Going online — experiences with a web survey

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Abstract

This case study details the process and lessons learnt from converting a compulsory comprehensive organisational survey from email to online format. The conversion was undertaken to improve data quality and reduce respondent burden. Key considerations in developing the online survey were ease of use, security and access. The new intuitive system allowed simultaneous access for multiple users, and incorporated dynamic indicators of progress and validation of numeric data. Reactions to the survey were mainly positive — about 75% of user feedback was positive or neutral, they reported the survey was "user friendly" and preferred the online format. Negative comments focused predominantly on the feature of expanding and collapsing questions which these respondents found difficult to manage. Administration of the survey was streamlined, with considerable reduction in time spent in checking and correcting responses for both respondents and data collectors. Although substantial improvements were recognised and appreciated by many users, it is important to acknowledge that users adapt to new technology at different speeds, and adequate support needs to be implemented for all users.

Aust Health Rev 2008: 32(2): 366–370

THIS CASE STUDY outlines the conversion of a comprehensive annual survey from Microsoft Word (Microsoft Corporation, Redmond, Wash, USA) format submitted by email, to a web-based

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What is known about the topic?
Health care practitioners use surveys on a regular basis to collect information to assist in improving services. Many services continue to use paper-based or email surveys and there is little information on the transition to online survey delivery.

What does this paper add?
This paper describes the conversion of an annual emailed questionnaire to online format.

What are the implications for practitioners?
Web surveys work in certain circumstances, resulting in more efficient administration and collation of results, faster response time, fewer errors, and easier data entry for respondents. Not all users adapt and we need to allow transition from old to new.

format with online submission. A survey is an effective way to obtain standardised information about the changing activities of diverse health care organisations, but the format of the survey influences data quality as well as efficiency of data collection, analysis and reporting. Inefficient survey methods are associated with poorer quality information, excessive data cleansing activities, and considerable waste of time and effort for staff members responding to, or administering, analysing and reporting on the results.

Setting

Divisions of General Practice provide support and services to local networks of general practices operating within defined geographical areas in all states and territories of Australia. Each Division receives funding from the Australian Government Department of Health and Ageing to support general practices in delivering high quality health care and to achieve improved health outcomes for their communities. Divisions are encouraged to collaborate with other members of the Division network and to integrate general practice with the wider health care system.[1-3]

Since 1992 the Department of Health and Ageing has commissioned regular Division surveys. The content has expanded along with Divisions' role, and survey methods have evolved with technology. In 2005, in line with widespread uptake of broadband technology,[4] the Primary Health Care Research and Information Service (PHC RIS), which conducts the survey, decided to convert the 49-page survey document to a web platform. Administration of surveys should be tailored to make best use of available technology, resources and skills, but importantly should consider utility and impact for respondents.[5,6] Our decision was driven by the need to improve ease of use for respondents and reduce the time needed for data cleansing and checking. It was an opportunity to improve data quality by use of question filters, limited response categories, and checks to eliminate missing or invalid responses.

Some features of the previous format (a Word form administered by email) contributed to errors in survey completion, and waste of time and resources for respondents (Divisions) and the administrator (PHC RIS). Multiple versions of documents caused confusion for respondents, exacerbated by the number of staff within the Division contributing to completion of the survey. The survey structure included complicated questions with response options spanning several pages. Problems in navigating the large document led to questions being inadvertently overlooked. As a result, many Divisions submitted incomplete or unfinished surveys. From an administration perspective, data checking, clarification and correction was an extensive task as the Word document had no mechanism for internal validation of data entered by Divisions. Errors affecting analysis could be introduced at any point in the collection process and were difficult to identify.

Surveys using a web platform can address these issues, under certain conditions. A web survey can be interactive and dynamic, allows enhancements such as colour, animation and skip patterns, and can ensure that data fit the desired format.[7,8] However, visual aspects of survey design can impact on user behaviour and response selection.[9] The types of surveys most appropriate for web administration are those which need complex branching and interaction, where survey content evolves quickly, or where there is no need for a representative sample. Web surveys are most appropriate when respondents are already competent and keen Internet users; email addresses are known for reminder messages; incentives are not needed; and respondents cover a wide geographical area.[10] Selection bias, response consistency and participant motivation can be problems for web-based surveys.[11,12] Technical pitfalls can affect both hardware and software, necessitating extensive testing so that specific browsers, platforms and monitors are not excluded.[11]

The necessary conditions for the success of web-based surveys are met in the Divisions network. All are connected to the Internet, staff members are computer literate, and email addresses are known. Completing the Annual Survey is a contractual requirement for Divisions, so motivation is less of a challenge than with voluntary surveys, and incentives unnecessary, although ease of completion is a factor in obtaining timely survey return. The survey has complex branching, and its content evolves each year. Selection bias and anonymity are not relevant, as completion is mandatory for all Divisions.

Our aim was to develop a user-friendly accessible system for efficient input (data entry) and output (download and processing), where training was unnecessary and the platform incorporated easily navigated menus, links and help functions.

Participants

Survey respondents were the key staff of 119 Divisions of General Practice, usually senior program and executive officers. Division staff had previously reported difficulties in completing the paper-based and electronic Word survey, which took them considerable time to complete, and often involved multiple staff. Staff were aware, and in favour of, the adoption of the new technology.

Survey content

The questions in the Annual Survey were originally developed for a paper-based survey, which had increased in size and complexity over time in parallel with the development of the Divisions Network. Considerable effort was made to update the survey content for web administration, consistent with the concept that survey design should reflect the manner of administering a survey. Accordingly, the survey contents were reviewed in consultation with users, resulting in minor changes to the wording. Where appropriate, the new web-based survey employed adaptive questions in which respondents were asked to complete subsequent or lower level questions based on responses to a top-level question.

