Web surveying academics
in six European countries

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Abstract

The WWW is increasingly used as a tool and platform for survey research. Several principles have been developed to deal with the new challenges posed to researchers conducting online surveys. In this paper, we discuss some of the challenges we encountered in all phases of our Web based survey conducted in 2004/2005 among nearly 10,000 respondents in six European countries. We argue how and to what extent we applied the principles and methodologies of online surveys to meet the challenges, ranging from composing sampling frames, questionnaire construction, addressing potential respondents, questionnaire distribution, response rate improvement, to data cleaning and data processing. When relevant, we discuss the differences between the six countries involved. It is concluded that many if not most of the problems encountered in online surveys are solved when taking into account the principles that guide the conduct of conventional surveys.

Keywords: web survey, methodology, organizational commitment study

Introduction

The Internet is increasingly used as a tool for social science research. Social scientists may see themselves confronted with the question whether they need to develop new social science research methods in order to enter the 'Internet arena'. With respect to this issue, at least three positions can be distinguished, ranging from the idea that Internet research is 'business as usual' to 'the urgent need for entire new methods' (see Van Selm and Jankowski, 2006).

This paper will focus on the Word Wide Web (WWW) as a tool for conducting survey research. A main reason why communication scholars conduct Web surveys is the object of study. Web surveys are often employed to reach a population with Internet experience. As the proportion

of Internet users among many general populations may still be relatively small, securing a (random) sample by postal addresses or telephone numbers would generate a considerable number of respondents who do not have access to the Internet (see Kay and Johnson, 1999). In addition, particular characteristics of the population may also be a reason for conducting a Web survey. Some populations only exist by virtue of the Internet, meaning that they are only traceable by means of this medium. Examples are members of discussion forums or MUDS, visitors of chat rooms, and virtual communities of gamers. Other Web environments serve as a meeting place for persons with similar hobbies, experiences, and lifestyles.

In the field of communication science, Web surveys and Web survey embedded experiments have been conducted, amongst other things, to examine priming effects of news stories (Cho, De Zuniga, and Shah, 2006), how public relations practitioners and journalists perceive source-reporter relationships (Shin and Cameron, 2005), how online journalists make use of several added values of the Internet (Paulussen, 2004), and how Web bloggers perceive issues of privacy and liability (Viegas, 2005).

In addition, considerable Web survey work has been done in the field of marketing research (Ilieva, Baron and Healy, 2002; http://www.researchinfo.com/docs/software/index.cfm, http://perseus.com/survey/software/index.html), and in the field of social science research methods methodology. Web survey experiments have been conducted in order to focus on methodological issues such as questionnaire design (Tourangeau, Couper, and Conrad, 2004), use of visual analog scales (Couper et al., 2006), response rates (Heerwegh, 2005; 2006; Heerwegh et al., 2005; Trouteaud, 2004), data quality (Denscombe, 2006; Heerwegh et al., 2005), and comparisons between different modes of survey, such as telephone versus Web (Fricker et al., 2005). In general, these studies show both the usefulness of traditional ways of conduct in survey research, and the development of principles and tools to deal with new challenges posed to researchers conducting Internet research.

It is interesting and useful to examine how, and to what extent methodological guidelines become 'research logic in use' when applied to an Internet environment. The purpose of this paper is to evaluate our Web based survey on organizational commitment among European university employees (hereafter OC-study) from an Internet methodology perspective, in order to contribute to the further development of Internet survey principles and tools. A multitude of methodological issues that researchers have to consider when conducting a Web based survey are reviewed and illustrated with examples from the OC-study. When relevant, the differences between the six European countries involved are discussed.

Section 1 discusses the reasons and purposes of the OC-study. In Section 2, we consider our reasons for conducting a Web based survey, and Section 3 discusses the sampling for our study. In Section 4, attention is paid to the construction and design of the questionnaire, and the process of data collection is discussed in Section 5. Sections 6 and 7 are concerned with response rates and processing of data, respectively. The paper ends with a discussion in Section 8.

The OC-study

The purpose of the OC-study is to examine the factors that influence the organizational commitment of university employees (academic, administrative, and supportive staff) in various managerial contexts, as organizational commitment has proven to be crucial for increasing quality of performances. The factors that potentially affect organizational commitment are Human Resource Management (HRM) practices and various individual social and structural antecedents. In our study we paid attention, among other things, to how HRM practices of communication and social interactions may influence the level of organizational commitment. For instance, we focused on whether the respondents perceive that they are adequately informed about what is going on in their faculty, and about changes that affect their jobs. Furthermore, we were interested in whether informal contacts with colleagues and the respondents' feelings about being part of the department or faculty affected their levels of organizational commitment.

