

# **RECSM**

Research and Expertise Centre for Survey Methodology

## **Do online access panels really need to allow and adapt surveys to mobile devices?**

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**Abstract:**

Researchers are more and more interested in the possibility of using mobile web for completing surveys, because they have observed that some respondents already try to complete web surveys via mobile devices, even when this is unintended. However, there is only little evidence of how large is the need for mobile surveys nowadays (in general and, mostly, in different countries) and what is the potentiality of using mobile web in survey completion. This lack of knowledge is even more important in the frame of commercial panels that do not provide mobile devices to people if they do not have them at their disposal yet. In this chapter, data from the Netquest online panel, collected in a wide set of countries (Spain, Portugal and Latin American countries), are used in order to evaluate what is the current need to offer web panellists the option of taking part in surveys via mobile devices. Revilla et al. (2014) studied the spread of smartphones and tablets among the Netquest panellists and examine to which kind of devices people have prevalently access to. However, they show that a large proportion of panellists have access to several devices (PC and mobile). Therefore, their participation through mobile to a survey not only depends on the access but also on their preferences. Thus, we go one step further and we evaluate how common is the use of mobile devices in current Netquest surveys. Next, we look at the willingness of the panellists to participate in surveys specifically adapted to mobile devices. Finally, we compare the propensity of respondents to participate in a survey by computers rather than by mobile devices, when the choice between the two options is available. This overview of what is the current situation is a first important step in order to determine which strategies commercial online panels should develop in the future for the mobile devices surveys.

## 1. Introduction

Online surveys in the last years had become not only a generally recognized and substantial way to involve respondents, but also, by now, an increasingly unavoidable standard method for data collection (Couper, 2008a; Dillman, 2007). Moreover, with the recent spread of mobile access to the Internet, the use of mobile Internet for surveys is seen as a “natural extension of the present use of online surveys and of the trends towards self-administration and technology use in survey methodology [...] (Couper, 2008b)” (Fuchs and Busse, 2009, p. 22). This evolution generates a lot of research interest, proved by several papers and books about mobile use in survey research: among others, see Couper (2013), de Bruijne and Wijnant (2013), Callegaro (2010), Fuchs and Busse (2009), Fuchs (2008). In fact, the involvement in surveys of respondents that make use of the new mobile technologies highlights the need to study new methodology issues and challenges, as well as the new potentialities, advantages and drawbacks linked to this kind of access to the web and of survey participation.

The main advantages of mobile access underlined by previous research (e.g. Fuchs and Busse, 2009, Kreuter, Presser and Tourangeau, 2008; Yeager et al., 2011; de Bruijne and Wijnant, 2013; Bosnjak et al., 2008) are the following: all the pros of self-administered surveys (for example, the absence of the interviewer, that sometimes could increase the bias of collected data, e.g. when the survey includes sensitive topics), an a-synchronous mode of interview (Hancock, Thom-Santelli and Ritchie, 2004), the drop of survey's costs (if compared to traditional face-to-face or telephone surveys), the reduction of some sampling problems (a RDD-like random selection procedure can be used), the availability of tools such as text messaging to pre-notify the survey, a location-independent survey completion; moreover no significant differences were registered between mobile devices (i.e. smartphones and tablets, in the following of this paper) and PCs (i.e. both fixed-PCs and laptops, from here on) surveys in terms of evaluation of questionnaire difficulty, interest and enjoyment of the respondent (de Bruijne and Wijnant, 2013).

Thus, taking into consideration both the listed advantages and the increasing importance of the use of mobile devices, the necessity to understand whether traditional survey tools (such as the questionnaire) need to be adapted to the new devices emerges clearly. The different characteristics of the hardware (e.g., the size of the screen, or the use of mouse) used in participating to a web survey through tablets or smartphones (rather than by PCs) suggested that at least an adaptation of the survey tools to the new devices was extremely needed. A lot of researchers focused on this topic, comparing the new devices' characteristics with traditional web surveys' tools (Peytchev and Hill, 2010), studying how to adapt questionnaires to new devices (Boreham and Wijnant, 2013), or, more in general, evaluating the quality of data collected through mobile devices (Wells, Bailey and Link, 2014 and 2013; de Bruijne and Wijnant, 2013; Mavletova, 2013; Stapleton, 2013).

The amount of research developed to study how to adapt web surveys tools to the new mobile mode is linked to one of the main drawbacks of mobile web surveys: in planning a survey, some additional time is needed for adapting the survey tools to the mobile devices, if one wants (or needs) to involve respondents that also use these devices. Thus, even if, similarly to web surveys, the new mobile mode can be cost saving in comparison to

traditional survey modes, it asks for big investments (in terms of research time and money) to adapt web surveys' traditional tools to new mobile needs. The large number of different devices (and brands of devices) that can be used to participate to an online survey does not help at all in reducing these investments. Moreover, even if the device is the same (e.g., two smartphones), different answer's options can be available for the respondent (e.g. depending on the models; Maxl and Baumgartner, 2013 highlighted how much the typology of mobile devices can vary on a population of students of the Graz University). Nevertheless, the costs of mobile web surveys need still to be further studied.

