

SMS-based surveys: strategies to improve participation

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The advertising industry is increasingly using mobile technology to communicate and research. This paper examines the use of the short messaging service (SMS) on mobile phones to recruit samples for probability web and telephone surveys. The influence of topic salience, sponsor identity and repeated contacts on decision to participate in the survey is tested through an experimental design. Results indicated that sponsor identity and repeated contacts have an effect on decision to participate, but topic salience did not. The majority of respondents preferred the web survey alternative over telephone survey mode, and the main advantage of using SMS is the high speed of response. However, the method appears to elicit higher levels of participation from male and younger members of the population.

Introduction

Advertising agencies tend to be not only heavy users but also providers of market research in campaign design and evaluation (McDaniel & Gates 2000). Indeed this trend is growing as a result of the market's need for increasing accountability of the advertising industry. In a recent feature article on the advertising agency of the future (*Campaign* 2005), the CEO of WPP (the world's second largest advertising agency) explained that market research will be at the forefront of that business. A similar trend is witnessed in *Advertising Age's* latest 'annual agency report' (*Advertising Age* 2006), where advertising and media services accounted for only 49.3% of US advertising agencies' revenues. In tandem, academics interested in advertising continue to publish issues on related to market research, and especially response errors, in top advertising journals (Schillmoeller 1988; Dutka & Frankel 1997; Sheehan & McMillan 1999; Colombo 2000;

Tuckel & O'Neill 2002; McPheters & Kossoff 2003). Finally, as most academics work for universities, information on the usefulness or otherwise of disclosing the university as the sponsor of the research is particularly salient.

This is set against the backdrop that web surveys are one of the fastest-growing methods of data collection in advertising, which – together with other online applications – are estimated to represent 40% of all market research surveys conducted. This trend is also evident in the survey research currently published in academic journals in the fields of advertising and marketing. Some market research agencies even see the web as a 'replacement' rather than a 'complementary' technology (Schaefer & Dillman 1998; Couper 2000). The growing popularity of web surveys for academic research (Couper 2000; Couper *et al.* 2001) is a result of their ability to reach a dispersed respondent population at a fraction of the cost of other methods, and to do it more quickly (Mehta & Sivadas 1995; Bachmann *et al.* 1996; Schaefer & Dillman 1998; Weible & Wallace 1998). Despite these advantages, their use is plagued by three main problems:

1. Not all people have access to the internet and those who do are different from those who do not.
2. The reliance on non-probability self-selected samples or recruited panels, which are due to a lack of sample frames of web users. This results in an inability to generate random email addresses, a fact made worse by anti-spamming legislation (Couper 2000).
3. The observed low response rates of surveys in general and web surveys in particular (Steeh 1981; Smith 1995; Cook *et al.* 2000; Couper 2000).

Early seminal work by Heberlein and Baumgartner (1978) on how to increase survey response, analysed 98 studies and found that 51% of the response rate variance can be explained by the number of contacts and the salience of the topic. Sponsorship, length of questionnaire, incentives and type of population surveyed also influenced response rate. Subsequent work by Goyder (1982), using a sample of 330 surveys, reported similar results with the exception of the negative effect of commercial sponsorship. Fox *et al.* (1988) used a different approach in a smaller sample of studies, but still found that sponsorship and multiple contacts have a significant effect on response rates. Since then, research has continued to highlight the importance of topic salience, sponsorship and multiple

contacts (Schaefer & Dillman 1998; Sheehan & McMillan 1999; Cook *et al.* 2000; Roster *et al.* 2004). However, none of these studies has considered the effects of these appeals within the context of short messaging service (SMS). Indeed, more research is needed on how traditional methods of increasing response rates can be used on electronic surveys, as recent research has suggested that it is possible for web surveys to match the response rates of mail surveys if pre-notification is used (Kaplowitz *et al.* 2004). One purpose of this study, therefore, is to provide market researchers with information that can assist in the design and implementation of probability web surveys using SMS technology.