Since the early 1980s, several social, economic, and political changes have taken place in the context of European universities. The accompanying accountability demands for efficient and effective quality improvement have reinforced the trend in academic institutions to adopt organizational forms, technologies, management instruments, and values that are commonly found in the private business sector (Deem, 1998). At the same time, such managerial values and practices are at right angles to the more professional values and practices that are generally held within universities (Salter and Tapper, 2002; Townley, 1997). There is a vast amount of studies suggesting that the contradiction between managerial and professional values leads to unintended behavior among individual academic employees, such as lower organizational commitment (Boyer et al., 1994; Bryson, 2004; Deem, 1998; Prichard and Willmott, 1997; Ylijoki, 2003). Concurrently, a high level of organizational commitment has proven to be valuable for the realization of higher quality performances (Iles et al., 1990; Lee, 1971; Meyer et al., 1989; Mowday et al., 1982; Peters and Waterman, 1982; Porter, 1985). Therefore, some authors claim that the managerialism works against its own intentions

(e. g., Bryson, 2004; Chan, 2001; Thornhill et al., 1996; Trow, 1994). This situation is called the 'managerialism contradiction' (Smeenk et al., 2006).

The OC-study investigates whether organizational commitment and quality of performances of university employees are higher in less managerial contexts and lower in more managerial faculties, *and* whether the relationship between organizational commitment and quality of performances varies across different managerial contexts. In short, we want to examine the predictors (HRM practices and antecedents) and consequences (quality of performances) of organizational commitment in different managerial settings.

The OC-study draws on a Web survey conducted among 9,944 university employees (recruited from 36 faculties and 18 universities; two faculties per university) in six European countries in the autumn/winter of 2004−2005. As we wanted different managerial contexts that were reasonably comparable, we chose six West European countries that are much alike from a social-economic perspective.

Our reasons for conducting a Web based survey

There are many reasons why researchers decide to conduct a Web based survey. In their methods review, Van Selm and Jankowski (2006) enumerate several of them, such as coverage, anonymity on behalf of the respondents, cost saving, efficiency, Internet usage as object of study, and purposive samples of self-organized Internet groups. The latter two reasons do not apply to our study. Moreover, the nature of our web survey makes it impossible to guarantee anonymity to the respondents, as we were able to link the email addresses to the respondent's answers. We therefore chose to guarantee them confidentiality of information in the sense of not disclosing individual responses. Our main reasons for conducting a Web based survey are thus related to coverage, costs, and efficiency.

With respect to *coverage*, we consider the Internet as a suitable tool for reaching a population of university staff. Our population is distributed across a relatively large geographic area, but is generally provided with access to the WWW. However, we experienced that the supportive staff were fairly underrepresented in our sample, as compared to their proportions in the population. As the survey was aimed at all university employees (academic, administrative, and supportive staff), it might be that not all supportive staff, which are categorized under the header of 'other staff', perform 'white collar' tasks such as operating a computer. In other words, not all university employees, in particular the supportive staff, could be reached by the Internet. It would probably have been wise

to approach this less Internet 'savvy' part of the population by means of a paper version of the questionnaire from the start.

A second reason for us to conduct the survey across the Internet was that it is *less expensive* than other modes of data collection such as face-to-face interviewing, mail, and telephone surveys. Because we lacked detailed expertise in the technical construction and programming of a Web based survey, we used an application called Netquestionnaires to design our questionnaire. The use of the application cost about € 6,000, excluding the time we spent on constructing and conducting the survey, which will be discussed next. Considering the number of respondents (n = 2,315) in six countries, this was quite a cheap way of surveying as compared to telephone and postal surveys.

Finally, we figured that data collection via the Internet would be extra *efficient*. As the activities such as checking for double email addresses, handling the bulk of emails that we received after sending the invitation emails, and replacing invalid email addresses still had to be done (comparable to telephone and postal surveys), the efficiency was gained in the phases of data entry and data cleaning. After all, all the answers of the respondents were automatically recorded in a SPSS-database. After completing the fieldwork, the file from the Netquestionnaires server was simply downloaded onto our computers. As there was no need for data entry and hardly any need for data cleaning (see also Section 7), we could almost immediately start analyzing the data. We acknowledge that computer assisted personal or telephone interviewing (i. e., CAPI, CATI) usually also require little data cleaning; an activity that may be very time consuming when using traditional paper and pencil methods.

