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Résumé

Éléments d'invitation dans la conception des enquêtes sur le Web - Peut-on ignorer les interactions ? : Ce texte examine les effets sur les taux de réponse et d'abandon dans les enquêtes présentées par email, incluant différents éléments dont : la ligne « sujet », la durée approximative de l'enquête, et la longueur de la présentation invitant à participer à l'enquête. L'analyse est centrée non seulement sur les effets principaux, mais aussi sur une question qui n'a pas encore été étudiée systématiquement : les effets d'interaction entre ces éléments de présentation. Une expérience Web en bloc complet factorielle, réalisée parmi les étudiants, les professeurs et le personnel administratif à l'École supérieure d'économie en Russie, variant la durée estimée de l'enquête (10 vs. 20 minutes), l'objet (« suivie » formelle vs. demande « informelle » d'aide), et la longueur de l'invitation (court vs. long), a été réalisée. Nous discutons les résultats de l'expérience et pensons que nous ne devrions pas ignorer les effets d'interaction entre les éléments de présentation pour comprendre la réaction à des sondages en ligne de manière plus approfondie.

Abstract

This paper investigates the effects on response and breakoff rates in Web surveys of e-mail invitation design elements including: subject line, estimated survey duration, and invitation length. The analysis is focused not only on the main effects, but also on an issue which has not yet been studied systematically: interaction effects between these design elements. A factorial complete block design Web experiment – among students, faculty, and administrative staff at the Higher School of Economics in Russia – varying the estimated length of the survey (10 vs. 20 minutes), subject line (formal “monitoring” vs. informal “help” request), and invitation length (short vs. long) was conducted. We discuss the results of

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the experiment and argue that we should not ignore interaction effects between design elements to understand response in Web surveys more thoroughly.

Mots clés

Enquêtes en ligne, Invitation à l'enquête, Taux de réponse, Taux d'abandon, Effets d'interaction

Keywords

Web Surveys, Survey Invitations, Response Rate, Breakoff Rate, Interaction Effects

Introduction

In mail and Web survey modes, elements of invitations requesting respondents to participate in the survey have an impact on response rates (see Dillman et al., 2009). However, compared to mail survey mode, which provides a researcher with ample opportunity to affect response rates (via quality of stationery, the appearance of envelopes, real signatures, printed sponsorship logos, etc.), e-mail invitations support rather limited range of visual features to encourage respondents to complete Web surveys (Crawford et al., 2001; Keusch, 2012; Tuten, 1997). Usually, only the sender of the e-mail and the subject line can be seen by all potential participants before they open the e-mail. Both the sender of the e-mail (Gueguen, 2003; Joinson and Reips, 2007; Keusch, 2012) and the subject line (Henderson, 2011; Kaplowitz et al., 2012; Porter and Whitcomb, 2005; Trouteaud, 2004) can affect the probability of response. If respondents decide to open an e-mail invitation such features as personalization (Heerwegh and Loosveldt, 2006; Muñoz-Leiva et al., 2010), expected survey duration (Crawford et al., 2001; Galesic and Bosnjak, 2009; Kaplowitz et al., 2012; Yan et al., 2010), the length of e-mail invitation text (Kaplowitz et al., 2012; Kloffstad et al., 2008), topic salience (Cook et al., 2000; Marcus et al., 2007), and incentives (Bosnjak and Tuten, 2003; Göritz, 2006) can have an effect on response and breakoff rates.

In this paper, we examine the effects of two different lengths of the invitation text, two estimated survey durations, and requesting "help" in the subject line on start, response, and breakoff rates. To our knowledge, no experiments on the interaction effects between these three design elements have been published. In line with the discussion of Marcus et al. (2007) who stress the usefulness of finding interaction effects between topic salience, incentives, researcher feedback, and survey length in Web surveys, we focus our analysis on finding both main and interaction effects between invitation length, stated survey duration, and subject line which have an impact on response and breakoff rates. The present research is based on the results of Web experiment conducted among students, faculty, and administrative staff at National Research University Higher School of Economics (HSE) in Russia.