In addition to this, the involvement of mobile access for survey participation is linked to other drawbacks highlighted by some authors (see, for example: de Bruijne and Wijnant, 2013; Peytchev and Hill, 2008; Zhang et al., 2008): usually low response rates are obtained with mobile mode (Fuchs and Busse, 2009; Bech and Kristensen, 2009)<sup>1</sup>; the currently expansive mobile subscription fares (if compared to landline costs) can discourage the use of mobile devices to participate to surveys (however these costs are gradually decreasing); the current lack of technological sophistication of some of the potential respondents that own a mobile device can limit the participation to surveys or can affect the quality of collected data (the importance of this phenomenon is also more and more reducing); the respondent's cognitive processing and comprehension of the questions can be affected by the location (Peytchev and Hill, 2010); the characteristics of mobile devices (e.g. size of the screen) can also cause some limitations (e.g., visibility, scrolling pages, zooming, breakoffs)<sup>2</sup>; in comparison to other traditional modes, a lower commitment of respondents is observed (and, consequently, respondents get increasingly fatigued and distracted, as the questionnaire progresses); the perceived and objective duration time for the survey completion is longer due to several reasons (more effort asked to respondents, lower loading speed of web pages, slower wi-fi connection, more difficult task handling; see de Bruijne and Wijnant, 2013); similarly to other survey modes, results of mobile surveys can be affected by coverage error and/or coverage bias, depending on the involved target population/ sample (Fuchs and Busse, 2009).

Summing up, it emerges clearly that the involvement of mobile access in web surveys is linked to important advantages, but also to not negligible drawbacks. Thus, on one hand, the development of mobile web access and the spread of mobile devices can provide researchers with a lot of new and mostly unexplored opportunities. On the other hand, this also generates a lot of new methodology issues to be faced and, moreover, it asks for bigger investments in terms of time and costs to plan and adapt surveys taking into account the new devices. Our main research question arises from here: seen the trade-off between pros and cons, is it worth

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<sup>1</sup> In particular, the authors attribute the low response rate mainly to one practical reason: many respondents directly log in to the survey questionnaire through the link included in the invitation email, that is mostly read on PC. This makes it difficult for respondents, even if they are asked to, to switch to another device. Nevertheless, to solve this issue, an invitation through a text message can be used, instead, since text messages are mostly read on mobile devices.

<sup>2</sup> Regarding the drawbacks linked to the main characteristics of mobile web surveys, further information can be found in the following papers: Bosnjak et al. (2013); Wells, Bailey and Link (2013); Buskirk and Andrus (2012); Guidry (2012); Callegaro (2010); Chae and Kim (2004); Couper et al. (2004); Jones, Buchanan and Thimbleby (2003); Watters, Duffy and Duffy (2003); Jones, et al. (1999).

it to face the bigger investments asked to adapt the surveys to the new mobile devices? In particular, in the framework of online panels, should panel agencies put more effort to take into account the “mobile web” population?

Currently, it is still not clear how important and how large is the real need for mobile web surveys, and if this need is felt similarly in different countries. Moreover, the potentialities of using mobile web in survey completion are still to be fully explored. Revilla et al. (2014) studied the access to mobile devices using data from the Netquest panel, an online access panel (non-probability based) that covers a wide set of countries: Spain, Portugal and five other Latin American countries (for further information, see [www.netquest.com](http://www.netquest.com)). In the seven considered countries, a large majority of panellists who own at least one mobile device was observed (80.6%). Therefore, the potential respondents by means of mobile devices are numerous, even more if we take into account panellists that do not own a device, but have access to it (for example, 16.3% of panellists that do not own a tablet has access to it; the same percentage for smartphones is 5.7%). Moreover, in the same study, the authors show that a large group of panellists (78%, at the average level) have access to more than one device (considering fixed PCs, laptops, tablets or smartphones), whereas only 20.3% of panellists own only one kind of device (and only 1.6% does not have a device at all). This means that, when they have to answer to a survey, panellists can choose between the different devices they have at their disposal to complete such a task. Thus, the need of adapting surveys to mobile devices is also linked to the preference of potential respondents for participating to surveys through mobile devices. If everybody would prefer to answer through a PC (fixed PC or laptop) even when they own a mobile device with Internet connection, then there would be no need to adapt surveys. The findings of Fuchs and Busse (2009) seem to confirm this suspect: analysing many countries, they concluded that it was “not clear yet whether the accessibility of potential respondents and the a-synchronous character of mobile web surveys actually translates into high response rates” (p. 31).

Therefore, in this paper, we go one step further, using again data from the Netquest access online panel: we study the current preferences for answering surveys through mobile devices within the agency’s panellists. In particular, we try to understand how much these preferences really translates to an actual choice towards mobile, and, thus, to a need for providing panellists with the possibility to answer web surveys by means of mobile devices. Our goal is to start filling in the gap due to the current lack of knowledge. Analysing the current situation, our main purpose is to provide access online panels with a more complete and detailed description that can be useful to define their future strategies about the role of mobile devices in their surveys.

In section 2, we review the literature about the preferences shown by potential respondents in filling online surveys through mobile devices, about the tolerance of panellists for these devices and for other kind of tasks (e.g. taking pictures or sharing GPS position), and about the impact of the involvement of unintended mobile respondents on the representativeness of a certain target population. In sections 3 new evidences are provided, analysing the panellists’ preferences for completing surveys using mobile or other devices. In section 4 we compare the characteristics of different groups of respondents, a preliminary step to evaluate the impact of the use of mobile devices on the representativeness of a certain survey. In section 5, we provide some elements of discussion and conclusions.

