based research tools, the Internet has been identified as a means for mitigating Delphi disadvantages and maximizing advantages. The discourse, however, has been speculative in nature while the pragmatic analysis of Internet-based Delphi administration has been lean. Concomitantly, methodological guidance for the Internet-based Delphi architect is limited and best-practices have yet to emerge. Through critical examination, this paper seeks to advance understanding of the technique, to contribute to the evolution of Internet-based methodological best-practices, and to provide guidance for the Delphi architect. An Internet-based Delphi case study experience is reported and on this basis, a set of ten recommendations for tourism researchers are introduced for discussion.

INTRODUCTION

The Delphi technique is an established and legitimate research method that is used in breadth of research domains – including tourism. In recent years, there has been speculation about the utility of the Internet for Delphi administration. Some claim that the Internet offers many advantages and by way of its structure, it may serve to mitigate some of the methodological disadvantages associated with the Delphi technique. However, there are limited resources available for guiding the Internet-based researcher and a review of the literature has revealed that few Internet-based Delphi studies have been reported. As a result, the Internet is a relatively new research frontier for Delphi administrators and methodological guidelines have yet to emerge. As a first step, a clear understanding of the technique's potential advantages and disadvantages, both in general and when using the Internet, is required to enable methodological application and best-practices reporting in the tourism domain (Ayton *et al.*, 1999; Mullen, 2003).

The purpose of this paper is to advance understanding of the Delphi technique and to contribute to the evolution of Internet-based best practices. Drawing on antecedent research - recent reviews, select studies, and seminal Delphi texts, a Delphi description is introduced and the advantages and disadvantages specific to the tourism context are explored. This is complimented by a case study-based examination whereby the potential for improving Delphi outcomes and moving best-practice forward through Internet-based administration are explored.

RESEARCH METHOD

The Delphi technique is a qualitative method used to systematically combine expert knowledge and opinion to arrive at an informed group consensus on a complex problem (Linstone and Turoff, 1975). Using iterative rounds, that is, sequential surveys interspersed with controlled feedback; the technique relies on the interpretation of expert opinion. It provides a mechanism for organizing conflicting values and experiences, and it facilitates the incorporation of multiple opinions into consensus (Briedenhann and Butts, 2006). Although originally developed as a forecasting tool, it has been applied to address a spectrum of complex research problems or issues.

In the case of tourism research, antecedents concede that the utility of the technique is related to a set of methodological advantages that are congruent with the characteristics of the tourism industry and the needs of tourism researchers (Kaynak and Marandu, 2006; Miller, 2001; Weber and Ladkin, 2003) First, the Delphi is suitable for exploring uncertain factors that affect or may affect the tourism industry (e.g. terrorism, market trends). Second, it is anonymous and thereby ensures that contributions reflect rational and reflexive individual opinions and not the influence of other participants (as is the case with other group methods). Third, the Delphi offers the freedom to select tourism experts based on their closeness to or experience with the problem at hand without being limited by geography or narrow expert definitions (Miller, 2001). Furthermore, fragmentation of the tourism industry and the research domain typically find individuals with little opportunity to interact and exchange ideas. Tourism experts may be more willing to participate in a Delphi because of the unique forum for idea generation and exchange it provides, as well as the fact that they may be directly affected by the outcomes, and/or they may be in a position to operationalize the results (Garrod and Fyall, 2005). Fourth, Brown (2007: 136) argues that the technique "contributes an exciting tool for researchers engaged in the paradigm shift away from reductionist, linear analysis that has limited application for the complex, interrelated issues emerging in the 21st century". This is particularly true of the tourism industry where non-linear approaches and alternatives to 'business as usual' are increasingly required to address emergent issues and complex tourism problems.

As with any research method, there are potential disadvantages and they can challenge the robustness and the validity of the research. These disadvantages have been comprehensively reviewed and a set of four common disadvantages have been identified (Donohoe and Needham, 2008). First, the method is highly sensitive to design characteristics such as panel composition, question clarity, and administration. Second, the Delphi is vulnerable to high attrition rates due to the long temporal commitment required and potential distractions between rounds (Briedenhann and Butts, 2006). Third, there is a risk of a specious consensus whereby dissenters withdraw or conform to a median judgement. Fourth, there is difficulty in determining what constitutes sufficient consensus (or lack thereof – an equally important outcome), when iterations stop, and when a final report should be prepared (Garrod and Fyall, 2005).

It is also important to note that while rapid administration has been identified as an advantage, the time required to complete a Delphi study is contested. Although the literature indicates both rapid (Tsaur *et al.*, 2006) and drawn out Delphi studies (Briedenhann and Butts, 2006; Miller, 2001), a substantial time commitment – on the part of the researcher(s) and the participants - may be considered a methodological disadvantage. Research delay is forced by slow communication mediums (e.g. ground mail), delayed response submissions,

inaccurate calculations of the time required for response synthesis and analysis, and the study scope and complexity. Landeta (2006) and Taylor and Judd (1994: 538) suggest that "The time required to complete the process can be decreased through refinements in the method, in making use of data processing procedures, and in selecting suitable panel members who are really willing to participate". It has also been suggested that it may be reduced with the use of Internet-based technology. For example, Internet-based surveys may provide Delphi administrators with an alternative for maximizing participation and minimizing time delays. During the participant recruitment phase, Internet usage can facilitate rapid communications with a global network of potential experts. A large sample may be accessed, recruitment costs (postage, travel, etc.) may be reduced, and time, as a result, can be optimized. Internet-based technology facilitates communications such as the delivery of surveys and survey deadline reminders and it can assist in the collection and analysis of data. Responses can be tracked, response rates can be calculated, and consensus can be monitored. Internet-based tools may provide opportunity to mitigate methodological disadvantages; however, it must be noted that Internet-based technology is a relatively new research tool and its utility for Delphi study has not been critically examined. The remainder of this paper explores the challenges of Internet-based Delphi research and it concludes with a set of recommendations for moving best-practice forward.