The first section of this paper discusses some of the problems with online surveys and shows how SMS might help. The second section develops a set of hypotheses relating to topic salience, sponsorship, and multiple contacts and SMS, before discussing the experimental methodology and results. The study therefore provides the first guidance to market researchers on how to use these traditional response-inducing techniques within a new technological context, and provides a case study on how SMS can be used in market research.

Web survey problems and SMS solutions

The first problem with web surveys is that many people do not have access to the internet, and those who do are different from those who do not. However, this problem is diminishing rapidly as the number of internet users continues to explode. For example, internet penetration is 70.5% in the US and 60.65% in Britain, and the average for the top 25 countries is 59.5% (Internet World Statistics 2005 (www.internetworldstats.com)). During the period 2000–2004, the use of the internet grew by an average of 120.5% worldwide – 132.7% for Britain and 117.6% for the US (Internet World Statistics 2005). Although these percentages can still generate some coverage problems for *general population* surveys, even in the most digital societies, penetration for specific groups of the population (such as members of certain associations, students, etc.) is nearing 100%.

The second problem of non-probability self-selected samples or recruited panels is more damaging to survey quality, due to the growing use of self-selected samples in the market research industry (Couper 2000). Prominent examples of such surveys include the National

Geographic Society millennium survey and Harris Poll web surveys. The main problem with these sampling methods is that the resulting samples are ultimately unrepresentative of the targeted population. One solution to the problem is to narrow the researched population; for example, to either the visitors of a site (that are randomly intercepted with pop-up window surveys) or specific groups where a list of email addresses is available (schools, universities, telecommunication organisations), which can then be used to draw samples randomly. However, these methods can be used only for narrowly defined populations. Another approach is to use mixed surveys in which respondents are randomly selected with a traditional survey method (e.g. telephone or mail) and are given the option to respond electronically. Of course this is not a pure web survey and results show that very few respondents usually take this option (Schaefer & Dillman 1998; Couper 2000).

To overcome this problem and to allow generalisations, a technique is used that Couper (2000) calls pre-recruited panels of internet users. In this method, samples are recruited using probability sampling, usually by random-digit dialling (RDD) telephone surveys. This method allows a measure of response rates, access to a wider section of the population, and is cost-effective. Moreover, it increases response rates over direct unsolicited email surveys, which have been found to suffer from extremely low response rates (Mehta & Sivadas 1995). However this method too suffers from the low incidence rate of those who have access to the internet, not-at-home respondents, and errors in the transmission and transcription of email addresses over the phone.

The third problem is the low response rates to web surveys. As sampling frames are not available, it is difficult to estimate response rates in pure web surveys. Thus, most of the evidence available comes from email surveys and surveys using RDD sampling. Systematic comparisons between email and mail survey response rates indicate significantly lower response rates for email surveys (Schaefer & Dillman 1998; Couper *et al.* 1999; Flemming & Sonner 1999; Cook *et al.* 2000). In general, email survey response rates are lower than those of equivalent mail surveys, by 13.5% to 28.1% across different sub-samples of respondents (Couper *et al.* 1999). Flemming and Sonner (1999) found that only 36% of internet users contacted through RDD telephones surveys agreed to participate.

The main explanations offered are technical difficulties and the inability to offer anonymity and confidentiality.

To overcome all three problems, it is suggested here that SMS on mobile phones can be a useful and cost-effective way of recruiting samples, as the technology allows standardised soliciting messages to be sent to a large number of potential respondents instantly. This reduces the number of person-hours required to contact respondents individually and talk to them over the phone. In addition, it has been reported that most of the refusals in voice telephone surveys occur before the arguments for participating in the survey are even presented by the interviewer (Groves 1990). The use of SMS can overcome this difficulty by allowing researchers to present their appeals to respondents instantly. Importantly, in many countries there is an overlap between mobile phone users and access to the internet. For example, in Britain, 90% of mobile phone users have access to the internet (Mintel 2003) and 80% of the population has a mobile phone (Doonar 2004). There is also a steady increase in the use of text messaging, which stood at an estimated 20 billion messages in 2003 (Mintel 2003). As research is almost non-existent in this area, the study will examine the effect of topic salience, sponsorship and multiple contacts on response rates to SMS-based surveys. These are now discussed in turn and it is hypothesised how they might affect response to an SMS request.