## 2. The need for mobile in online panels: literature review

The mobile Internet penetration increased from 7% of 2008 to 29% of 2013 and it is forecasted to overtake the fixed-broadband penetration in 2017 (Statista, 2014). According to Smart Insights (2014), the mobile usage currently represents 25% of the overall web usage, on a worldwide basis. StatCounter GlobalStats (2014) substantially confirms these findings, stating that the mobile web usage reached 29.8% in October 2014 (+25.5 percentage points, in comparison to January 2011). Due to the quick increase of the mobile Internet rate on the total traffic, Bruijne and Wijnant (2014) expect a likewise increase in access to online surveys using mobile. The growing importance of the new kind of access to the web (and the new kind of potential participation to a web survey) pushes the researchers to define a new kind of respondent, the “unintended mobile respondent”<sup>3</sup>. It is defined as a respondent that attempts to participate to a web surveys using mobile devices, when the survey is designed for PC and not adapted for mobile browsers (i.e., for smaller displays).

However one should bear in mind that owning or having access to a mobile device or to Internet does not mean using it. A Nielsen Mobile (2008) study shows that in 2008 in the US there were 95 million of mobile subscribers (37% of the total population) that paid to have an access to the mobile Internet, but that only 40 million subscribers (15,6%) were active users of mobile Internet services (using these at least once on monthly basis). An analogous situation is observed in other countries: in 2007 in Italy the access to the web was covering 34% of the population, but the mobile web usage rate was only 11.9%; in Spain this rate was also quite low (10.8%), if compared to the general Internet access (35%); in France the web usage rate was 9.6%, and in Germany it was 7.4%, even if the Internet access coverage was, respectively, 25% and 20% (Nielsen Mobile 2008). It is true that these differences between the two rates are becoming narrower, but it is also clear that not everyone who has access to mobile devices and/or to Internet, actually uses them to surf the web.

Moreover, actively using a mobile device does not automatically imply a willingness to use it for participating to surveys. Thus, to answer to our research question, we should study if the spread of both the Internet coverage and the mobile web access are also moving in the same direction as the use of mobile devices to answer surveys. Again: is it worth it to face the investments introduced in the introduction? Or respondents still prefer to participate to web surveys accessing the Internet by their PCs, even if they have a mobile device at their disposal?

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<sup>3</sup> Other synonymous are “unintended mobile respondents” (Wells, Bailey, and Link, 2013) and “unintentional mobile response” (Peterson, 2012). For more details about the phenomenon of “unintended mobile response”, see the two papers listed above.

## 2.1 Preferences

The willingness to participate to a web survey by mobile devices is not only a question of being a mobile user, but it is also strongly linked to other factors. Several authors, from Fuchs and Busse (2009) to Millar and Dillman (2012), studied the factors that could encourage the mobile responding process. They found that the lack of technological sophistication of potential respondents and the expensive payment plans established by telephone companies could discourage the participation to surveys by mobile devices. Statistics Netherlands (2012) confirms these findings: in the Netherlands about 40% of Internet users do not use mobile devices to access to the web because they are worried about the connection's costs. Also the Eurobarometer (2012) found that about 43% of mobile Internet users limit their access to the web mainly due to concerns about charges. Nevertheless, both phenomena of lacking technological sophistication and of high connection costs are recently losing their importance, and in this field of research there is currently a lack of practical experience.

On the other hand, some other factors that can influence the willingness to participate to a survey through mobile devices include: the enjoyment perceived by the respondents, the perceived trustworthiness, the behavioural attitudes, the self-congruity (Bosnjak, Metzger and Gräf, 2010), and the perceived enjoyment and usefulness (Verkasalo et al., 2010). In addition, the possibility to participate to surveys from any kind of location is generally considered very important. Nevertheless, at this regard de Bruijne and Wijnant (2013) in a panel's study found no significant difference between the percentages of people filling in a questionnaire at home by mobile devices rather than by PC. In fact, the majority of respondents participated at home, even if having a mobile device at their disposal. Moreover, a similar percentage of respondents in family settings was registered (32.7%), with no significant difference between mobile and PC web access.

Even if the new type of respondent (unintended mobile respondent) and the factors that push him/her to participate to web surveys through mobile devices have still to be studied in depth, it is clear, seen the increasing popularity of the new devices, that it is also more "necessary than ever to monitor how people access online surveys" (de Bruijne and Wijnant, 2014). Moreover, mobile web respondents are considered mostly progressive forerunners in adopting new technology, and, as technology matures, the mobile web penetration should rise fast, helping the spreading of the unintended mobile web response. So even if currently the phenomenon of (unintended) mobile respondents can be still considered in its early stage, we can expect that it will soon be impossible to neglect its impact.