Theoretical Background and Hypotheses

Subject Line

Previous studies have provided evidence suggesting that e-mail subject lines affect response rates. In a full-factorial experiment ($n = 15,652$) on the effects of invitation

Table 1. Experimental design

Factor Z (Subject line) – formal (Z ₁) vs. informal (Z ₂)	Factor X (Expected survey duration) – 10 min. (X ₁) vs. 20 min. (X ₂)	
Factor Y (Invitation) – long (Y ₁) vs. short (Y ₂)*		
Formal subject line with a longer invitation	X ₁ Y ₁ Z ₁	X ₂ Y ₁ Z ₁
Informal subject line with a longer invitation	X ₁ Y ₁ Z ₂	X ₂ Y ₁ Z ₂
Formal subject line with a shorter invitation	X ₁ Y ₂ Z ₁	X ₂ Y ₂ Z ₁
Informal subject line with a shorter invitation	X ₁ Y ₂ Z ₂	X ₂ Y ₂ Z ₂

*Different values for experimental groups: students – 108 vs. 155 words; faculty – 116 vs. 173; administrative staff – 95 vs. 205.

design on Web survey response rates, Kaplowitz et al. (2012) showed significant effects of subject line on response rates among university faculty, staff, and students. An “authoritative” subject line (“MSU Vice President asks you to take a survey”) significantly increased response rates in all three groups compared to a salient subject request (“Take an MSU survey on campus environmental stewardship”). Henderson (2011) found that a plea request (“Please provide your feedback!”) improved response rate by 21 percent both in North America and Europe compared to posing a question in the subject line of e-mail (“Would you like to provide your feedback?”). Trouteaud (2004) showed that a “Please help” subject leads to higher response rate compared to such subjects as “Share your advice” or “Take some of your time to share”. However, Porter and Whitcomb (2005) found no effect of requesting assistance in the subject line. According to the social exchange approach to survey response, asking for help might increase responsibility and motivate individuals to respond to the survey (Dillman et al., 2009).

In our 2x2x2 factorial complete block design experiment, we tested the effect of “help” request on start, response, and breakoff rates among students, administrative staff, and faculty (see Table 1 for experimental design). Half of each subpopulation was randomly assigned to receive the invitation with the subject line “Share your opinion – Help to make HSE better!” The other half received the invitation with the formal subject line “Monitoring student life” or “Monitoring administrative staff” or “Monitoring faculty life”, as appropriate. In both experimental treatments, the invitations were sent from the e-mail address of HSE Centre of Institutional Monitoring. We expected that a “help” request in the subject line (“Share your opinion – please help to make HSE better!”) would result in higher response rates and lower breakoff rates compared to more formal subject “Monitoring student life (administrative staff/faculty life)”, since it might increase the perceived usefulness to participation in the survey.

Estimated Survey Duration

Lower estimated survey duration might result in higher start rates in a survey with the identical questionnaire length (Crawford et al., 2001). More respondents would start the survey if the stated length is low (e.g., 5 min.) than if the stated length is higher (e.g., 20 min.). At the same time, those who start the questionnaire while invited to the

survey with higher duration would have fewer breakoffs, since their commitments and sunk costs are greater compared to those who were invited to the survey with the lower duration (Yan et al., 2010).

Kaplowitz et al. (2012) showed that the short estimate of the survey length (10 min.) led to a higher response rate among students compared to the long estimate (less than 30 min). However, no differences were found for university staff and faculty. Crawford et al. (2001) demonstrated that a shorter estimated duration (10 min.) led to both higher start and breakoff rates compared to a longer estimated duration (20 min.) among students, which finally resulted in similar response rates in both conditions. Yan et al. (2010) found that the start rate was higher in the shorter time estimate conditions (5 and 10 min.) compared to longer estimates (25 and 40 min., respectively), however, no consistent results on breakoff rates were found. Galesic and Bosnjak (2009) found that start rate was significantly higher when the stated length of the questionnaire was 10 min. compared to 20 and 30 min. conditions. The likelihood of completing later questions was positively correlated with the stated length; thus, more respondents were ready to complete later blocks of the questionnaire when the expected lengths were 20 and 30 min. compared to 10 min. At the same time, Trouteaud (2004) found no evidence that the short estimate of the survey length (3-5 min.) resulted in higher response rate compared to longer estimate (10-15 min.). However, he found a significant interaction effect between expected survey duration and plea request. A plea request improved response rates among those who expected that the survey would take a long time to complete (Trouteaud, 2004).

