

From paper-and-pencil to screen-and-keyboard : studies on the effectiveness of internet-based marketing research

Citation for published version (APA):

Deutskens, E. C. (2006). *From paper-and-pencil to screen-and-keyboard : studies on the effectiveness of internet-based marketing research*. [Doctoral Thesis, Maastricht University]. Universiteit Maastricht. <https://doi.org/10.26481/dis.20060120ed>

Document status and date:

Published: 01/01/2006

DOI:

[10.26481/dis.20060120ed](https://doi.org/10.26481/dis.20060120ed)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

CHAPTER 6: CONCLUSION

The final chapter of this dissertation consists of a discussion of the results of the four different studies, their managerial and theoretical implications, a conclusion, and a perspective on future research.

"The two most significant advances in survey methodology during the twentieth century were the introduction of random sampling in the 1940s and interviewing by telephone in the 1970s. Both of these innovations have transformed how most major surveys are done. We are now witnessing another development in survey methodology, the consequences of which may prove to be even more profound. It is the collection of survey data through [...] e-mail [and] the World Wide Web."
(Dillman 2000, p. 352)

6.1 Synopsis

As the quote illustrates, Dillman (2000) views the development of online surveys as one of the most profound developments in the survey research industry. This potential of online surveys is driven by two main developments: (1) The rapid development of the World Wide Web where over half a billion people worldwide now have Internet access (NUA Internet Surveys 2003) and (2) the advantages of online surveys, especially low costs and fast responses, which make online surveys an effective alternative to traditional survey methods. Metzke and Allan (2005) even predict that within two years time, online surveys will have an average predicted share of business of 39.6%, more than telephone (30.7%), face-to-face (23.9%) or mail surveys (5.7%). Despite the increasing popularity, scientific research on online surveys is still scarce. This is surprising since online surveys are more than just a new survey mode. According to Miller and Dickson (2001), online surveys present a technological and cultural change that influences what we do as researchers and how we think about research.

As the success of online surveys will "stand or fall by the credibility of the data it generates" (Taylor 2000, p.51) in relation to data collection costs, empirical evidence is needed that examines critical factors and their impact on the effectiveness of online surveys. Therefore, the overall objective of this dissertation was to investigate the impact of design factors, mode effects, and individual differences on the effectiveness of online surveys. The studies were conducted in a B-2-B as well as B-2-C context using surveys, experiments, and Generalizability theory (G-theory). The types of web surveys that were investigated were volunteer opt-in panels and mixed mode surveys conducted with list-based samples. The different perspectives on online surveys were combined in the following overall research question:

What are the critical factors that influence the effectiveness of online marketing research?

This main research problem was analyzed by conducting four consecutive studies, which were discussed in chapter two through five. In chapter 2, we examined the effect of the timing of follow-ups, different incentives, length, and presentation of the questionnaire on the response rate and response quality in an online experimental setting. Systematic differences in response quality were investigated by examining and comparing the equivalence (chapter 3) and generalizability (chapter 4) of online and mail surveys. Chapter 5 focused on individual differences in motives to join an online access panel and the corresponding effects of response motives on response rate and response quality.

The final chapter of this dissertation consists of a discussion of the results of the four different studies and a perspective on future research.

6.2 Discussion

This dissertation contributes to the survey literature in several important ways. As illustrated throughout this dissertation, the virtual environment of online surveys has changed the surveying process significantly. Because of these different processes, empirical findings from the existing survey literature cannot per se be generalized to the online setting. Also, existing studies on online surveys are still scarce. To fill the lacunae regarding quality of online surveys, we conducted several interrelated studies that present a comprehensive assessment of critical factors that influence response quality of online surveys using different empirical methodologies. The four studies in this dissertation build upon each other and answer successive research questions which, taken together, help researchers in three different phases of the surveying process: (1) creating an optimal design of online surveys that increases response rates and response quality, (2) comparing the quality of online and mail surveys, and (3) evaluating the quality of online access panels.