Overall, the first findings about this topic show that the participation to surveys by mobile devices is indeed quickly increasing over the last years. In 2010, Callegaro analysed the rate of mobile responses in a customer satisfaction survey that involved some countries in Asia, North America and Europe: an increase from 1.2 to 2.6% was observed. Other authors confirmed that, in general, mobile involvement rates in surveys are increasing (see, for example, Toepoel and Lugtig, 2014). Nevertheless, studying the mobile response rate by means of a GESIS Pilot Panel, Poggio, Bosnjak and Weyandt (2013) noticed a non-significant growth between 2011 and 2012 (8 waves): the rate raised from 2.8 to 4.2%. Bruijne and Wijnant (2014) studied two online probability based panels in the Netherlands: the CentERpanel and the Longitudinal Internet Studies for the Social sciences (LISS). They found

a stable difference of about 7 percentage points between general mobile traffic (StatCounter; average of 6.3% increase) and mobile web response (LISS panel; average of 5.9% increase). Nevertheless, overall the majority of studies agree with the Toepoel and Lugtig (2014) findings: the participation to surveys by mobile devices is indeed quickly increasing over the last years. Just to make a further example, de Bruijne and Wijnant (2014) show that in the LISS panel the unintended mobile completion (i.e. completion of surveys by unintended respondents) of web questionnaires increased from 3.1% in March of 2012 (including 0.4% through smartphones and 2.6% through tablets) to 10.9% in September of 2013 (including 1.6% through smartphones and 9.3% through tablets). An analogous rise was observed considering the CentERpanel data: the same percentage increased from 3% to 16% between February 2012 and October 2013, mostly due to the introduction of new young panellists in the group. The authors also found that the growth of the unintended mobile access rate was mainly due to tablets, and not to smartphones. The reasons for this should be further studied: is it due to small screens of smartphones, rather to conditions more similar to the PC ones (sitting, stationary, etc.) with tablets?

Furthermore, the impact of unintended mobile response is even more relevant taking into consideration that the switch to mobile devices is not led by the researchers, but rather by the respondents themselves; in fact, this switch could be done without the researchers being aware of it, or, sometimes, without them even accepting it. More details about the unintended mobile respondents can be found in Peterson (2012) and Wells, Bailey and Link (2013).

Besides, looking at the unintended respondents, de Bruijne and Wijnant (2014) also used data from a survey where respondents were asked about their preferred device in order to complete several tasks. In this paper the authors, studying the CentERpanel data (year: 2012), compared the preferred devices of respondents to visit websites or to complete surveys. Among all interviewed, the fixed PC was largely preferred for both visiting websites (48%) and completing surveys (47%). The laptop was the second choice for both the first activity (39%) and the second one (36%). On the other hand, tablet and smartphone showed lower preferences: 11% of respondents declared to prefer tablets to visit website or complete survey (same percentages); whereas 1% and 2% of respondents showed a preference for smartphones to, respectively, visit websites and complete surveys. These figures seem to show that the preferences for participating to surveys by mobile devices are currently quite low: the favourite devices are still PCs, but in our opinion there are several other problems and issues connected with this topic that need to be clarified.

First of all, in several studies a not negligible group of respondents already shows its preference for mobile devices, even when unintended: can we really neglect this group? More studies are needed, first to better define the characteristic of this group and, second, to understand if it is becoming larger, simultaneously with the spread and the growing importance of mobile devices. At this regard, the findings of the research of Mavletova (2013) are also interesting: the author observe a response rate for mobile web lower than for computer web (this could be considered a partial confirmation of the results of de Bruijne and Wijnant, 2014, shown above); however, in the same paper it is also suggested to carefully study the relationship between general mobile Internet usage and mobile survey completion, because, seen the different response rate, it is possible that the two aspects are mostly linked to two different groups (and types) of users.

Second, some potential respondents already affirmed that they would prefer to use mobile devices for surveys participation, if the survey would be adapted accordingly. For example, Baker-Prewitt (2013) shows that the percentage of smartphone respondents that prefer to participate to surveys on a smartphone is significantly higher, if the survey is adapted. Thus, how many of this group of potential respondents would be lost if we do not provide them with a “mobile option” and/or with a mobile-adapted survey?

These are all topics that should be further studied, and we will try to answer to some of these partially still unexplored questions in section 3.

## **2.2 Tolerance**

When respondents have to participate to a web surveys, their involvement is driven not only by their preferences for a specific mode or device, but also by their tolerance for a certain mode/device. With the term “tolerance” we mean that, even if the device is not the respondents’ first choice, if the researchers explicitly ask them to answer the survey through this device, they will accept to do it. At this regard, de Bruijne and Wijnant (2013) found that sometimes it is difficult to persuade people to use specific devices, even when they are specifically requested to do so: despite asked to use a PC, around 12% of respondents used tablets, and, although asked to use mobile devices, 9.9% used a PC. At least part of the unintended mobile respondents may not really realise that the switch to a different device can affect the contents/quality of their answers or the answering process itself. They do not feel like they are not respecting the panel engagement rules, as long as they answer to the proposed questionnaire. Therefore, the authors suggest to carefully monitoring the mode actually used by respondents, for example using automatic way to detect the mode of participation. In addition to this, they recommend to not completely rely on respondents’ answers about the completion mode, because they noticed, for example, that respondents estimated their mobile device use higher, when reporting is done using a mobile device.

Moreover, Baker-Prewitt (2013) highlighted challenges linked to mobile surveys, especially when respondents are requested by the researchers to use a certain device: the evaluation of the survey participation’s quality experience can indeed be different, if the respondents choose to take a survey on a mobile device rather than if they are asked to do so. These preliminary results suggest that respondents do not only have preference for some devices, but that some of them can be completely or partially “intolerant” to some devices: they can dislike the idea of participating to a survey by mobile devices, or even that refuse to use them, even if they have access to them, when they are requested to do so.