Hypothesis development

Topic salience

Salience is defined as a topic that deals with an important issue that is also current or timely (Martin 1994). Topic salience has been found to be the most important determinant of observed response rates to mail surveys (Heberlein & Baumgartner 1978). More specifically, Heberlein and Baumgartner (1978) reported response rates of 77% for highly salient issues compared to 42% for non-salient topics in mail surveys. The results are confirmed by a number of similar and more recent (non-meta-analytical) studies (Roberson & Sundstrom 1990; Martin 1994; Groves *et al.* 2000; van Kenhove *et al.* 2002). However, salience of the topic does interact with other aspects of the survey, such as reputation of the organisation and

monetary incentives, especially when the topic is of low salience. This can be explained by Petty and Cacioppo's (1986) persuasion theory. If the topic is of interest, respondents will engage in an extensive cognitive processing of the message, which is a central route to persuasion. However, if the opposite is true, then respondents will use peripheral cues (i.e. other features of the survey than the topic) to make their decision. Based on this premise, Groves *et al.* (2000) leverage salience theory to suggest that the participation decision of people who are uninterested in the topic will be influenced more by features of the survey other than salience. However, in the absence of other positive features in the survey, topic salience will be the main determinant of any decision to participate. Salience is particularly important to email surveys, as many respondents screen their emails by reading only the subject line of the messages (Sheehan & McMillan 1999). This leads us to hypothesise that:

H1: Participation in SMS-based surveys will increase as topic salience increases.

Sponsorship

Previous research on the impact of sponsorship has shown that surveys from governmental and academic organisations tend to have higher response rates (Heberlein & Baumgartner 1978; Goyder 1987; Fox *et al.* 1988; Faria & Dickinson 1992, 1996; Greer & Lohtia 1994; Schneider & Johnson 1995). In part, this is thought to occur because of perceived differences in legitimacy between government and academic researchers and commercial organisations (Groves *et al.* 1992). The norms of civic duty (i.e. feelings of obligation to help or contribute to what is thought to be a common cause) seem to underlie the decision to participate in surveys sponsored by social institutions, government and universities (Goyder 1987). The belief is that the information collected by these institutions is publicly available and makes a valuable contribution to society. In contrast, there is a belief that commercial organisations usually make a profit out of the information they collect, which is treated as a proprietary asset with limited societal value. Hence, the motivation to participate in surveys from such organisations is low. This leads us to hypothesise that:

- H2:** Participation in SMS-based surveys will be higher when the sponsor is an academic institution rather than a commercial organisation.

Respondent contacts

Meta-analytical studies have shown that multiple contacts are among the most important ways to increase response rates in mail surveys (Heberlein & Baumgartner 1978; Goyder 1982; Yu & Cooper 1983; Fox *et al.* 1988; Yammarino *et al.* 1991). Specifically, multiple contacts can increase response rates by 3.5 percentage points (Fox *et al.* 1988), 15.6 percentage points (Yammarino *et al.* 1991) and 18.1 percentage points for mail surveys (Yu & Copper 1983). Yammarino *et al.* (1991) also found that repeated contacts have a greater effect on response rates when the survey is conducted with institutional rather than consumer groups of respondents. Groves (1990) reported that RDD telephone interviews bring lower response rates compared to mail and face-to-face surveys, as respondents find it easier to refuse over the phone. Collins *et al.* (1988) also reported that response rates in telephone surveys in Britain tend to be 15% lower than those for face-to-face surveys, although recent evidence (Nicolaas & Lynn 2002) indicates that the difference can be as high as 30%. Goyder (1987) argued that repeated call-backs are not repeated invasions of privacy but a way to communicate the importance of the respondent to the research. Indeed, repeated calls in telephone surveys appear to increase response rates by a reported 20–40% (Groves 1990). In email surveys, multiple contacts have a clear effect and increase the response rates by between 5.3% (Smith 1997) and 20% (Mehta & Sivadas 1995). The average response rate in email surveys with a single contact is 28.5%, which rises to 41% after two contacts and 57% with three or more contacts (Schaefer & Dillman 1998). We therefore hypothesise that:

- H3:** Participation in SMS-based surveys will increase as the number of subsequent contacts increases.