Sampling

In our OC-study, we wanted to examine whether the predictors of organizational commitment (such as communication and social interactions), the organizational commitment itself, the quality of performances, and the relationships between these variables vary among different managerial contexts. Therefore, we included 36 faculties of eighteen universities from six European countries.

As we wanted different managerial settings that were reasonably comparable in socio-economic terms, we chose six countries that are all located in Western Europe, that are socially and economically more or less equally developed, and in which knowledge of the English language is generally rather high (as we used a questionnaire formulated in the English language only, see also Section 4). Within these countries, we selected all universities that have both a business or management faculty and a social sciences faculty or equivalents thereof. We chose two gamma

Table 1. *Countries and faculties included in the sample.*

Manageralism	Country	Universities (Uni) and faculties (Fac)
Low managerialism	Germany	− Frankfurt Uni; Fac of Economics and Business Administration − Frankfurt Uni; Fac of Social Sciences − Uni of Bremen; Fac of Business Studies and Economics − Uni of Bremen; Fac of Social Sciences − Uni of Magdeburg; Fac of Economics and Management − Uni of Magdeburg; Fac for Humanities, Social Sciences and Education
	Belgium	− Ghent Uni; Fac of Economics and Business Administration − Ghent Uni; Fac of Political and Social Sciences − Uni of Antwerp; Fac of Applied Economics − Uni of Antwerp; Fac of Political and Social Sciences − Uni of Leuven; Fac of Economics and Applied Economics − Uni of Leuven; Fac of Social Sciences
	Netherlands	− Free Uni Amsterdam; Fac of Economics and Business Administration − Free Uni Amsterdam; Fac of Social Sciences − Uni of Amsterdam; Fac of Economics and Econometrics − Uni of Amsterdam; Fac of Social and Behavioural Sciences − Uni of Groningen; Fac of Management and Organisation − Uni of Groningen; Fac of Behavioural and Social Sciences
	Finland	− Jyväskylä Uni; School of Business and Economics − Jyväskylä Uni; Fac of Social Sciences − Uni of Oulu; Fac of Economics and Business Administration − Uni of Oulu; Fac of Humanities − Uni of Tampere; Fac of Economics and Administration − Uni of Tampere; Fac of Social Sciences
	Sweden	− Göteborg Uni; School of Business, Economics and Law − Göteborg Uni; Fac of Social Sciences − Uppsala Uni; Fac of Social Sciences (Economic part)

Table 1. *(continued)*

Manageralism	Country	Universities (Uni) and faculties (Fac)
	Sweden	− Uppsala Uni; Fac of Social Sciences (Social part) − Växjö Uni; School of Management and Economics − Växjö Uni; School of Social Sciences
High managerialism	Great Britain	− Cardiff Uni; Business School − Cardiff Uni; School of Social Sciences − Uni of Edinburgh; Management School and Economics − Uni of Edinburgh; School of Social and Political Studies − Uni of East Anglia; School of Management − Uni of East Anglia; School of Economic and Social Studies*

* nonexistent anymore under this name

faculties as we wanted different managerial contexts that are reasonably comparable at the same time. After all, the levels of managerialism do not only differ among countries, but also within countries, and even within universities. Subsequently, we randomly picked three universities (and consequently six faculties) per country and searched for the email addresses of their employees on the Internet. Table 1 lists the countries and faculties.

Our sample from the population of university employees in business/ management and social sciences faculties in Western Europe thus consists of employees of 36 selected faculties of eighteen universities in six European countries[1]. Because our potential respondents are all listed on the university websites, including their email addresses (see Section 5), we were able to determine the response rate. The latter is rather problematic in many Web surveys available on the WWW because a central registration of WWW users is lacking (Van Selm and Jankowski, 2006) and the reliability of measures of Website visits is typically poor.

Design of the questionnaire

In line with a middle position in the debate about the necessity of entire new methods for the conduct of social science research in the Internet arena, questionnaire design in Web surveys should follow the principles that guide the design of conventional survey questionnaires. A good questionnaire design which is tailored to the interests and style of the target audience may increase response rates. Following Swoboda et al.

(1997) we tried to keep the questionnaire as short and simple as possible. Looking at ourselves as examples, we figured that academic employees would generally not be very attracted by or even disgusted by clashing titles, flashing pictures, and strange fonts. These frills could only slow down the speed of site appearance, especially on older computers with less storage capacity, and consequently reduce the response rate. Moreover, Dillman et al. (1998) found that a plain questionnaire provides better results in terms of response rate, completeness, and completion time than a fancy version of the same questionnaire.