Web design

User management, security and access are central aspects of web design. The survey was intended to be accessed by multiple users over multiple sessions, with respondents able to review responses and change answers at any time before survey submission. An internally secure process was required for survey submission. Consultation suggested it was efficient and desirable for Divisions, rather than PHC RIS, to manage their own users as they knew who should have access. This was achieved by assigning the CEO as internal "administrator" for the Division, with rights to authorise new users and to submit the completed survey. Submitting the survey effectively locked it from further editing.

Recognising the length of the survey, a navigation bar was incorporated and dynamic indicators designed to show survey progress and item status. These colour-coded indicators quickly identified unanswered, completed, and incomplete (or invalid) responses. Design of the survey also incorporated standard validation of numeric data, identification of inter-item relationships, and avoidance of "conflicts" between questions. Submission of the survey was only possible when all recorded answers were valid.

Ease of use of the system was a top priority. To avoid the need for resource-intensive face-to-face training, the system was designed to be as intuitive as possible. Although separate help pages were made available, most help information was located on screen and immediately accessible to the user. Definitions of technical terms and acronyms were provided using a combination of pop-up windows and hyperlinks. Online calculations, formulae and downloadable spreadsheets were "on hand" to assist complex calculations. A set of "frequently asked questions" (FAQs), developed from user queries, provided guidance and direction where necessary (and at first log-in). Complementing this online help, users could call an established phone number for any issues they could not easily resolve.

Programming challenges

The principal requirement was to develop a system that was accessible, intuitive, secure and flexible. With almost 3000 data points (included in 62 questions, and multiple sub questions) there were considerable data to handle effectively and efficiently — this posed a substantial challenge. The survey programming framework was designed to accommodate six question formats. This allowed easy editing of items and provided a centralised way of displaying and managing responses for each question. The considerable initial investment to set up the online system was justified by reduced maintenance and easier upgrades in subsequent years.

Testing

After rigorous internal testing of the technical framework of the survey, four Divisions pilot tested the survey. Each was given access to a working online version, and invited to test a range of features by entering legitimate responses, as the pilot phase was designed to retain responses when the survey went "live" (as we considered this the most efficient use of the respondents' time). Users were asked for feedback about ease of log-in, simultaneous multiple user access, data entry difficulties, navigation, question structure and flow, help resources and any other issues. The few issues identified in the pilot phase were resolved immediately.

Streamlining and feedback

User reactions

Feedback about the new format was actively sought in two ways. Firstly, Divisions were asked to provide comments and suggestions at the end of the survey — 29 of 119 Divisions (24%) took this opportunity to comment on the online format. Two thirds of these Divisions ($n = 19$) provided positive comments, one quarter ($n = 7$) reported difficulties, and some made general or constructive comments (ie, include a spell check, improve print function). Secondly, a telephone interview with 31 users (randomly selected) was conducted a month after submission of the survey. The response profile was very similar to that reported above — 19 (61%) responded positively, five (16%) reported negatively, while seven (23%) were neutral (these tended to relate to survey content rather than the online format).

Positive responses from both feedback methods reported a preference for the online interface, which was easier to complete and "user friendly", summed up by one user in the following way: "Love the internet interface — heaps better than that olde Worde document."

The difficulties reported by Divisions mainly related to the adaptive questions — these expanded or collapsed based on a prior response. They were designed to reduce workload but had the opposite effect for some Divisions who were also frustrated by their inability to print the collapsed items. This was a problem when the Division decided not to authorise online access for all staff members who contributed to the survey, for example:

> The extra pages that are produced as one progresses make the process impossible to run as we do. I hand pages to individual staff to fill in their stats usually. I have to now constantly return as I discover extra information that is needed all the time, I know they could all go online but several people share sections and none have the complete overview and I would have to edit everything anyway.

Administration

For PHC RIS the new format provided easier administration and follow-up. User access could be tracked and progress monitored, enabling targeted reminders about the due date. This resulted in a more timely return of the survey than previously, with 72% of surveys received by the due date for the 2005–06 online survey and 87% received one week later. This compared favourably with 51% of emailed surveys received by the due date the previous year, and 76% of responses received in the subsequent week. Although all surveys were eventually received, a couple of outliers provided their responses 2 months late each year — technology was not the only factor determining response time.

Data downloading, checking and cleansing processes were considerably streamlined with the new technology. The system provided a simple method for exporting data into a text file which could easily be imported into the chosen statistical package. Checking and cleansing processes subsequently identified only 98 data points requiring follow-up and clarification, a significant improvement from more than 4000 points in the previous year. An important but "invisible" aspect of this improvement was the reduction of burden to respondents and data collectors who were no longer required to spend considerable time on checking and correcting responses after submission.

Conclusions and lessons learned

For this long complicated survey, the simplified web-based process offers security, and easier and faster online data entry, which was appreciated by many. However, respondents required a clear idea what to expect, including whether there were "hidden" questions. Although all collapsible items were labelled in the survey, this labelling was overlooked by respondents and should be more obvious in future. Since not all users adapt quickly to new methods, it is important in planning to support the transition from old to new. The survey was designed on the assumption that all staff would complete it online, which turned

out to be incorrect for ten of the Divisions that commented. Further consideration should be given to accommodating diverse methods of completion.

From an administration perspective, the online survey was a considerable "upfront" investment of time and effort to design, test and refine the tool. However, this investment paid off in the first year in terms of reduced time spent in data checking, cleansing and transfer, reduced error rate, prompter submission — and increased goodwill from respondents. We anticipate further gains in future years.

Acknowledgement

Competing interests

The authors declare that they have no competing interests.

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