In our experiment, half of each subpopulation was randomly assigned to lower estimated survey duration (10 min.); the other half – to higher estimate (20 min.). We hypothesized that short estimate (10 min.) would result in higher start rate compared to longer survey duration statement. At the same time, it might produce fewer breakoffs, since the respondents are more conscientious to complete a longer questionnaire compared to those who expected a shorter survey.

Invitation Length

Kaplowitz et al. (2012) found that a longer invitation text (182 words) resulted in higher response rates among faculty and staff compared to shorter text wording (80 words). It is suggested that providing some additional details about the survey might increase the perceived significance of participation and encourage respondents to fill out the questionnaire (Dillman et al., 2009).

In our experiment, each participant was randomly assigned to either a shorter version or a longer version of the invitation text (see Table 1). No personalization was used in the e-mail invitations. In the longer versions we additionally explained goals of the survey. Since the questionnaires were different for each group, invitation lengths varied slightly for each subpopulation. The short version for students contained 108 words; the long version – 155. The short version for administrative staff consisted of 94 words; the long one – of 205 words. The faculty short version invitation contained 116 words, whereas the long text – 173 words. We expected that a longer

invitation text would result in higher response and lower breakoff rates compared to a shorter invitation text.

In addition to the main effects we focus our analysis on an issue which has not yet been studied systematically: interaction effects between these design elements. We expected significant interaction effects: e.g., a longer invitation text would increase response rates in the survey with the long estimated duration and would have no impact in the survey with the short estimated duration; requesting help in the subject line would increase response rates if respondents receive a short invitation text, and would have no impact if respondents receive longer invitation, etc.

Data Collection Method

The paper is based on survey data collected from a campus-wide Web survey at National Research University Higher School of Economics in Russia. The sample was selected randomly among students, faculty, and administrative staff from the current official database of corporate e-mail addresses. All faculty and staff received invitations in their university e-mail accounts, while students received invitations in their personal e-mail addresses. The full-factorial experiment was designed to explore the effect of subject line, promised survey duration, and length of electronic invitation letter on start, response, and breakoff rates. Experimental conditions were assigned randomly to each participant.

Invitations were sent to all members of the sample at the beginning of October 2012. We focus our analysis on so-called early starters – those who began the survey within one week without receiving reminders. After the first week of the experiment, non-respondents received reminders and were strongly induced to participate in the survey by the university administration. Since that could affect the experiment by introducing bias into our data, we included only early respondents in our analysis (see Note 1). In other words, we aimed to identify the design elements of the e-mail invitation and interactions which have an impact on a *voluntary response* initiated by the very fact of invitation not confounded with a response set as a context-determined distortion in respondent motivation (see Jackson and Messick; 1958; Paulhus, 1991).

We used Kinesis survey software to program the questionnaires with a paging design. There were three different questionnaires, one per group. The survey was designed so that only relevant questions were asked. For example, if students did not face problems in dormitories, or if faculty did not use a learning management system, they were not asked these blocks of the questionnaire.