Therefore, we used standard black fonts on a white background solely watermarked with the logo of the Radboud University. Modest red textual logos decorated the top and the bottom of the site, while the sub questions in a matrix form used alternating white and pale grey backgrounds. As Couper et al. (2001) found that the presence of a progress indicator reduces respondent loss, we added a red-colored indicator. It should be noted that recently published studies on progress indicators seem to argue against its use in that calibration of the indicator may in some cases increase dropout (e. g., Conrad et al., 2004).

Furthermore, we used multiple item screens and employed radio buttons where possible, because they are found to result in faster completion times and less missing items (Couper et al., 2001). We used one routing: When respondents indicated that their position was 'support and administrative staff' or 'student assistant', they did not have to answer questions about the numbers of articles, books, and presentations they have published or given since 1 January 2002. As an example, Figure 1 presents one of the pages of the questionnaire.

We believe that a simple and neutral design is most effective in being culturally independent, which is a requirement for international research. In addition, in the most ideal case, the questionnaire of an international research is available in all languages of the countries involved, and a respondent can choose his or her language of preference. Internet technology is supportive of offering these multiple options. However, for practical and time pressure reasons, we did not make a version per country because we expected the respondents in the six countries to have enough command of the English language to correctly understand our questionnaire, especially because they are university employees. A consequence of only using an English version of the questionnaire is that we surely missed some answers from employees whose command of the English language was insufficient (especially from the supportive staff members who are generally less educated than their academic counterparts). The lesson we learned from this is that it is important to pay attention to sample subgroups in an effort to approach different segments of the sample with different methods if necessary. However, it
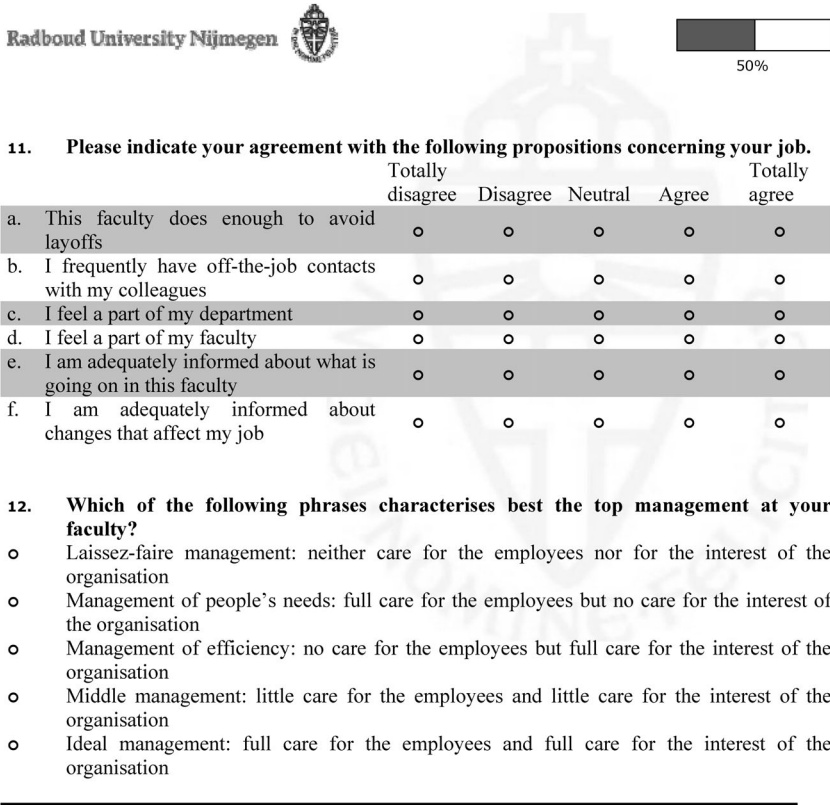
Radboud University Nijmegen

50%

11. **Please indicate your agreement with the following propositions concerning your job.**

		Totally disagree	Disagree	Neutral	Agree	Totally agree
a.	This faculty does enough to avoid layoffs	o	o	o	o	o
b.	I frequently have off-the-job contacts with my colleagues	o	o	o	o	o
c.	I feel a part of my department	o	o	o	o	o
d.	I feel a part of my faculty	o	o	o	o	o
e.	I am adequately informed about what is going on in this faculty	o	o	o	o	o
f.	I am adequately informed about changes that affect my job	o	o	o	o	o