If we want to encourage the respondents to answer by mobile devices, some authors suggest providing with these devices those who do not own one (for example, this is the strategy adopted in Peytchev and Hill, 2010, Sweeney and Crestani, 2006, and Scagnelli and Bristol, 2014). Nevertheless, de Bruijne and Wijnant (2013) recommend conducting surveys using respondents’ own mobile devices, and not providing them with mobile device by researchers. This may also be seen as a way to reduce the proportion of intolerant respondents: probably more respondents will accept to answer through their own mobile device than through one that was given to them just for this purpose. In fact, the answering

process should be much easier for them, because they are used to manage with their own device.

Besides, mobile devices have features that allow the researchers to get information in different ways than the classic surveys methods. For instance, it is possible to track the GPS position of panellists and get information about their movements. This information could be used to survey respondents at a specific moment or in a specific space (e.g., just when they get out of the store, such that their memory about the experience is still fresh) or to obtain further information about their behaviour. For example, Giannotti and Rinzivillo (2014), using mobility data such as the call detail records from mobile phones and the GPS tracks from car navigation devices, studied the patterns of collective movement behaviour trying to identify specific subgroups of travellers. Another feature that generates a lot of research interest is the possibility to ask panellists to send pictures, e.g. of the place where they are, or of their fridge, or of the receipts of the supermarket. By means of mobile devices, this and similar tasks became very easy to do. Therefore, all these new attractive features of mobile devices could provide researchers with new interesting tools and possibilities. These are some of the reasons why so much interest was aroused and some research activity was stimulated in the last years. However, there is still little knowledge about both these new possibilities and the willingness of respondents to complete these tasks. Scagnelli and Bristol (2014), for example, by means of a pilot research, study the participation and tolerance for using mobile devices over time to gather the consumer behaviour longitudinally. The monitored activity is, in particular, the mobile barcode scanning of consumer products.

### **2.3 Impact on representativeness**

In their 2014 paper, de Bruijne and Wijnant found that some variables were predicting the preference for a certain device to complete surveys. For example, the tablet preference is mostly linked to age, gender, working status, level of education and housing composition, whereas the preference for smartphones is correlated with age and education degree. Moreover, at a general level, those provided with a more advanced interface and those using smartphones frequently (to read emails, for example) were more likely to participate to surveys. These results suggest that probably the characteristics of mobile respondents can be quite different, in comparison to the group that is more likely to participate to surveys through fixed PCs or laptops. So a first arising question is: do mobile respondents differ from the others? If so, how do they differ?

These questions are very important from a practical point of view. If the groups of respondents are different, who are we losing if we do not allow respondents to answer through mobile devices? What are the characteristics of the respondents that always use mobile devices? The answers to these questions are strictly linked to the representativeness issue. If allowing the mobile participation (and facing the connected investments), or if giving the priority to a certain device does not preserve the representativeness, this strategy should not be suggested to online panel agencies.

The differences between the groups of mobile and non-mobile respondents were studied in a lot of papers. For example, Fuchs and Busse (2009), using European data, found that the low penetration rates of mobile Internet devices (mainly due to constraints such as costs,

accessibility, and familiarity with technology) could bring to an underrepresentation of some socio-demographic groups. Even if they highlight the spreading of the phenomenon of switching from landline to mobile only, they also found that the population of mobile web early adopters differs noticeably from the general population. This could potentially affect the representativeness of a survey that excludes (or that is based exclusively on) this group. In fact, the switch from fixed to mobile is more likely for persons that have the same characteristics as the early technology adopters: that is, they are young, well-educated and with high incomes (Yu, 2006). Other authors confirmed these findings (e.g., Fuchs, 2002; Arthur, 2007; Blumberg and Luke, 2007) and underlined that the population with a mobile device available also shows more sophisticated technological competencies (Nicolai, 2009). The mobile web population was found also very different from the population without a mobile Internet access: the first is mostly made of younger people (21% between 18 and 24 years old, vs 8% in this category for the population without mobile access), with a bigger share of males (53%, vs 46%), higher degree of education, residing more in larger municipalities (27% vs 24%) and less often married or widowed (Fuchs and Busse, 2009).

Currently the scenery is noticeably changed. A study of Statistics Netherlands (2012), for example, showed that, from 2007 to 2012, the mobile Internet use (and, consequently, the probability of participating to a web survey by a mobile device) tripled from about 20% to about 60%. Nevertheless, analysing the data by age classes, the percentage growth is very different: from 12 to 25 years old the percentage grew from about 21 to about 85%, whereas for 65 to 75 years old, the same percentage grew from about 6 to about 22%; thus the different age classes are still very differently represented in terms of mobile Internet usage.

Going more into details, other authors, studying PC, tablets and smartphones users, highlighted the different characteristics of these specific groups of mobile respondents from both the demographic and the social behaviour point of view. For example, Peterson (2012), studied the usage of the different types of mobile devices by subgroups and by respondent characteristics: the author noticed that females and younger than 35 years old are more likely to access surveys on smartphones; he also found that not only other characteristics of the respondents, but also the type of device used can be linked to the willingness to complete a mobile web survey. De Bruijne and Wijnant (2014), focusing on online probability based web panels' respondents, found a share of females in their mobile respondents higher than in PC users. Moreover, differences were observed between smartphone users (mainly young) and tablet users (mostly working adults, between 25 and 54 years old). But these, even if interesting, are only preliminary results about the topic, so far specifically focused on one online panel in a certain country (the Netherlands). More general findings are still needed, thus the group of mobile respondents still have to be further studied, taking also into account the fast evolution of its characteristics over time.