6.2.1 Design of Online Surveys

Study one examined the impact of several important design factors where the evidence from the traditional survey literature could not be translated to the online environment. The virtual setting requires, for example, different incentive schemes since cash incentives cannot be attached to an online questionnaire. It is also unclear how a 'long' online survey is defined. Rosenblum (2001), for example, states that online surveys should not contain more than 20 questions, which is generally considered too short for most surveys. To answer the fundamental question of how to design online surveys, we conducted an online experiment in which the effect of the timing of follow-ups, different incentives, length, and presentation of the questionnaire on the response rate and response quality was examined.

The results showed that long questionnaires still generated a surprisingly high response, which indicates that online surveys have the potential to be used for substantive research. Moreover, we found that lotteries with several small prizes are very effective in increasing the response rate, especially in short surveys. This is surprising since the mail survey literature finds that small cash incentives for every respondent are more successful in increasing response rates than lotteries or donations (Warriner et al. 1996).

In addition, study one was also one of the first studies to examine the use of design elements that make use of the interactive nature of the Internet, such as product images. Showing pictures of products instead of only giving the name increased response quality while response rates were lower, especially in the long version. Also, respondents in the visual version preferred an incentive that compensated for the time and effort they spent on the questionnaire rather than a donation to charity. This indicated that respondents in the visual version were subject to longer downloading times.

6.2.2 Comparability of Online and Mail Surveys

Once researchers know how to design online surveys, it is paramount to investigate the response quality of online surveys and examine whether there are any systematic differences between online and offline self-administered surveys. Because of the importance of response quality, two studies in this dissertation examined different aspects of response quality. In both studies, we conducted a large-scale real life quasi-experiment in which relevant influencing

factors such as sample source were the same across groups so that systematic differences between online and mail surveys could be examined.

Study two examined whether online and mail surveys produce convergent results. Even though online surveys seem to replace telephone surveys in the commercial world, online and mail surveys are similar in structure and are therefore often used in mixed-mode service quality studies. In the context of a large B2B service quality assessment, we analyzed the accuracy and completeness of respondents' answers to both open and closed questions. Overall, the results suggested that online and mail surveys produce equivalent results. Both the composite reliability and the average variance extracted showed consistently high levels for both groups, and the means and variance-covariance matrices were equal across modes. Convergent validity between the two survey modes was supported further by a measurement-invariance test based on multigroup confirmatory factor analysis (Jöreskog 1971). However, minor differences occurred in the answers to open-ended questions. For example, online respondents provided more improvement suggestions, indicated more often to which competitor they wanted to switch, and provided lengthier answers in response to requests for examples of positive experiences with the company.

Study three compared the generalizability of online and mail surveys in a cross-national service quality study. We illustrated how G-theory can be used to compare online and mail surveys while taking data collection costs into account. Looking at the required or desired response quality in relation to data collection costs is interesting since the two are directly linked. For example, if more items are added to a questionnaire to improve the reliability of the constructs and thus the response quality, the cost must also increase. Even though online surveys benefit from lower costs, the costs of large-scale international performance measurement, even when administered online, may still be substantial. Surveyors can thus pursue two different goals: (1) maximize response quality given a certain cost level or (2) minimize costs given the desired response quality level. The results of this study indicated a comparable level of generalizability between online and mail surveys, confirming the findings of study two. The cost functions do not only prove that online surveys benefit from considerably lower costs, but help researchers to decide how restricted research resources may best be employed.

Both studies find convergent results between online and mail surveys. These findings are promising and direct researchers' attention to other influences on the quality of online surveys, such as the sample. Study two and three also bear strong implications for mixed-mode surveys since they show how online and mail surveys can be compared.

6.2.3 Quality of Online Access Panels

This dissertation shed more light on the design of online surveys and provided evidence that online surveys are comparable to mail surveys. While this is important information that helps in the set-up of online surveys, the quality of online studies stands and falls with the quality of the sample. In a B-2-B context, many companies still have a database from which they can draw a random sample. In contrast, most B-2-C companies have to rely on e-mail addresses from online panels. Though a majority of online panels are very large and apply sophisticated weighting techniques to compose a representative sampling frame with respect to demographics, empirical evidence suggests that on- and offline samples are still different, leading to incomparable results (e.g., Robinson, Neustadtl, and Kestnbaum 2002; Sparrow and Curtice 2004; Vehovar, Lozar Manfreda, and Batagelj 1999). These differences could be caused by self-selection of online panel members.