Methodology

To test the above hypotheses, a 2×2 factorial design was used to examine the impact of sponsorship and topic salience (see Table 1). The SMS contact varied in two areas:

1. sponsor identity that was either an academic sponsor (i.e. a well-known UK university) or a commercial organisation (i.e. a fictional market research agency)
2. topic salience that was high (asylum seekers) or low (grocery shopping).

A standardised SMS message (which varied by subgroup) was sent to 200 (50 in each cell) randomly dialled UK mobile phone numbers (Nicolaas & Lynn 2002). Respondents were asked to participate in the study and provide some basic demographic information (gender and age), as well as to indicate their preference for receiving the survey via a telephone call or the web. They were given these options for two reasons: to include those without access to the internet and address the problems of population equivalence identified by Rice and Katz (2003); to provide a response mode choice, which has been shown to increase response rates (Goyder 1987; Schaefer & Dillman 1998). Results regarding the preferred mode to receive the survey were more optimistic, with 56% of respondents indicating that they would like to receive it via the web, and the remaining 44% to be interviewed on the phone. The two 'asylum seeker' treatment groups showed a preference for the telephone mode, whereas the sponsor identity treatment groups had no effect in the response mode. Furthermore, no gender or age differences in survey mode preferences were observed.

Table 1: Characteristics of respondents

	%		%		%
<i>Preferred contact mode</i>		<i>Age of respondents</i>		<i>Internet access</i>	
Web	56	18–30	17.5	No	18
Phone	44	21–30	31.0	Yes	82
		31–40	27.5		
<i>Gender of respondents</i>		41–50	9.5		
Male	64	51–60	12.0		
Female	36	Over 60	2.5		

To check the effects of multiple contacts, two SMS reminders were sent to non-respondents after one week and two weeks, respectively. The messages were sent through AOL's text messaging service, which can send messages to any UK mobile. This method has many advantages as it enables bulk message sending, responses to be viewed on the internet and computer, and call logs to be kept of the time and delivery status of all messages sent and received.

As it is difficult to measure directly the salience of a topic (Groves *et al.* 2000), the following procedure was used to identify a salient issue. First, the MORI political monitoring poll (MORI 2004) showed that asylum seekers and immigration control, together with international terrorism, were the main concerns of the British public in April 2004, when this research was conducted. The findings were corroborated by a similar survey by YouGov research agency published at the same time (YouGov 2004), which rated asylum seekers the second most important issue for Britons after health. This view was supported by a content analysis of the British press. A word search of the Factiva database revealed around 3700 articles in the UK press dealing with asylum seekers in the period from January 2003 to April 2004. The facts are that, in 2003, the estimated number of people arriving to live in the UK for at least a year was 513,000, from which around 80,000 official applications to grant asylum seeker status were filed (Office for National Statistics 2004 (www.statistics.gov.uk)).

The average age of those who agreed to participate was 32.2 years, and 64% of them were males (see Table 1). The age composition was biased towards the younger generation, as suggested by Groves (1990). Specifically, 48.5% of the respondents were younger than 30; 27.5% were 30 to 40; 9.5% were 40 to 50; 12% were 50 to 60; and only 2.5% were over 60 years old (Table 1). This may have to do with several other considerations, such as:

- the general trend of lower participation of the elderly in telephone surveys (Groves 1990)
- more familiarity, dexterity and higher use of the SMS facility by the younger populations (Maddel & Muncer 2004)
- the relatively lower penetration of mobile phones to the higher age bands (Mintel 2003)
- more positive attitudes towards SMS by younger people (Pearse 2002).