To conclude, the main aim of our chapter is to better understand the phenomenon of mobile web respondents, trying to compensate the current "lack of information about the frequency of mobile Internet usage" (de Bruijne and Wijnant, 2014) and, mostly, about the propensity of respondents to participate to a survey through a mobile device. In developing this research, we were pulled by the belief that further research in this framework can be useful to better understand if, in the following years, the mobile surveys can become a new

valid (or even essential) method for data collection, for panel agencies as well as in general. Seen the fast spread of mobile devices among the general population, it is not excluded that, in a close future, the mobile surveys could also be used by themselves, and not only in combination with alternative modes.

### **3. New findings from the Netquest access panel**

Netquest ([www.netquest.com](http://www.netquest.com)) is an online fieldwork company founded in 2001 that started its first online panel in 2006, in Spain. Currently, it is also present in Portugal and Latin America, with more than 450,000 panellists truly active and 4 millions of completed surveys every year. Netquest panellists are recruited from databases of users of many websites that agreed to receive emails. For each completed survey, panellists get points that they can exchange for gifts. Most of the surveys sent by Netquest were thought to be completed on PCs. However, in the last years, the company started getting requests for surveys adapted to mobile devices. In our research, we used Netquest data in order to study more in details the preferences of their panellists for different devices (sec. 3.1) and their tolerance both for using mobile devices to participate to surveys and for some specific tasks (sec. 3.2). This is a first research step which strategy panel agencies like Netquest should adopt in the next years. Nevertheless, the obtained results can also be seen as findings of more general interest, given that they cover a relatively unexplored area of web surveys.

#### **3.1 Preference for different devices**

In this section, we first consider the preferences of panellists for specific devices. In particular, first we focus the analysis on the devices that a representative sample of panellists claimed to have, when asked about it in a specific survey (subsection 3.2.1); second, we study the preferences of panellists observed tracking the kind of device (subsection 3.2.2).

##### *3.2.1 Claimed preference in a survey question*

To determine which devices panellists prefer to use, we first surveyed a representative sample of the panel of around 1,000 panellists (in each of the seven considered country). This survey took place in July 2013, and the main results are shown in Table 1. The following three questions were asked to panellists: first, which devices they usually use for answering the surveys proposed by Netquest (this item is represented by the category “*Usually*”, in Table 1); second, which devices they are using to answer the current survey (category “*Now*”, in Table 1); third, which device they would use, if Netquest would send them only surveys adapted to mobile devices (“*Future*”, in Table 1). Table 1 shows the percentages for the complete samples (first part of the table), but also focuses on the group of respondents that said that they own all three devices (smartphone, tablet and PC; second half of the table).

**Table 1: Percentages of respondents that declare they usually use (*Usually*), are using (*Now*) or would use the different devices if the surveys were adapted (*Future*)**

	Country		Use S	Use T	Use PC	Other	Vary
Complete samples	Argentina (N=1,000)	Usually	4.40	1.90	88.60	0.90	4.20
		Now	4.90	2.30	91.50	1.30	NA
		Future	25.20	6.50	47.50	NA	20.80
	Brazil (N=1,011)	Usually	5.44	1.78	85.95	2.08	4.75
		Now	4.85	1.38	91.79	1.98	NA
		Future	33.83	8.80	40.36	NA	17.01
	Chile (N=1,000)	Usually	9.30	2.70	77.60	0.60	9.80
		Now	14.20	3.90	81.20	0.70	NA
		Future	39.40	9.50	28.80	NA	22.30
	Colombia (N=1,001)	Usually	4.30	1.70	87.21	0.70	6.09
		Now	3.30	2.80	93.51	0.40	NA
		Future	34.47	13.69	34.57	NA	17.28
	Spain (N=1,002)	Usually	5.99	3.99	85.63	0.40	3.99
		Now	7.88	3.69	88.32	0.10	NA
		Future	24.25	12.28	44.21	NA	19.26
	Mexico (N=1,005)	Usually	5.67	3.18	85.87	1.00	4.28
		Now	5.47	3.78	89.35	1.39	NA
		Future	40.60	16.62	27.96	NA	14.83
	Portugal (N=1,000)	Usually	3.20	4.40	87.60	0.90	3.90
		Now	4.70	5.70	88.90	0.70	NA
		Future	19.40	14.80	47.90	NA	17.90
	<b>AVERAGE</b>	Usually	<b>5.47</b>	<b>2.81</b>	<b>85.49</b>	<b>0.94</b>	<b>5.29</b>
		Now	<b>6.47</b>	<b>3.36</b>	<b>89.22</b>	<b>0.94</b>	<b>NA</b>
		Future	<b>31.02</b>	<b>11.74</b>	<b>38.76</b>	<b>NA</b>	<b>18.48</b>
Only the ones with 3 devices	Argentina (N=255)	Usually	5.88	5.10	82.75	0.39	5.88
		Now	5.88	6.27	86.27	1.57	NA
		Future	32.94	16.08	27.84	NA	23.14
	Brazil (N=398)	Usually	6.03	3.27	84.67	1.26	4.77
		Now	4.52	2.26	92.21	1.01	NA
		Future	37.44	14.82	28.39	NA	19.35
	Chile (N=392)	Usually	8.42	5.87	71.94	0.77	13.01
		Now	15.31	7.91	76.02	0.77	NA
		Future	43.88	17.35	16.84	NA	21.94
	Colombia (N=379)	Usually	5.80	3.17	81.00	1.06	8.97
		Now	3.96	5.01	90.77	0.26	NA
		Future	43.54	22.96	17.15	NA	16.36
	Spain (N=533)	Usually	6.94	5.82	81.80	0.38	5.07
		Now	8.44	5.63	85.93	0	NA
		Future	25.70	21.01	30.02	NA	23.26
	Mexico (N=461)	Usually	6.94	4.77	83.08	0.65	4.56
		Now	4.77	6.72	88.29	0.22	NA
		Future	46.64	24.08	15.84	NA	13.45
	Portugal	Usually	5.88	9.07	78.19	0.74	6.13