Since panel members have to be highly motivated to join an online panel and to continuously participate in online surveys, online access panels are likely to contain respondents which are more willing to cooperate. Many respondents are members of several panels or participate because of the money they can win (e.g. "The free Get Paid to Take Surveys Online Guide;" <http://www.surveys4money.com/>). As mentioned in the introduction, ComScore Networks (2005) even report that 30% of all online surveys are completed by only 0.25% of the Internet population.

Therefore, the aim of study four was to enhance the existing survey literature by identifying the underlying motives that stimulate respondents to participate in online panels. This dissertation presents one of the first studies to examine individual difference in response motives. Specifically, we established a more complete typology of response motives which was tested through the newly developed SPI. We also examined the effect of the type of motivation on the participation rate as well as response quality. Based on the SPI, respondents

could be divided into three clusters where respondents can be characterized as voicing assistants, reward seekers, and intrinsics. Intrinsics exhibited higher participation rates but lower response quality. This suggests that researchers have to trade-off increased response rates which are supposed to reduce nonresponse error with a potential loss in response quality due to an overrepresentation of highly motivated respondents.

The SPI presents a useful tool for researchers to assess respondents' motives to join online access panels or participate in specific online surveys. Researchers can thus determine whether their sample is representative with respect to the type and level of motivation and whether they have overly motivated or professional respondents in their sample/panel. In addition, the design of the e-mail invitation and survey can be matched to the response motive in order to increase response rates when inviting panel members to participate in surveys.

6.2.4 Results in Reference to the Overall Effectiveness of Online Surveys

The results of this dissertation can be referred back to the effectiveness equation as presented in the introduction of this dissertation. In essence, effectiveness of marketing research can be expressed as a function of two variables: (1) costs and (2) data quality. One of the key advantages of online surveys is lower costs (e.g., Illieva, Baron, and Healey 2002). Yet, claims regarding the cost-effectiveness of online surveys in international service research were largely based on anecdotal evidence and had not been systematically analyzed relative to mail surveys. To compare the cost structures of online and mail surveys, we conducted in-depth interviews with five researchers working at three different international market research agencies. We came up with two cost functions for mail and online surveys (details on how the cost functions were derived can be found in Table 4.2). Our equations show that the fixed costs of online surveys are slightly higher because of the programming efforts upfront, but variable costs are virtually zero. Thus, online surveys are indeed less expensive than mail surveys

Costs do not only include money but also time spent during the complete research cycle. As mentioned earlier, online surveys are reported to have much faster response times than for example mail surveys. In study one, we received

more than half of the final responses (52.9%) after only three days and the average response time was 6.6 days. Even though slightly higher than the 5.59 days as reported by Illieva, Baron and Healey (2002), our evidence confirms the speed of online surveys. The response time was not recorded in the other studies, but our experience verifies the fast response time of online surveys. One interesting finding from study one is that respondents in the lottery group responded 1 and 1.5 days faster than the donation and voucher group, respectively. This could be due to the fact that respondents in the lottery might have inferred that by responding early, they have a higher chance of winning a price.

Finally, all online surveys should be viewed in light of potential coverage and sampling, nonresponse and measurement error. As outlined by Couper (Couper 2000), different types of web surveys are more or less sensitive to the different types of error. Companies should be careful when using volunteer opt-in panels. While these panels are growing fast and receive widespread attention, study four shows that there is a self-selection of volunteers who join the panel.

Since this dissertation provides new empirical evidence on costs and quality of online surveys, researchers are now able to assess the effectiveness of online surveys and chose the most appropriate research mode for their research objective at hand.