12. **Which of the following phrases characterises best the top management at your faculty?**
- o Laissez-faire management: neither care for the employees nor for the interest of the organisation
- o Management of people's needs: full care for the employees but no care for the interest of the organisation
- o Management of efficiency: no care for the employees but full care for the interest of the organisation
- o Middle management: little care for the employees and little care for the interest of the organisation
- o Ideal management: full care for the employees and full care for the interest of the organisation

Figure 1. *Questionnaire design.*

might be speculated that this loss of response is at least partly compensated by the response generated by foreign employees that do not sufficiently speak or understand the host university's language, but who do speak and understand the English language. We have no empirical data to support this speculation, however. Another possible consequence of an international questionnaire formulated only in English was that the response rate among the French (who might have had some more difficulties with a questionnaire in English) was only about 5 %. Therefore, we excluded France from our analysis and continued with the six remaining countries.

As Sheehan and McMillan (1999) suggest that the longer the questionnaire, the less likely people will respond, we deleted equivalent and irrelevant items. However, because we applied (tested and common-used) vali-

dated scales to measure most of the concepts, we were careful in altering the scale formats, anchors, and scale values in order to preserve the original scale characteristics. To control for the potential effects of common method variance (Podsakoff et al., 2003), we applied different response formats for the measurement of the HRM practices (single choice question, numerical entry, five-point Likert scale), the antecedents (single choice with and without optional text-response, date, and numerical entry, five-point Likert scale), organizational commitment (five-point Likert scale), and quality of performances (five-point Likert scale and numerical entry).

The questionnaire was pre-tested in the summer of 2004 through a pilot survey held in two faculties (a business and management faculty and a social sciences faculty) of the same university. This led to some adaptations as to the formulation and sequence of the questions.

Data collection

In the autumn/winter of 2004−2005 (1 November 2004 to 31 January 2005), we addressed all potential respondents by means of an introductory email with a personal WWW hyperlink of the questionnaire to the respondents. We assured confidentiality by informing the respondents that their email addresses were to be unlinked from the survey responses after completion of the fieldwork. At the end of the questionnaire, we asked the respondents to comment on the questionnaire. This feedback illustrates some of the problems encountered by the respondents as a result of which other respondents may have decided to ignore or quit the questionnaire. Table 2 shows the distribution of comments over the six sample countries. Remarkable is the relatively high percentage regarding the problems due to faculty/country context in Germany. Examination of the individual German comments revealed that the university structure in Germany is different than was assumed in the questionnaire. Other percentages that are relatively high are the 9.7 % in Finland and the 8.1 % in Great Britain mentioning that the questionnaire misses an aspect. The individual comments indicate that the difference in focus between commitment to the faculty and commitment to the department is considered to be not optimally addressed in our questionnaire.

We encountered two technical problems during the data collection. First, some respondents were not able to open the link in the invitation email. As we could not send them a new link (each respondent had a personal link representing a unique access code), we advised them either to keep pushed the CTRL-button while clicking, or to copy the link and to paste it into the address bar. We received no reaction that the link still did not work, but we did receive emails in which respondents re-

Table 2. *Distribution of comments per country.**

	BE N = 488	FI N = 185	GE N = 188	NL N = 882	SW N = 449	GB N = 123	Total N = 2315
Interesting/good/good luck	1.6%	4.3%	4.3%	2.0%	3.1%	3.3%	2.3%
Technical problems	0.6%	0.5%	0.0%	0.0%	0.0%	0.0%	0.2%
Problems due to personal context	1.2%	0.5%	1.6%	1.2%	3.3%	2.4%	1.6%
Problems due to faculty/country context	0.2%	0.0%	7.4%	0.5%	0.7%	0.8%	1.0%
Question(s) not relevant	1.6%	1.6%	0.5%	1.7%	0.0%	0.0%	1.2%
Covering problems	3.1%	9.7%	3.7%	4.8%	3.6%	8.1%	4.7%
Problems due to formulation/English	2.5%	1.6%	1.6%	3.2%	2.7%	3.3%	2.7%
Questionnaire takes longer to fill in	0.2%	1.1%	1.6%	0.7%	0.9%	0.0%	0.7%
Total (n)	54	36	39	122	65	22	338

*Including respondents with no comments the column percentages sum to 100.