The student questionnaire contained a total of 72 questions (screens), and was about student engagement in the learning process, their evaluation of the university, problems they face, free time, and plans to continue education. The median time of completing the survey was 11.53 minutes. The questionnaire for faculty had 109 questions, and was about evaluation systems used by faculty in their courses; electronic learning management system use; travel and research grants; published papers; and difficulties they face while working at the university. The median time of completing the survey among faculty was 22.87 min. The questionnaire for administrative staff contained a total of

Table 2. Start rates, response rates (RRI) and breakoff rates by groups

	Students	Faculty	Staff	Chi-square ($df = 2$)
Start Rate	11.0% (655)	13.4% (388)	18.5% (186)	46.844 ***
RRI	9.4% (557)	9.6% (277)	8.1% (81)	2.134
Breakoff Rate	15.0% (98)	28.6% (111)	56.5% (105)	133.887***
E-mail addresses	5,938	2,898	1,006	

*** $p < 0.001$.

87 questions and was about working conditions, expectations, career plans, and problems they face working at HSE. The median completion time among staff was 23.37 min.

Results

Start Rates, Response Rates and Breakoff Rates

Since Kaplowitz et al. (2012) showed that there might be different effects of the invitation elements on response rates among these three groups, we analyzed them separately. We sent 9,842 invitations to the students, faculty, and administrative staff (see Table 2). The highest start rate was found among staff (18.5 percent), and the lowest – among students (11.0 percent). At the same time, the staff had the highest breakoff rate (56.5 percent), while the students – the lowest among three groups (15.0 percent). Faculty demonstrated start rate and breakoff rates close to average for three subpopulations (start rate = 13.4 percent, breakoff rate = 28.6 percent). Differences in start and breakoff rates across three subpopulations resulted in the overall response rate (RRI) of 9.3 percent with no significant differences between groups (see AAPOR, 2011).

Subject Line

Contrary to our expectations and previous research findings, a “help” request did not cause an increase in response rates (see Table 3). In all three groups it resulted in higher breakoff rates: 10 percentage points higher among faculty (from 23.2 percent with a “monitoring” subject line to 33.2 percent with a “help” subject line, $p < 0.05$), 17.3 percentage points higher for administrative staff (from 47.9 percent to 65.2 percent, respectively, $p < 0.05$), and 4.2 percentage points higher though not statistically significant for students. More faculty members started the survey when the subject line requested help to improve university ($p < 0.05$), however, no significant differences were revealed in start rates among two other groups. Requesting help significantly decreased response rates among staff ($p < 0.05$), while no significant difference was found among faculty and students.

Estimated Survey Duration. No effect of estimated survey duration on response rates was detected in our experiment. In accordance with our expectations, a higher breakoff rate was found when the stated length was 10 min. compared to 20 min. among students

Table 3. Start, response, and breakoff rates by conditions and groups

	Students				Faculty				Staff			
	Sample Size	Start rate	RR1	Breakoff rate	Sample Size	Start rate	RR1	Breakoff rate	Sample Size	Start rate	RR1	Breakoff rate
Subject line	2960	10.8% (320)	9.4% (279)	12.8% (41)	1461	12.1%* (177)	9.3% (136)	23.2%* (41)	507	18.5% (94)	9.7%* (49)	47.9%* (45)
Help	2978	11.2% (325)	9.3% (278)	17.0% (57)	1437	14.7%* (211)	9.8% (141)	33.2%* (70)	499	18.4% (92)	6.4%* (32)	65.2%* (60)
Survey length	2964	11.1% (330)	9.2% (273)	17.3%+ (57)	1463	14.0% (205)	10.0% (146)	28.8% (59)	502	19.9% (100)	8.4% (42)	58.0% (58)
20 min.	2974	10.9% (325)	9.5% (284)	12.6%+ (41)	1435	12.8% (183)	9.1% (131)	28.4% (52)	504	17.1% (86)	7.7% (39)	54.7% (47)
Invitation Short	2954	10.6% (312)	8.7%* (256)	17.9%* (56)	1451	15.0%** (218)	10.2% (148)	32.1%+ (70)	499	13.8%*** (69)	7.0% (35)	49.3% (34)
length Long	2984	11.5% (343)	10.1%* (301)	12.2%* (42)	1447	11.7%** (170)	8.9% (129)	24.1%+ (41)	507	23.1%*** (117)	9.1% (46)	60.7% (71)

Chi-square test: ***p < 0.001, **p < 0.01, *p < 0.05, + p < 0.06.

