

EFFECTS OF MOBILE WEB SURVEY INVITATION MODES ON NON-RESPONSE

Emanuel Maxl, Werner Haring, Astrid Tarkus, Manfred Altenstrasser, Martin Dolinar

Abstract:

One of the main concerns of using mobile surveys as a method is the low participation rates. Several possible reasons such as high data transfer costs, inadequately- equipped mobile phones and poor usability of WAP surveys are discussed in the literature. Furthermore, it is presumed that crucial criteria influencing the response rate include the way to invite the target groups and the content of the invitation message. This paper focuses on the variation of technical options in inviting respondents to mobile online surveys, such as WAP-push messages versus SMS with integrated links, within a case study for Raiffeisen, an Austrian financial service provider. One hypothesis states that inviting respondents by WAP-push is the best choice due to lower barriers to participation with the "one-click to open the questionnaire" approach. However, new mobile devices with high Internet usage because of flat-rates like the iPhone and Windows Mobile smartphones are actually not able to handle WAP pushes. Therefore, text messages with embedded links to the questionnaire have also been tested. About 60,000 invitations were sent to customers of Raiffeisen to evaluate a mobile marketing campaign. Results showed that there were no discrepancies regarding the response rate between the two invitation modes. In addition, there are no differences between two text options varying the wordings "survey" with "tell your opinion" regarding response rate. A handset analysis provides evidence of used mobile phones in the WAP-push and SMS group. For example, iPhones were found only in the SMS group as expected. A mobile panel approach is recommended to target user groups more precisely for mobile Web surveys.

Keywords: mobile Web survey, mobile market research, non-response, WAP-push, SMS

INTRODUCTION

There is a saying: First impressions count. It is often this first magical moment when we meet someone, which decides whether we are accepted or not. This saying is also relevant in mobile research. This paper will provide results and insights on this first contact with a target group in the financial sector in order to make the participants respond to self-administered mobile Web surveys. In particular, it gives advice whether SMS plus link or WAP-push invitations are the better choice in mobile Web surveys and reasons for that conclusion. In addition, findings on how to text invitations by mobile phone are outlined. The problem of a high level of non-response is still one of the crucial challenges in conducting mobile Web surveys. Several reasons for this are discussed in the literature: high costs for mobile Web data transfer, poor usability of mobile

handsets with small screens and clumsy data entry possibilities, and low skills and experience in using the mobile Internet (Doering, 2009). We focus on the very first phase of the research process, namely the invitation to research subjects, since this is, in our point of view,

one of the relevant gateways to attracting people to complete a mobile Web survey.

Information about response, drop-out rates and moments of early leaving are essential criteria in judging the quality of surveys in general (Funke & Reips, 2007).

Data about the quick response in mobile self-administered Web surveys are consistent when compared to classical online surveys. Results confirm that about half of the final sample in mobile surveys finished within the first hour after sending out invitations (Wallisch, 2009). In a study conducted by

Bosnjak (2009), 40% of the sample filled in the mobile questionnaire after the first hour of fieldwork. The response curve was flatter in the online survey which was conducted at the same time online. One reason for the high peak at the beginning of fieldwork in mobile Web surveys is the disappearance of the invitations, such as WAP pushes or SMS plus link, into folders which are sometimes hidden on the mobile phone as soon as the incoming message is not activated but clicked away, or while respondents are calling. Thus, mobile Web surveys are mostly either completed immediately upon the receipt of invitations or not at all. Friedrich-Freska (2009) observed only half of the response among panellists (15.9%) compared to an online survey (32.7%). Reminders by SMS were able to increase the response rate and reduce reaction delay (Hellwig, 2009). Petit (2009) found an average response time of 3.2 hours in mobile interactive voice response (IVR) studies after an invitation by SMS compared with 5.1 hours in a comparable mobile Web survey. With the use of SMS in a control group completing an online survey, the reaction time was reduced from 6.4 hours to 3.9 hours. However, quick response is only a means to an end, not an end itself, and relevant for questions which are time critical. The shorter the period between impression and survey, the more valid and less biased the delivered results. Hellwig (2009) was able to verify a higher recall score of sponsors in mobile Web surveys as opposed to an online survey group.

In his panel study, Friedrich-Freska (2009) showed that the main reason for a lack of participation in mobile Web surveys is the expensive use of the mobile Internet (35%). This is followed by a general excuse of "not having time enough" (18%) and no interest in such kind of surveys (16%), as well as a lack of appropriately-equipped mobile phones with no Internet access (13%). Considering a general

population, 23% of Austrians do not possess a mobile phone with Web capacity (MMA, 2009).