	(N=408)	Now	7.11	11.52	80.88	0.49	NA
		Future	26.72	26.72	25.74	NA	20.83
<b>AVERAGE</b>		Usually	<b>6.56</b>	<b>5.30</b>	<b>80.49</b>	<b>0.75</b>	<b>6.91</b>
		Now	<b>7.14</b>	<b>6.47</b>	<b>85.77</b>	<b>0.62</b>	<b>NA</b>
		Future	<b>36.69</b>	<b>20.43</b>	<b>23.12</b>	<b>NA</b>	<b>19.76</b>

**Note:** S = smartphones; T = tablets; PC = fixed PCs and laptops; Vary= they would vary from one device to another; NA: not applicable (because the option was not offered in the corresponding question); AVERAGE = non-weighted average of the values observed in the different countries.

Table 1 shows that most of the respondents are usually answering to surveys using a PC: between a minimum of 77.6% observed in Chile to a maximum of 88.6% in Argentina, with an average of 85.49%. Relatively similar proportions of respondents in the different countries say that they are usually varying among several devices (between 3.90% in Portugal and 9.80% in Chile; average: 5.29%) or that they usually answer with a smartphone (between 3.2% in Portugal and 9.3% in Chile; average: 5.47%). Finally, there are very few respondents that usually use a tablet to answer (between 1.7% in Colombia and 4.4% in Portugal; average: 2.81%) and even less that use other devices than smartphones, tablets or PCs (between 0.4% in Spain and 2.08% in Brazil; average: 0.94%). Similar proportions are found when looking at the question about the current survey. When considering what the respondents mention they would do, if in the future surveys would be adapted to mobile devices, in Argentina, Brazil, Spain and Portugal, there is still an higher proportion of respondents that would answer from a PC (40.36 to 47.9%); whereas in Colombia there is a similar proportion that would answer by smartphones (34.47%) than by PC (34.57%) and in Mexico and Chile there are more that would answer through smartphones (around 40%). There are also 14.83% (Mexico) to 22.3% (Chile) of respondents, depending on the countries, that say they will vary among devices. All this shows that there is a real need for adapting surveys to mobile devices, even if this need varies by country.

In addition to this, some panellists are already showing their preference for mobile devices by answering surveys that are not intended to be done through these devices. But there are even much more panellists that would prefer to use mobile devices, if the surveys would be adapted to be answered through mobile devices (and, in particular, through smartphones) or that would prefer changing devices for different surveys. According to Table 1, the device that would be used by a larger proportion of Netquest respondents, if the surveys would be adapted, is the smartphone in Mexico (40.6%) and Chile (39.4%). There is no country studied where the PC would still be used as single device by a majority of respondents (all proportions are lower than 50%), even if still the choice of the PC is the favourite one (in 5 out of 7 countries). Thus, it is clear that respondents would often prefer to answer surveys by mobile devices, but surveys need to be well adapted for this access, first.

The second part of Table 1 focuses only on the respondents that have said that they have all the three devices (smartphones, tablets and PCs). Indeed, these are the ones that can really choose between the different devices. Therefore, this gives a more precise idea about the devices that the respondents really prefer, when they have at their disposal all the options. Similarly to the previous part of the table, the percentages correspond to respondents that

usually participate to surveys (category “*Usually*”) or are currently answering (“*Now*”) through the different devices and to those who would answer if the surveys would be adapted (“*Future*”). We notice that for this last specific group, the percentages of respondents that use or would use mobile devices increase, in particular for tablets. The percentages almost double in all the countries: for example, in Chile it grew from 2.70 to 5.87%. On the other hand, the proportions that use or would use PC decrease: for instance in Portugal, the percentage corresponding to the category “*Usually*” for PCs drops from 87.6 to 78.19%, and the one corresponding to “*Future*” from 47.9 to 25.74%. Besides, the PC option in this group (“*Future*”) is the main choice only in one out of the seven countries (Spain, 30.02%). However, still 15.84% to 30.02% of the respondents (depending on the country) would still prefer to answer from a PC, even if the surveys would be adapted for mobile and even if they have all three devices available. This suggests that there is also a not negligible part of the population that really has a preference for PC over mobile (23.12%, at the average level).

Even if in the study of de Bruijne and Wijnant (2013) it was found that also for mobile devices the main preferred location for participating to surveys was home (see sect. 2.2), we thought that the preference for answering through mobile devices (mainly smartphones) could be linked to the fact that respondents want to answer surveys at any place (on public transports, while waiting for someone, spending time in public places, and so on). Therefore, we also asked information about the place of participation, focusing on respondents that were answering the current survey from a tablet or a smartphone. Table 2 shows the results.