Table 3. *Questionnaire completion time.**

	BE N = 362	FI N = 145	GE N = 136	NL N = 664	SW N = 354	GB N = 95	Total N = 1756
Mean time	15.15	21.20	18.46	17.48	17.19	15.06	17.24
Standard deviation	11.27	17.33	14.02	15.53	15.52	14.44	15.05

*Completion time for participants who completed the questionnaire in a single session.

ported the successful opening of the link. Secondly, after sending the invitation emails to the respondents in the first two countries (France and Great Britain) some respondents replied to us that the email was completely 'distorted'. After contacting the application administrator, it appeared that, depending on the operating system of the respondent, the Netquestionnaires application did not support MS Word lay out. This resulted in unreadable and incomprehensible mails resembling spam or virus-carrying mails. It would have been wise to plan a more extensive phase of testing at this point. In order to find out how many respondents had received a distorted email, we sent an email to 24 randomly selected respondents from each of the two countries in which we explained our problem and asked whether they had received our email correctly. It appeared that five respondents (10 %) had received the email correctly, while one person (2 %) had received a distorted email (42 respondents did not reply, that is 88 %). These technical defects may have influenced the response rate in France and Great Britain in a negative way. Encouraging however, are the low percentages of technical problems encountered by respondents that received a well-working link.

Other problems respondents encountered when filling in the questionnaire were related to personal context (e. g., some respondents worked at two universities), faculty context (e. g., one faculty did not work with formal working equivalences), university context (e. g., the question on position did not cover all possibilities), or content (e. g., the questionnaire did not address the difference in commitment to faculty, department, and research group).

Additional problems encountered by respondents were related to the formulation of the questions. Some respondents thought the level of English was quite high, especially "if the study wants to cover all ranks of academic personnel" (respondent 31165), while others said that the English translation was mediocre. Some respondents found some questions unclear or difficult due to specific terminology which was considered too much oriented towards business life and management jargon. However, other respondents thought the study was more aimed at social sciences.

Finally, some respondents said the questionnaire took longer to fill in than the ten to twelve minutes that were suggested in the introduction. The mean time to complete the questionnaire in one session was seventeen minutes and 24 seconds with a standard deviation of fifteen minutes and five seconds. Hence the respondents may be correct in their comments, although we do not have any information about how efficient they were in filling in the questionnaire. Also note that the standard deviation is relatively large. In addition, we compared the completion time across the six countries. The results are displayed in Table 3.

Since we have no adequate figures for the completion time of multiple sessions, Table 3 only records the time for those who completed the questionnaire in a single session. The British respondents had the lowest completion time, which comes as no surprise as the questionnaire was in their native language. The Finnish respondents took the longest time to complete the questionnaire.

Response

In calculating the response rates (see Table 4), we firstly subtracted the 1,494 ineligible respondents from the total number of potential respondents ($n = 9,944$). From these 8,450 respondents, 2,315 respondents filled in the questionnaire. The useable response rate was thus 27.4 %, a figure that compares well with other studies using an online survey such as Kwak and Radler (2000) (27 %) and Medlin et al. (1999) (28 %).

To improve the response rate we applied various techniques. Firstly, we sent two reminders to non-respondents. The Netquestionnaires application recorded who had not yet responded, who had started but not completed, and who had completed the questionnaire. As the number of respondents increased considerably after sending the first and second reminders, the usefulness of reminders is demonstrated (see Table 5).

In addition, in some of the universities we had one or two contact persons (favorably one from the business/economy faculty and one from the social sciences faculty) who was familiar with, and supported the study. It seems that mentioning the contact person's name in the mail to the employees of the university improved the response rates, since the mean response rate from faculties or universities with a contact person is 26.5 %, while for those without a contact person is 21.8 % (calculated before deduction of ineligibles).

Furthermore, respondents were offered the possibility to receive a paper version of the questionnaire. This was intended to meet the preferences of the respondents. As few as nineteen paper versions were sent to respondents in all countries, twelve of which were returned (63 %).

We also offered the respondents the opportunity to fill in the questionnaire in multiple sessions so that they could tune the process of filling in to their own conveniences and needs. The mean number of sessions was 1.24 with a standard deviation of .94. Of all respondents, 91.3 % filled in the questionnaire in a single session, 0.9 % in two sessions, 5.0 % in three sessions, and the remaining 2.8 % of the respondents required more than three sessions. Table 6 gives an overview of the number of sessions in the different countries.

It appears from Table 6 that most of the respondents who used multiple sessions, completed the questionnaire in three stages. This find-

Table 4. *Response rates.*

	BE	FI	GE	NL	SW	GB	Total
Gross sample size (i.e., total number of email addresses)	1321	1047	1197	3177	2282	920	9944
Unknown eligibles [1]	38	86	106	357	166	96	849
Ineligibles [2]	59	57	115	245	86	93	645
Net sample size	1234	902	976	2575	2030	731	n = 8450
Number of respondents	488	185	188	882	449	123	n = 2315
Response rate	39.5%	20.5%	19.3%	34.3%	22.1%	16.8%	27.4%

[1] Unknown eligibles comprise: (a) not able to open the link to the questionnaire, and (b) undeliverable mail.
[2] Ineligibles comprise: (a) end of employment contract or retirement, (b) maternity leave, (c) long period absent or sabbatical leave, and (d) email is wrongly addressed.