The general attitude toward the mobile method, affective and hedonistic factors like fun and entertainment, the way the method fits to the personality, trust in data security, and expected usefulness together with low entry barriers were identified by Bosnjak (2009) as the most influential reasons to take part in a mobile survey. In his study, costs do not play a major role.

To sum up at this point, literature shows that non-response is provoked by several reasons, but specific studies researching different invitation modes in mobile Web surveys are not available yet. Therefore, this study has the intention of filling this gap.

Mobile Marketing Campaign 'Raiffeisen Mobil'

The data and results of this study are related to Styria, one of the nine Austrian federal provinces. Raiffeisen is the leading banking group in Styria with a market share of 44 percent, about 700,000 retail customers and 89 banks, which own the core bank Raiffeisen Landesbank Steiermark AG in a bottom-up structure. The product range comprises all standard services of a commercial and retail bank, like savings and loans. One of the targets of the Raiffeisen group is to keep a close relationship to their customers in everyday life. Therefore, in 2008 Raiffeisen decided to launch a mobile marketing service called Raiffeisen Mobil.

The aim of implementing Raiffeisen Mobil, a system for mobile customer relationship management (CRM), was to provide the young target group with an innovative offer of staying up to date with new ideas and concepts of CRM from Raiffeisen's point of view. In addition to the direct contact of a Raiffeisen customer with an employee of the bank, the self-service area at the point of sale, and online banking opportunities, the mobile communication became the fourth channel for the retail business in banking. Raiffeisen Mobil uses three basic services in mobile

CRM to benefit from the advantages of mobile communication. The first aspect of Raiffeisen Mobil is timed information by SMS about events, new products or special offers of the bank. The second service of Raiffeisen's mobile CRM solution involves sending automatic short messages to congratulate customers on their birthdays. Finally, SMS as a reminder of upcoming appointments with financial advisors are sent to the customers.

Since the mobile CRM solution was released in July 2008, about 147,000 customers aged 18 years and older have started to use the service. More than 1.5 million messages have been sent to the clients in this period. Clients have received an average of ten messages since the launch of the campaign.

Table 1 shows the distribution of Raiffeisen Mobil customers according to gender and age. Raiffeisen Mobil is used by more males than females.

Table 1: Structure of Raiffeisen Mobil customers aged 18 years and older

Gender	n	%
Male	79,611	54
Female	67,891	46
Age		
18-25	31,845	22
26-30	22,209	15
31-40	35,649	24
41-50	30,290	21
51+	27,509	18
Total	147,502	100%

Raiffeisen Mobil Accompanied Evaluation

From the beginning, one of the tasks within Raiffeisen Mobil was to track the performance of this mobile marketing campaign with the intention of getting reliable data about customer satisfaction and

needs. Therefore, market research studies are conducted on a regular basis to monitor and evaluate this CRM service. Together with Raiffeisen, the authors of this paper decided to carry out the study as a Web-based mobile survey in a self-administered way. Basically, there would have been other research methods to examine the customers, but we dismissed an online survey as an alternative method, since there are no e-mail addresses available for the Raiffeisen Mobil clients. In addition, company policy forbids contacting clients by e-mail in general due to phishing and spamming issues.

Another option was to survey the target group by classical computer-assisted-telephone-interviews (CATI). Since we only had mobile phone numbers, this would have been too expensive and we did not want to take the risk of annoying mobile phone users by contacting them in inappropriate situations by voice calls. Furthermore, one of our aims was to apply a research method via mobile phone without change of media. The mobile marketing campaign takes place in a non-voice mobile messaging way, so the research method should also be conducted in this way. Finally, this approach was carried out with respect to the scientific purpose of developing further new mobile methods at our centre of competence.

Since it was our fourth wave, we were aware of the limits of mobile Web surveys, particularly the rather low response rates and the possible bias resulting from this in terms of under coverage effects. Therefore, one of our main targets was to increase the response rate and learn as much as possible about influencing variables in this way.

METHOD

The methodology and results are related to the survey wave of November 2009. In this wave, we put emphasis on the wishes and needs of the target group. For instance, we asked the clients when and how

often they would like to receive information from Raiffeisen Mobil.

Participants

Customers of the Raiffeisen Mobil service aged 18 years and older were invited to the mobile Web survey. In total, 59,986 messages were sent to the target group, which constitutes 40% of the relevant audience of Raiffeisen Mobil customers. To get a representative coverage of the target group the sample was stratified according to the five regions of Styria: Upper, Eastern, Western, South and the capital Graz. Aside from information about the clients' regions and the mobile phone number, no further data were available of the target group. This means that the research group had no knowledge of the handsets used by the customers. The high amount of invitations was chosen to get a final sample size which made it possible to analyse the subgroups in detail. Each mobile Web interview took about four minutes on average. The questionnaire consisted of eleven questions, including eight single, two multiple choice and an open-ended question.