(4.7 percentage points higher, $p < 0.06$). However, it did not affect response rates. No other impact of survey duration was revealed.

Invitation Length. A longer invitation text was more efficient in motivating administrative staff to start the survey ($p < 0.001$), however, a contrary effect was found among faculty where the long text decreased the start rate ($p < 0.01$). No effect on the start rate was found among students. Fewer breakoffs were revealed in the long text condition among students (5.7 percentage points fewer, $p < 0.05$) and faculty (8 percentage points fewer, $p < 0.05$). The lower breakoff rate among students who received the longer invitation resulted in a slightly but significantly higher response rate compared to the short invitation condition (1.3 percentage points more, $p < 0.05$), however, no effect on response rate was found among the two other groups.

Interaction Effects. As a next step, we analyzed the interaction effects between experimental factors. We performed a multinomial logit regression to predict completion status of the respondent (completed interview, breakoff, and unit nonresponse) based on the three design elements. The completed interview was selected as the baseline comparison group.

Interaction Effect between Subject Line and Estimated Survey Duration. We expected that requesting help in the subject line would decrease the risk of nonresponse and breaking off in the long survey duration treatment among three groups. No significant interaction effect in the short survey estimation was expected.

As expected, a “help” request in the subject line decreased the likelihood of nonresponse in the long estimated survey duration compared to the shorter estimation among students (see Table 4). Requesting help in the subject line and indicating longer survey duration decreased the odds of not responding by 0.70 among students ($p < 0.05$). No significant interaction effect between expected length and the subject line was revealed among the two other groups.

Interaction Effect between Invitation Length and Estimated Survey Duration. We hypothesized that the longer invitation would have a positive impact on response rates and a negative effect on breakoff rates in the long expected survey duration treatment. Contrary to expectations, longer text invitation increased the likelihood of nonresponse when invited to the survey with the expected duration length of 20 min. by 2.49 among staff ($p < 0.06$), and decreased the likelihood while inviting to the shorter estimated duration condition of 10 min. by 0.44 ($p < 0.05$). Moreover, sending a long invitation while invited to 20 min. survey increased the likelihood of breakoff by 3.47 ($p < 0.05$) among staff. No significant interaction effects between invitation length and expected survey duration was found among students and faculty.

Interaction Effect between Subject Line and Invitation Length. Requesting help in the subject line was expected to improve response rates and decrease breakoff rates in the short invitation condition, and no effect was expected in the longer invitation treatment. However,

Table 4. Multinomial logit regression predicting completion status (Odds Ratio)

	Students	Faculty	Staff
Nonresponse			
Help subject	1.202 (.936–1.544)	.920 (.718–1.179)	1.507 (.944–2.406)
20 min. survey length	1.152 (.900–1.476)	1.111 (.867–1.425)	.675 (.334–1.364)
Long invitation	.850 (.713–1.013)	1.189 (.927–1.525)	.441* (.225–.862)
Help subject x 20 min. survey length	.703* (.495–.998)		
Long invitation x 20 min. survey length			2.488+ (.971–6.376)
Breakoff			
Help subject	1.316 (.742–2.331)	1.649* (1.049–2.591)	2.049* (1.134–3.702)
20 min. survey length	.586 (.295–1.165)	.976 (.627–1.518)	.415 (.158–1.095)
Long invitation	.638* (.414–.984)	.671 (.427–1.055)	.885 (.383–2.047)
Help subject x 20 min. survey length	1.254 (.513–3.064)		
Long invitation x 20 min. survey length			3.474* (1.016–11.876)
–2 Log Likelihood	84.243	82.020	67.183
Chi-square	16.509* (df = 8)	19.715** (df = 6)	28.598*** (df = 8)

***p < 0.001, **p < 0.01, *p < 0.05, + p < 0.06.

95% confidence interval indicated in parentheses.

The reference category: completed interview.

no interaction effect between the subject line and the invitation length was found either in response, or in breakoff rates among three groups (not included in the model in Table 4).