Table 5. *Response behavior.*

	BE N = 488	FI N = 185	GE N = 188	NL N = 882	SW N = 449	GB N = 123
Day of opening	*11.9%*	*3.4%*	*19.4%*	*24.1%*	*33.1%*	*30.5%*
1 day after opening	33.1%	25.6%	21.3%	14.9%	1.6%	7.4%
2 days after opening	3.9%	3.4%	6.6%	5.1%	1.5%	8.4%
3 days after opening	1.7%	0.0%	2.2%	0.0%	6.7%	0.0%
4 days after opening	0.3%	0.7%	0.7%	0.6%	3.4%	1.1%
5 days after opening	0.0%	0.0%	0.0%	4.4%	2.9%	1.1%
6 days after opening	0.8%	2.1%	0.0%	3.9%	1.4%	0.0%
7 days after opening	0.6%	0.0%	2.2%	1.5%	0.5%	1.1%
8 days after opening	0.3%	0.7%	0.7%	0.8%	0.0%	0.0%
9 days after opening	0.8%	0.7%	0.7%	0.4%	0.0%	1.1%

10 days after opening	0.0%	0.3%	0.0%	0.7%	0.0%	0.0%
> 10 days after opening	1.1%	1.4%	2.1%	0.7%	0.7%	0.0%
Day of first reminder	*14.7%*	*24.0%*	*16.7%*	*18.4%*	*9.0%*	*16.0%*
1 day after first reminder	7.4%	4.0%	3.2%	5.1%	16.5%	1.9%
2 days after first reminder	0.0%	1.1%	1.5%	0.7%	1.4%	0.8%
3 days after first reminder	1.1%	7.4%	0.8%	1.5%	0.7%	0.3%
4 days after first reminder	0.0%	3.4%	0.3%	0.0%	0.0%	0.6%
5 days after first reminder	0.0%	1.2%	0.0%	0.0%	0.0%	0.3%
6 days after first reminder	0.0%	0.8%	0.3%	0.7%	2.1%	0.0%
7 days after first reminder	2.1%	0.0%	0.3%	0.7%	0.0%	2.5%
8 days after first reminder	0.0%	0.0%	0.1%	0.0%	0.0%	0.6%
9 days after first reminder	0.0%	0.0%	0.2%	0.7%	0.7%	0.0%
10 days after first reminder	0.0%	0.9%	0.1%	0.0%	0.0%	0.0%
> 10 days after first reminder	1.1%	4.2%	0.2%	0.0%	0.7%	0.6%
Day of second reminder	*11.6%*	n.a.[1]	*11.0%*	*7.4%*	*24.1%*	*13.0%*
1 day after second reminder	2.1%	n.a.	1.3%	3.7%	1.4%	5.2%
2 days after second reminder	2.1%	n.a.	1.4%	1.5%	2.1%	0.8%
3 days after second reminder	1.1%	n.a.	0.9%	0.0%	0.7%	0.3%
4 days after second reminder	0.0%	n.a.	0.3%	0.0%	0.0%	0.0%
5 days after second reminder	0.0%	n.a.	0.0%	0.7%	0.7%	0.6%
6 days after second reminder	0.0%	n.a.	0.0%	0.0%	0.0%	0.6%
7 days after second reminder	1.1%	n.a.	0.1%	0.0%	0.0%	0.6%
8 days after second reminder	1.1%	n.a.	1.7%	0.0%	0.7%	0.6%
9 days after second reminder	1.1%	n.a.	0.3%	0.0%	0.7%	0.3%
10 days after second reminder	0.0%	n.a.	0.3%	0.0%	0.0%	0.0%
> 10 days after second reminder	1.1%	n.a.	1.2%	2.2%	0.7%	0.6%
Total	100%	100%	100%	100%	100%	100%

[1] n.a. = not applicable. Due to the negative responses to the first reminder in Sweden, we decided not to sent a second reminder to the Swedish respondents