Internet-Based Delphi Case Study

A Delphi study was initiated and completed in 2008. The Delphi was designed to capture international ecotourism expertise in order to develop a consensus definition for culturally sensitive ecotourism. The research design was shaped by three significant factors: the necessity for a geographically and culturally diverse panel, a lack of funding for group interaction, and a limited timeline for research execution. It was, therefore, decided that the potential methodological disadvantages associated with these research needs/constraints must be addressed. The use of the Internet for Delphi administration was judged to be suitable means for mitigating temporal, financial, and spatial constraints. It was also identified as an opportunity for exploring a lean area of methodological study. A comprehensive literature search, across research domains, revealed that Internet-based Delphi administration is uncommon. References appear regarding the potential utility of the Internet but no studies that reported on the outcomes of such applications were identified. Therefore, an opportunity to make a contribution to methodological best-practice and innovation was identified. From the planning to the operational phase of the research, the Internet served as the primary research tool/medium. Potential Delphi participants were identified through Internet resources (online journals and databases), and all communications were conducted through email. A website was also created to serve as the central research communication portal and an interactive online map of the 'virtual laboratory' was shared with participants. The Delphi surveys were administered over the course of six months using an online survey provider – Surveymonkey.com.

FINDINGS

In administering the Delphi, the researcher was able to confirm several of the Internet-based advantages that have been suggested (but not justified) elsewhere in the literature. The identification of potential participants and their email contact information was completed using online databases. This made communications with a global network of experts

possible, rapid, and efficient. Recruitment costs were reduced as postage and travel were not required. Postage costs for survey delivery and return were eliminated and data collection and analysis costs amounted to less than one-hundred US dollars (fee paid to surveymonkey.com). Included in this fee was data storage, list management services, data analysis software, response tracking, and survey reminder features. Although tangible advantages for Internet-based Delphi administration were evident through application, several challenges – both expected and unexpected - affected the research process. Technological challenges presented the most significant barrier to participant recruitment and data collection. Select participants reported difficulties such as an inability to open survey links, to download the survey, or to submit their survey response. In most cases, difficulty was the result of user error and administrator assistance served to resolve the issue. In other cases, computer hardware such as operating systems, Internet connections, and technical failures were the source for difficulty. For some, Internet access was not available (infrastructure limited in remote locations and developing countries), it was interrupted by electricity failures or unreliable connections (or in one case, cables damaged by terrorists). Technological failures at the research centre also caused delay when the server collapsed and the network remained inaccessible for 7 days. Finally, some email addresses were inactive and this resulted in a significant amount of returned emails.

APPLICATION OF RESULTS

On the basis of this case-study experience, a set of ten recommendations are introduced. In doing so, the ambition is to move best-practice forward, to inform Internet-based Delphi administration debate and discussion, and to contribute to the development of methodological guidelines for Internet-based research.

1. Become informed about the structure and function of the Internet, its users, as well as Internet-based research advantages/disadvantages before initiating research architecture.
2. Clearly define the study's data and information needs (e.g. data types, participant sample) so as to identify and mitigate potential constraints early.
3. Make use of free Internet-based survey service providers and make informed service provider selections based on research needs and participant/designer usability (best-fit approach).
4. Maximize survey design and administration features (e.g. email reminders, progress bars, 'save and return later' links) to mitigate attrition and data loss
5. Pilot test all communications (emails, surveys, etc.) as this facilitates early identification and mitigation of technical, interpretation, or other difficulties (such as returned emails).
6. Invest in software/hardware (and updates) to mitigate/prevent technological difficulties.
7. Keep communications simple, use common interfaces, keep file sizes small, and provide clear instructions so as to increase usability and mitigate access constraints.
8. Provide alternatives/back-ups (e.g. traditional pen and paper survey) should access become a significant constraint or should technological issues present.
9. Consult with colleagues and institutional review boards, for guidance. Students, by way of their social position, are often great sources for Internet related information (trends, technology, etc.).
10. Adopt 'netiquette' as an informal ethical framework for Internet-based communications and contribute to the evolution of a formal Code of Ethics for Internet-based research.

DISCUSSION

Although a [relatively] new research frontier, the Internet presents unparalleled opportunities for research. For Delphi research, there exists great potential to harness the power of the Internet to facilitate data collection and analysis in an efficient, economical, and timely way. The Internet offers tourism researchers access to a large and geographically diverse population, rapid communications and data collection, and reduced research design and data management costs. It is for this reasons that Internet-based survey research has become a widely-used method. As technology becomes more advanced, as Internet penetration rates, connectivity, and bandwidth increase, the use of the Internet to conduct tourism research is sure to increase and its utility for Delphi research is likely to continue to be explored. It is important to remember, however, that although Internet-based Delphi research presents many opportunities, it does have its own tensions, contradictions, and constraints (Denzin, 2004). Thus as precursor, Delphi administrators must invest time and effort into understanding the methodological issues that are associated with this research tool. Sharing of research findings and experiences is also required of researchers so that the breadth of knowledge can be enhanced, methodological refinement can progress, and Internet-based research guidelines and Delphi best-practices can continue to evolve.

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