Experimental Variation

As a part of experimental variation, we sent out two kinds of invitations to half of the sample in a randomised way according to a quota plan. On the one hand, we used so-called WAP-push messages, and on the other hand SMS plus integrated link were applied for the survey. As in every mobile Web survey, the process happened as follows: At first the invitation was sent to the customer; then after the respondent clicked on this invitation link the mobile start page appeared. This start page contained important information about the survey including objective, length, possible costs for data transfer and privacy statements. In the case of a respondent deciding to carry on with the survey and click on "next," the first mobile questionnaire page appeared, then the second and so forth until he or she reached the end page. Figure 1 illustrates how a survey screen, which in this

case corresponds to a single choice question, would appear to a respondent taking a mobile survey.

One critical issue is the technical reliability of both invitation modes. There are types of mobile phones which at the time of the survey could not receive WAP-push messages, like the Apple iPhone or Windows Mobile smartphones. For those who send WAP-push messages to mobile phone numbers of clients without knowledge of the type of phone being used this means that the message could get lost, and no feedback would be returned like bounce-back e-mails in online-surveys. This marks a crucial source of error. Second, most of the mobile phones are able to receive SMS with a URL link, but there are models which do not show the URL as a clickable link, but only as text. This means that respondents needed to copy the URL text to their mobile browsers, which is in fact a critical entry barrier for using mobile surveys. Figure 2 demonstrates an example of how the two invitation modes appeared on a Nokia 6230 phone, which has been the second most popular phone over the past two years among younger people in Austria (MMA, 2009). This example proves that a WAP-push can be easier to handle for respondents than a SMS plus link. In this case, it was only necessary to click on 'abrufen' (access) and the mobile Web browser opened with the start page of the survey. As opposed to that, the URL in the SMS plus URL is not directly linked to the mobile Web browser. It is necessary to overcome three sub-menus in order to be able to open the mobile browser. This could be demanding for less adept mobile phone users.

Figure 1: Mobile survey screen



Figure 2: WAP-push versus SMS plus link on a Nokia 6230i phone SMS

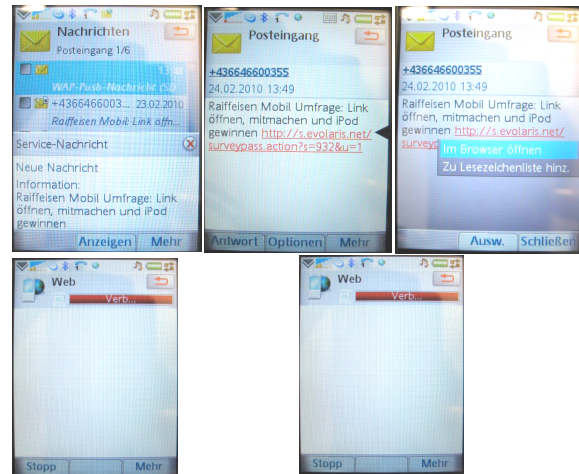


WAP-push

SMS plus link

On the contrary, the SonyEricsson M600 (Figure 3) depicts the URL within an SMS as a clickable link and therefore makes it fairly easy to access a mobile Web survey. There is another interesting point in the WAP-push message on the SonyEricsson mobile phone. The system text says in German "Service-Nachricht" (service message). This might confuse the respondents, leading to dropout and possible negative connotations with the sender. Sometimes mobile phones do not even show the sender's phone number, which could also lead to mistrust.

Figure 3: WAP-push versus SMS plus link on a Nokia 6230i phone SMS



WAP-Push

SMS + Link

The second experimental condition was a comparison between two different invitation texts. Previous qualitative studies concerning the wording of the invitation text suggest replacing the word "survey" with the more embracing and less technical phrase "tell your opinion" (Tarkus, 2009). Consequently, we varied the invitation text A "Raiffeisen Mobil Survey: Open link, participate and win iPod" and text B "Raiffeisen Mobil: Open link, tell opinion and win iPod" by keeping mainly the other words except the two mentioned. Generally, the number of characters is limited to 160 in invitations to mobile Web surveys by the mobile service SMS. Technically, it is possible to merge two SMS of double length, the so-called concatenated SMS, but this comes with double messaging costs, and some handsets do not support this service. Unfortunately, those 160 characters are not entirely available to motivate the target group to participate since the letters of the URL have to be subtracted.

Hypotheses

Based on the available results in literature and in-house experience, three hypotheses were examined.