Table 6. *Number of sessions to complete the questionnaire.*

Number of sessions	BE N = 488	FI N = 185	GE N = 188	NL N = 882	SW N = 449	GB N = 123	Total N = 2315
1	90.0%	92.0%	88.4%	91.7%	94.5%	91.1%	91.6%
2	0.8%	1.1%	0.0%	0.6%	0.9%	1.6%	0.7%
3	6.3%	4.8%	5.8%	5.2%	3.3%	5.6%	5.1%
4	0.6%	0.5%	3.2%	0.6%	0.0%	0.8%	0.7%
5	1.4%	1.1%	1.1%	1.0%	0.9%	0.8%	1.1%
6	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%
7	0.4%	0.5%	1.6%	0.3%	0.0%	0.0%	0.4%
9	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.1%
11	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
13	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
Total	100%	100%	100%	100%	100%	100%	100%

ing applies to participants from all countries in the sample. A small number of respondents used as many as seven sessions to complete the questionnaire and some of the Dutch respondents took even more (up to thirteen).

Finally, as gratitude to their assistance and another way to potentially increase the response rate, we raffled off 25 coupons of € 40 (or equivalent for the Swedish and British respondents) among those who completed the questionnaire. All winners received mails in which they were notified that they had won € 40 (or equivalent). They were asked to reply with their details necessary for transferring the money. However, even after two reminders, some winners did not reply to our mails. As many mailboxes are overwhelmed by spam mails indicating a winning notification promising the most fantastic prizes, it might be that some of the non-repliers perceived our mails as spam. It would have been wise to choose a subject line in our notification that would generate more confidence amongst its receivers. Table 7 demonstrates the number of winners per country, and the number of winners that responded to our winning mail.

Table 7. *Number of winners.*

	BE N = 488	FI N = 185	GE N = 188	NL N = 882	SW N = 449	GB N = 123	Total N = 2315
Number of winners	6	4	4	6	5	0	25
Number of winners interested in prize	4	1	3	5	3	0	16

As can be seen, sixteen of the 25 winners responded to our winning mail. Not surprisingly, the Dutch winners responded in largest numbers to the mail. After all, the study was conducted by researchers from a Dutch university. The Finnish winners were most reserved; only one out of four winners appeared to be interested in the prize. It is merely bad luck, that none of the British respondents won a prize.

Processing data

By using a Web based survey, the answers to the OC-study questionnaire were directly coded and entered into an electronic file. Hence there was no need for a separate phase of data entry. Further, when a respondent entered, dropped out, or completed the survey, a cookie was put on his or her computer. This prevented respondents to fill in our survey more than once and it was therefore not necessary to detect multiple question-naire completion. Cookies are files installed on a respondent's computer system when a Web site is visited. When a respondent completes a sur-vey, a cookie is placed on the computer, and when the person tries to respond to the same survey again, the system recognizes the cookie and restricts access. Although seemingly an ideal solution to double re-sponses, Internet browsers can be programmed in such a manner to prevent cookies from being placed on a computer. Respondents who restrict placement of such cookies on their computers are thus excluded from the survey, which in turn introduces a new source of non-response.

In addition, because we mostly used point-and-click response formats and pre-set ranges for open-ended questions (for example, year of start working could not be earlier than 1925 or later than 2004 because emeriti professors have no standard retirement age), we did not have to clean the data in this respect. Finally, in the Netquestionnaires application it was possible to require completion of questions before allowing respon-dents to proceed. This may lead to more complete data with less missing values. In other words, it increases response quality at the expense of the response rate, as it may also have irritated respondents leading to drop-outs. We therefore did not require completion of any of the ques-tions in the OC-study.

Discussion

The purpose of this contribution was to evaluate our Web survey among European university employees from an Internet methodology perspec-tive. We started from the idea that most problems encountered when transferring survey research to an internet arena are addressed by taking into account principles and steps of conventional surveys. In addition,

new features offered by the Internet technology disclosed aspects of the performance of methodological principles in the six European countries. These included the effectiveness of sending first and second reminders by email, the variation in number of sessions to complete the survey, and in the successfulness of the incentive, here the lottery. In order to take advantage of these possibilities, researchers need to anticipate in advance on how to incorporate these data into their analyses. This may add even more value to the Internet as a survey research tool in an academic environment.

Note

1. To investigate the representativeness of the sample, we examined whether the respondents differed from the general population of university employees in the six sample countries using χ^2 goodness-of-fit tests for the variables gender, age, and position. The overall gender distribution across the six countries did not differ significantly from the population's gender distribution. In all sample countries the age and position distributions deviated significantly from the population's age distributions. The deviations between the sample and population data may be explained by differences in level of distribution (university versus faculty), differences in ways of recording (in persons versus in full time equivalences), and sampling bias (attracting respondents who are familiar with computers but keeping away those who are not).

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