6.3 Perspectives on Future Research

This paragraph provides general directions for future studies in marketing research and the progression of online surveys. As mentioned in the introduction, there has been growing skepticism about the role and value of traditional marketing research in influencing managerial decision making. Globalization, technology and communication, reduction in traditional boundaries, and a strategic focus on the use of information seem to require a new era of marketing research. Common points of criticism about traditional survey modes are high costs and long research cycles in relation to the quality of the information that is delivered (Burke, Rangaswamy, and Gupta 1999). The advances of the Internet offer an opportunity to address these limitations of existing research approaches. Online surveys are cheaper, faster and easier to complete, and foster large scale, international research.

Furthermore, the Internet democratizes the survey-taking process since large scale data collection is no longer restricted to major organizations. The relatively low cost of conducting online surveys essentially puts the tool in the hands of almost every person with access to the Internet (Couper 2000). Yet, the downside is that the design and development of online surveys has in large part come from computer programmers, many of whom have little or no training in survey methodology (Dillman and Bowker 2001). The flood of online survey tools makes it increasingly difficult to distinguish the good from the bad. Survey methodologists are in demand to bring their knowledge on methodology to online surveys.

Study two and three of this dissertation compared online and mail surveys because the type of research for which mail surveys are used is most likely to be supplemented by online surveys. However, future research should examine how alternative modes compare to online surveys. It might be especially interesting to compare telephone surveys, which have the largest share of business at the moment (34.4%) (Metzke and Allan 2005). Telephone surveys are not self-administered and random digit dialing makes it possible to obtain a representative national sample. However, telephone surveys are threatened by growing time pressure, rise of telemarketing, more mobile phones and less fixed lines, answering machines, caller ID, call blocking and no answers (Morin 2004).

Future studies should also examine additional design factors, such as survey invitations and introductions or different layouts. Also the impact of potential moderating factors on the results should be investigated. In addition, systematic differences between online surveys and traditional modes should be verified in a B-2-C context where sampling is a much bigger issue.

Nonrespondents have received little attention in the survey literature. Brennan and Hoek (1992) find that refusers differ from nonrespondents with regard to their opinion toward survey participation and demonstrate quite different attitudes and behaviors. Also Bickart and Schmittlein (1999) propose that some respondents are less prone to participate in surveys. This problem might be intensified for online surveys where the threshold for participation is higher; respondents need to be online and be willing to devote their precious time to participate in online surveys while they could spend their online minutes on more enjoyable things. Since nonresponse is likely to be driven by different factors than the response motives as identified in study four, future research

could identify reasons that drive nonresponse and the impact on sample representativeness and response quality. Researchers could examine in how far nonrespondents affect coverage, sampling, and nonresponse error.

This dissertation used volunteer opt-in panels and conducted mixed mode surveys with list-based samples. Future research could also examine other types of online surveys (Table 1.1). In addition, online qualitative research might be worth investigating. Several authors and practitioners acknowledge the wide range of possibilities for qualitative online research (e.g., Montoya-Weiss, Massey, and Clapper 1998; Scholl, Mulders, and Drent 2002). However, the role of the moderator differs and spontaneous reactions and non-verbal cues are difficult to simulate in an online environment (e.g., Greenbaum 1998). As Greenbaum (1998) articulates that "Internet Focus Groups are not Focus Groups - So Don't Call Them That", future research should assess whether online qualitative research methods still provide detailed insights into the phenomena under study. Hence, researchers should critically compare several online and traditional qualitative research methods to assess their quality.

While the interactivity of the Internet offers great design opportunities, most online surveys are mere copies of their paper counterparts. Market research companies are only slowly starting to implement more interactive question formats, for example by using alternative interfaces or metaphors. Advancing the design of online surveys could be a key competitive advantage that may also help to prevent declining response rates by making it easier, more intuitive and more enjoyable for the respondent to participate in online surveys.

In our opinion, future marketing research will be more integrated with other information tools. For example, customer relationship management software could include online surveys and research reporting applications. Also decision support tools such as dashboards can integrate online surveys to receive continuous input from customers to predict future behavior as well as revenues.