H1: Response to WAP-push invitations is significantly higher than to the SMS plus link.

The reason for this assumption is based on results showing that WAP-push offers better usability than the SMS plus link due to its “one-click to mobile browser” character (Tarkus, 2009).

H2: Text B “tell your opinion” provokes a higher response rate than text A “survey”.

This hypothesis is because of the previously mentioned qualitative results saying that “tell your opinion” might attract a broader scale of respondents than “survey” does.

H3: Results differ between testing groups.

Due to different participating respondents caused by technical restrictions such as handsets not able to receive WAP-push and the SMS plus link with difficult to open links, the answers to the mobile survey will differ significantly between the testing groups.

RESULTS

Starting with a base of 100 percent for each testing group, in the WAP-push group 11% clicked on the invitation message to view the start page. In comparison, only 2.7% of those respondents who got an SMS plus link invitation opened the mobile Web survey. The next step from the start page with the general information about the survey to the first question was taken by 2.3% of all starters in the WAP-push condition and 1.8% in the SMS plus link group. The final response rate was 1.4% for the WAP-push group and 1% for the SMS plus link.

Two results are outstanding when looking at these responses: At first, the high rate of those who clicked on the WAP-push at the very beginning, and after that the huge drop-out before answering the first question. Secondly, the low response rate at the beginning in the SMS plus link group is remarkable. Possible reasons for this will be discussed below using analysis of utilized handsets. In total, 650 respondents completed the survey resulting in an overall response rate of 1.2%.

A chi-square test considering the invitation modes and the two text options confirms no statistically relevant differences between the test cells. Table 2 illustrates the results for the four experimental groups.

To examine why response rates dropped from sending to completed interviews, we took a closer look at the available meta-data. One part includes information about the involved handsets, including brand and type of mobile phone with which respondents took part in the survey. The applied mobile survey software is able to track this data, even if the respondent does not complete the survey. Every action starting with the click on the invitation was recorded. This means that we also know the handsets of those who started the survey but did not finish. All in all, 3768 people sent reactions to the invitation by either clicking on the WAP-push (n=3038) or trying to open the link in the SMS (n=730). Looking at the brands, we could see that far more Nokia handsets started the survey (64% of all participating handsets) than in the final sample (only 22% of all completed interviews). In the final sample, SonyEricsson was the dominating brand with a share of 33%. Compared to the starters, the share of iPhone users became larger in the final sample (2% vs. 7%). This is also true for Motorola as a brand (2% vs. 10%) and Blackberry /RIM (4% vs. 8%). Thus, smartphone users completed the mobile survey more often than non-smartphone users.

Having a look at the testing groups WAP-push versus SMS plus link, there are further insightful results. First, the expected data for the iPhone could be observed. No iPhone user finished in the WAP-push group, since iPhones, at the time of the survey, could not receive this kind of message. Thus, 12% in the SMS invitation group finished the study with an iPhone. In addition, more Motorola (3% vs. 16%) and HTC handsets (1% vs. 6%) took part in the SMS group compared to the WAP-push group, basically the newer

Table 2: Response rate of WAP-push invitations versus SMS plus link in two text options

Invitation Text	WAP-push		SMS plus link		χ^2	<i>p</i>
	n	%	n	%		
A ('survey')	169	1.2	210	1.6	.205	.651
B ('tell opinion')	116	0.8	155	1.2		

smartphone generation. The share of Nokia phones and SonyEricsson phones is about twice as high in the WAP-push group compared with the SMS invitation (31% vs. 14% and 45% vs. 24%).

We found an interesting data entry for "handset model" in the analysed data which confirms that 9% in the SMS group typed the URL into a Web browser of a conventional computer to complete the survey (1% in the WAP-push group). This was probably done to avoid costs for mobile data transfer.

In the end we had 120 different mobile phone models in our final sample of 650 which indicates that about every fifth phone is technically different. This is a crucial insight for mobile survey software, since it has to work properly on a very broad scale of mobile platforms.

Looking at the respondents' answers, which we are not allowed to communicate in detail, found, in contrary to our expectations, no significant differences between the testing groups. Even though people with very different handsets took part in the different variations of the survey, the answers to the questions were given consistently. The content of the questions about perception of Raiffeisen Mobil and general wishes for the future development seems to be independent from the users' experience with their own mobile phones.

It was not only answers which were comparable between the test groups, but also the socio-demographics surveyed in the form of gender and age. Table 3 shows the distribution of the total sample

related to the distribution of Raiffeisen Mobil customers. Basically, the structure of the sample is more equal to the users of the mobile Internet in general (MMA, 2009) than to Raiffeisen Mobil customers. A bias toward younger males can especially be observed.