Gender differences may also be related to the higher penetration of mobile phones observed in the male population: 81% for males and 72% for females (Mintel 2003).

There were no statistically significant differences in age and gender across the two treatments and across the four experimental groups, and no gender or age differences in the follow-up responses were identified. Although the proportion of female respondents in the two 'grocery shopping' treatment groups was slightly higher, the relationship was not statistically significant.

Results and discussion

The overall response rate for all groups was 36.5% (see Table 2), which is almost identical to the rate reported by Flemming and Sonner (1999). Most non-respondents did not respond at all to the SMS and 3% responded to say that they would not participate and to stop sending them any reminders. The results in Table 2 suggest that treatment group 3 (asylum seekers/market research agency) reported the highest response rate (56%) and group 2 (grocery shopping/university) the lowest (24%). To test the first two hypotheses as well as the interaction effect between sponsorship and topic salience (as suggested by Groves *et al.* 2000), analysis of variance (ANOVA) was undertaken. The results in Table 3 support hypothesis 2, that sponsorship will affect response rates. Unexpectedly, the two market research agency treatment groups resulted in much higher response rates (48% on average) than the two university treatment groups (25%). Similar results regarding sponsorship were reported by Albaum

Table 2: Response rates for the different treatment groups

Group	Saliency of topic	Sponsor ID	After 1st contact (%)	After 2nd contact (%)	After 3rd contact (%)
1	Asylum seekers	University	20	20	26
2	Grocery shopping	University	18	18	24
3	Asylum seekers	Market research agency	30	48	56
4	Grocery shopping	Market research agency	22	32	40
Total			22.5	29.5	36.5

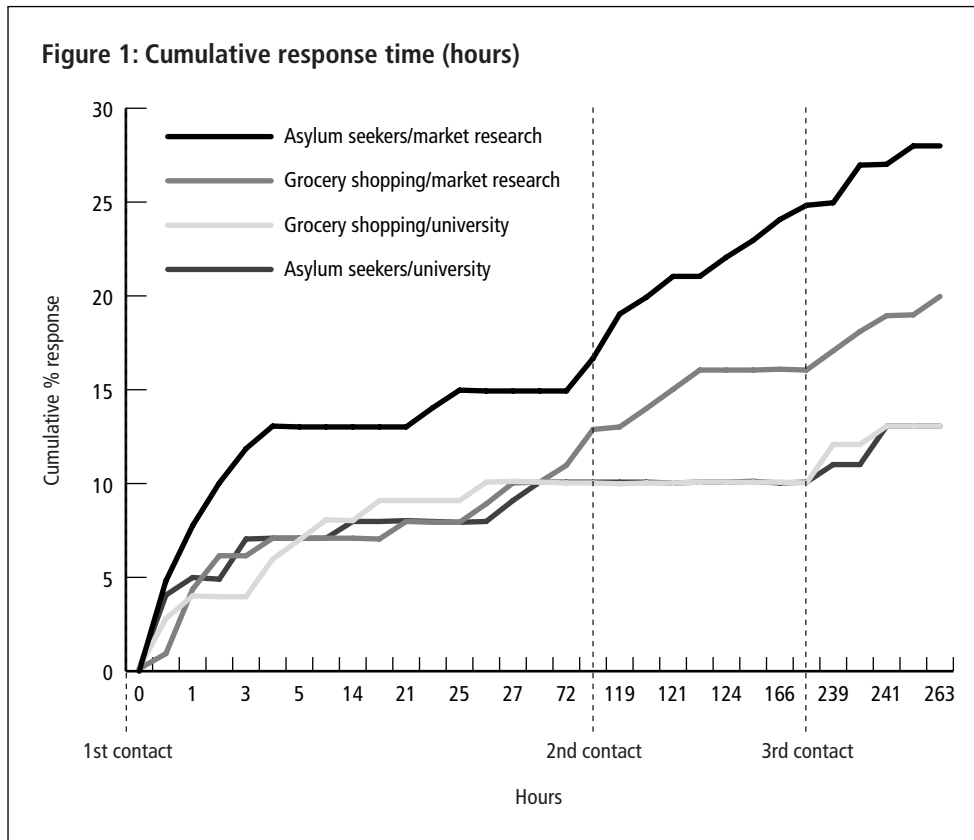
(1987) and Cavusgil and Elvey-Kirk (1998). This may be due to the proliferation of student surveys originating from UK academic institutions and used for educational purposes, with little effect on society in general. Alternatively, respondent motivations to participate in ‘market research’ surveys may be higher because they see the survey as just another university training exercise that will have limited impact on the asylum problem. However, it may also be that respondents were more suspicious of the motives of the government/university to sponsor a survey on asylum seekers than a market research agency, which can have little vested interest in the results. Both topic salience and the interaction effect (topic salience $\times$ sponsorship) had a statistically insignificant effect on response rates. Hence, hypothesis 2 cannot be supported.