Discussion

The results of our experiment show that the interactions between such design elements of the invitation letter as subject line, stated survey duration, and length of invitation might significantly influence the response and breakoff rates in Web surveys. Moreover, these effects differ by the groups being studied and their motivation. Though these effects are quite moderate, we suggest that our findings could help to understand what interactions improve response rates in Web surveys.

We did not find that a “help” request in the subject line increases response and decreases breakoff rates. On the contrary, it increased breakoff rates and decreased response rates. Some previous experiments showed that requesting assistance in the email body rather than in the subject line has a positive impact on response rates (Porter and Whitcomb, 2003; 2005). However, we even found a backfire effect that requesting

assistance to “make University better” in the subject line demotivated administrative staff to participate in the survey. It seems that e-mail invitations should be tailored for each group separately to increase response rates in Web surveys. We also suggest that indicating research target group in the subject line like “Monitoring student life” or “Monitoring faculty” makes it clear for the potential respondents who are expected to fill out the questionnaire. It is reasonable to hypothesize that a “help” request might increase response rates if it contains the research object and covers some benefits relevant for the respondents (e.g., “Help to make staff life easier at HSE” “Help to make student life more interesting at HSE”). However, this is a hypothesis which should be tested in future experiments.

We found rather limited support for the expectation that short estimated duration results in higher start rate, but lower breakoff rates compared to long estimate. Longer estimated duration decreased breakoff rate among students ($p < 0.06$), however, no other effects were revealed. Nevertheless, we demonstrated the interaction effects between expected survey length and the two other design elements – subject line and length of the invitation letter. As expected, requesting help had a positive effect on response rates in the longer expected survey duration condition among students and no significant effect in the shorter expected survey duration condition.

A longer invitation resulted in lower breakoff rates among students and faculty, and slightly higher response rate among students. In line with the results of Kaplowitz et al. (2012), we found support for the hypothesis that a longer invitation text might increase motivation to complete the survey. However, we found that a longer invitation can also have a negative impact. For instance, longer text significantly decreased start rate among faculty. Moreover, the long invitation text to the survey with the stated duration length of 20 min. decreased response rate and increased breakoff rate among staff. Though we hypothesized that a long invitation would be more efficient when respondents are invited to the longer survey, it might produce an opposite effect when a long text invitation to 20 min. questionnaire increases the perception of survey length and perception of burden, which has a negative effect on the likelihood of responding. At the same time, the long invitation text to the shorter expected survey duration (10 min.) significantly improved motivation to fill out the questionnaire among administrative staff. We suggest that this finding may be practically important, since our experiment shows that indicating shorter expected survey duration and describing the goals of the survey in more details in the invitation may increase the willingness to fill out the questionnaire. No interaction effect between subject line and invitation length was found in the experiment.

Some limitations of our experimental design and data collection method should also be mentioned. First, our finding concerning the limited effect of the promised survey duration might be induced by differences in questionnaires and factual completion time among three different groups – students, faculty, and administrative staff. Second, different texts of the invitation letters to these three groups might also result in different effect of the invitation length on response and breakoff rates. Third, since we focused our analysis on early starters, or those respondents who started the survey prior to receiving reminders, this might have limited generalizability to those participants who receive reminders to complete the survey. Finally, there might be some ethical issues concerning the experiment when a researcher underestimates the survey length. We should be

cautious about providing wrong information for the respondents. Still, we suggest that the results show the advantages of exploring both the main and interaction effects between design elements in Web surveys.

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Note

1. The difference between early and late respondents in Internet-based surveys has not been yet studied systematically, but late respondents could be reasonably expected to react negatively to longer questionnaires (Vink and Boomsma, 2008) and report less accurately (Cannell and Fowler, 1963) than the early ones. Though some evidence also exists that “reluctant respondents are not necessarily poorer reporters than early respondents” (Yan et al., 2004), we decided to focus our analysis on early respondents whose motivation to cooperate was not affected by any form of direct administrative pressure.

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