Table 3: Structure of participants on survey versus Raiffeisen Mobil customers

	Participants on mobile Web survey	Raiffeisen Mobil customers
Gender	%	%
Male	63	54
Female	37	46
Age		
18-25	42	22
26-30	19	15
31-40	21	24
41-50	11	21
51+	7	18
Total	100	100

Further analysis verifies the already known quick response to mobile Web surveys; 56% of the final data were available one hour after sending the invitations. To be more precise, 44% answered after 20 minutes and 48% after half an hour. Of the sample, 77% was reached twelve hours after starting the fieldwork, which lasted five days in total (November 16 –20, 2009).

The average completion time for a mobile survey page was highest for the starting page (43 seconds) and the first question (42 seconds). The median for completing one of the eleven questions of the mobile questionnaire was eighteen seconds.

Twenty percent typed in answers to an open-ended question with general feedback on the tested mobile marketing service. The average length of the feedback was 32 characters (4.6 words). Of the finishers, 4% had a look at the “about us” link on the start page with further information about the initiator of the research.

DISCUSSION

Coming back to the hypotheses, all of them had to be rejected. Response was not higher when WAP-push messages were sent instead of the SMS plus link. The expression “survey” is still relevant, and “tell your opinion” can not attract more respondents. Finally, at least in this case, no differences regarding answering behaviour could be seen. In the case of the text options, obviously the word “survey” signals precisely what the message is about, whereas the rather vague “tell your opinion” might not be clear enough to get more feedback from the target group.

Data suggest that the strengths and limits of each invitation mode equal the participation rate in the end. A reason for the sharp decrease in the WAP-push group between start page and first question is that it is probably too easy for respondents to open the incoming link to the mobile survey, and respondents are not conscious enough about the possible consequences, like costs and effort to fill in the questionnaire. Since older Nokia models were affected in this group, small screens with poor resolution, low data-transfer rates, and mobile operator restricted access to the mobile Internet could also have led to an early break off. Possible negative affects on attitude toward the method of respondents in this case should be considered in future research projects. The SMS plus link invitation demanded higher requirements from technical equipment and skills of the target group right from the start. Table 4 shows a

comparison of the strengths and weaknesses of WAP-push versus the SMS plus link invitation mode.

In terms of non-response, general limitations regarding coverage have to be taken into account for mobile research. Hence, only 22% of all mobile phone users are experienced with the mobile Internet in Austria (MMA, 2009). As already mentioned, nearly a quarter of the mobile phone users do not have a device which is capable of accessing the Internet. These are basic limitations when conducting mobile Web surveys and main sources of non-response as well as technical constraints of varying technologies for the use of the mobile Internet on portable devices.

One of the consequences of this study is to target potential respondents with the most appropriate invitation mode as well as possible. To achieve this, it is necessary to have information about used handsets. This could be collected in dedicated mobile survey panels with a detailed pre-recruiting process at the very beginning.

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The usage of the term “survey” is still advisable, since we could not find data against the use of it. Incentives are still necessary in running this kind of survey in order to cover data transfer costs, at least with a lottery as we did. The information of respondents about privacy issues, for example in the form of an ‘about us’ link on the start page, is highly recommended, given that this method is new for most of the participants and privacy information might be able to build up trust in mobile research.

Table 4: Comparison of strengths and limits of both invitation modes

Criteria	WAP-Push	SMS + Link	Rationale
User-Friendliness	+	-	WAP-push benefit: one-push to mobile Web; link in SMS sometimes difficult to open
Number of characters	--	-	Due to technical issues more characters in SMS than WAP-push possible to display
Availability on handsets	-	++	Every handset able to receive SMS plus link, widespread smart-phones do not support WAP-push (iPhone, HTC, WinMobile)
Transparency of costs	-	+	SMS: better transparency of costs; new smart-phones not WAP-push featured more often combined with data-flat rates; WAP- push: data transfer costs less transparent when opening WAP-push message
Attraction to participate	++	-	4 times more users click on WAP-push compared to SMS plus link
Completion of survey	o	o	Completion rates comparable between both invitation-modes

Scale: ++ / + / o / - / --

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Emanuel Maxl*
 evolaris next level GmbH
 Austria
 emanuel.maxl@evolaris.net

Werner Haring
 evolaris next level GmbH
 Austria
 Astrid Tarkus
 evolaris next level GmbH
 Austria

Martin Altenstrasser
 Raiffeisen Landesbank Steiermark
 Austria

Martin Dolinar
 Raiffeisen Landesbank Steiermark
 Austria

*Corresponding author

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