Multiple contacts led to an increase of the average response rate by 14 percentage points (i.e. from 22.5% to 36.5%). However, in the case when the sponsor was a market research company, response rates increased by 18 to 26 percentage points (see Table 3). The response rate improvement in follow-ups was higher for the two ‘market research’ treatment groups ($p = 0.006$) and was not affected by topic salience. The results showed that follow-ups increased the response rate more for those who preferred the web survey mode than the telephone mode, but the difference was not statistically significant.

Finally, an unintended but noteworthy finding was the effect on speed of response, which was remarkable as 44.5% of all responses were received within five hours from the time SMS was dispatched (Figure 1). Some 16.5% of all responses were received the same day as the second contact was made, and 19% of responses were received the same day as the third contact was made. The average response time was 3.3 days. Although responses for the ‘university sponsored’ and ‘asylum seeker’ treatments arrived faster than those for other groups, statistical analysis failed to uncover significant variations in the speed of responses across the four treatment groups. Speeds of

Table 3: Analysis of variance (ANOVA) across the two factorial groups

Source	F-test	Sig.
<i>Main effects</i>		
SALIENCY	1.44	0.232
SPONSOR	10.89	0.000
<i>Interaction effect</i>		
SALIENCY $\times$ SPONSOR	1.44	0.232
ANOVA model	4.59	0.000



response were also similar across different gender and age groups. It appears that, unlike what happens with email inboxes (Schaeffer & Dillman 1998), people tend to check their SMS inboxes more often and respond almost immediately.

Conclusion

Based on our rationale and experience with using SMS, we propose that SMS can be used effectively for probability web surveys by using it either with Couper's (2000) mixed-mode method (e.g. provide the option to receive the survey via a phone call or the web) or pre-recruitment method (through RDD) of panels of respondents to achieve better coverage of the population and response rates. Results of our experiment showed SMS-based surveys offer a promising alternative to probability surveys and have

the potential to elicit high response rates (56% in certain conditions). Importantly, it appears that SMS surveys can be used for a variety of issues, as topic salience does not really affect respondents' intention to participate. Moreover, in this case, SMS-based surveys sponsored by market research agencies appear to achieve higher response rates than those of academic institutions. Repeated contacts proved to be an effective way to improve survey participation rates, showing increases of up to 26 percentage points (i.e. from 30% to 56% in treatment group 3, see Table 2) for all types of respondents and topics, with higher response rates being observed with market research agency sponsorship. SMS-based surveys can also prove to be a very good method when market researchers need to collect information quickly, as the average speed of response (3.3 days) is better than for other survey modes. Finally, unlike results from previous mixed-mode survey designs (Schaefer & Dillman 1998; Couper 2000), this study showed that a larger proportion of the respondents in SMS-based surveys preferred the web over the phone survey option. Finally, it must be noted that one potential negative of SMS-based surveys is that they might appeal to certain types of respondent, which in this study were males and younger respondents.

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