**Table 2: Place of answer for respondents participating through tablets or smartphones**

	Smartphone					Tablet				
	Home	W/S	T/S	Other	<i>N</i>	Home	W/S	T/S	Other	<i>N</i>
Argentina	85.71	6.12	6.12	2.04	49	95.65	0	0	4.35	23
Brazil	69.39	26.53	2.04	2.04	49	92.86	7.14	0	0	14
Chile	86.62	5.63	4.93	2.82	142	89.74	7.69	2.56	0	39
Colombia	75.76	21.21	0	3.03	33	75.00	17.86	3.57	3.57	28
Spain	67.09	8.86	8.86	15.19	79	67.57	24.32	0	8.11	37
Mexico	78.18	16.36	0	5.45	55	81.58	15.79	0	2.63	38
Portugal	59.57	12.77	6.38	21.28	47	84.21	7.02	0	8.77	57
<b>AVERAGE</b>	<b>74.62</b>	<b>13.93</b>	<b>4.05</b>	<b>7.41</b>	<b>65</b>	<b>83.80</b>	<b>11.40</b>	<b>0.88</b>	<b>3.92</b>	<b>34</b>

**Note:** W/S = Workplace or School/university; T/S = Transports/public transports or Streets; AVERAGE = non-weighted average of the values observed in the different countries.

Table 2 does not show support for our hypothesis. On the contrary, a large majority of respondents that answered both from a smartphone (74.62%) and from a tablet (83.8%) are answering from home. The prevalence of this location is observed in all countries: for those answering by smartphones the maximum level is observed for Chile (86.62%), and the minimum level for Portugal (59.57%, where still this is the main location), whereas for tablets response, the maximum level of participation from home is observed for Argentina (95.65%) and the minimum level for Spain (67.57%). At an average level, about 12-13% are also answering through the two mobile devices from workplace or school/university (13.93% for

smartphones, 11.40% for tablets). But these percentages vary a lot by country: if we consider smartphones participation, the data show two peaks corresponding to Brazil (26.53%) and Colombia (21.21%), whereas we have a less-frequently-observed phenomenon in Chile (5.63%) and Argentina (6.12%); on the other hand, for tablets the participation from workplaces/schools is very important for Spain (24.32%), Mexico (15.79%) and, again, for Colombia (17.86%), whereas it is not observed at all in Argentina. Few are the respondents answering by mobile devices from other places (at an average level, 7.41% through smartphones, 3.92% through tablets), but, again, the spread of the phenomenon vary a lot by country. For smartphones, for example, a maximum of 21.28% is observed for Portugal, followed by 15.19% in Spain. All the other percentages are under 6%. The participation from “other places” is even less important for tablets: the maximum level of about 8% is observed for Spain and Portugal, whereas the phenomenon is not observed at all in Brazil and Chile. Thus, concluding, what mainly emerges from previous results is the general prevalence of “Home” as the most-favoured place for participating to surveys: this is still the main panellists’ choice. This is somehow an unexpected finding, but it further confirms the results of de Bruijne and Wijnant’s (2013). It suggests that the possibility to complete the survey at any place is probably not the factor that is mainly motivating the respondents to participate through a mobile device. However, 25.38% of respondents by smartphones and 16.2% by tablets choose to answer to surveys from places different than “Home”. Thus, even if most respondents use mobile devices to complete surveys at home, this does not mean that we do not need to adapt surveys for mobile devices.

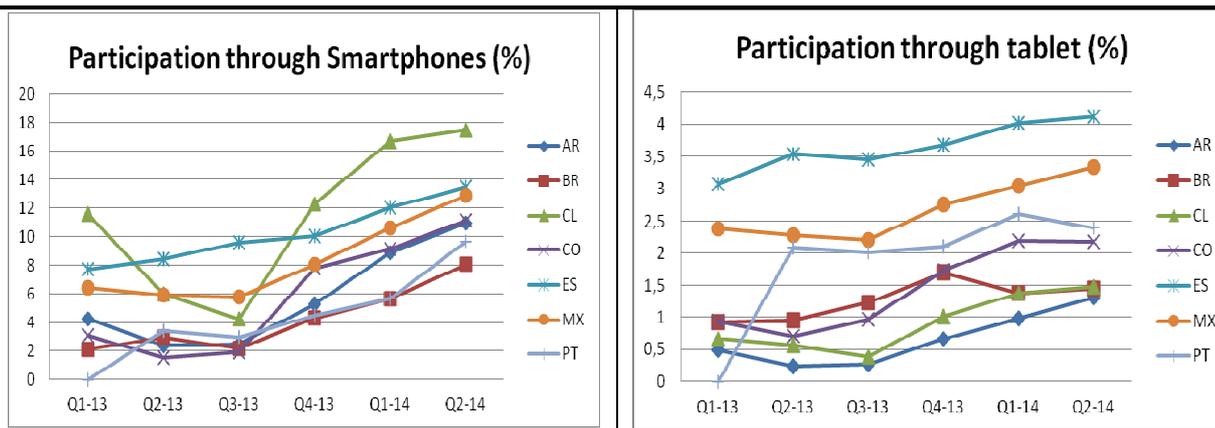
### *3.2.2 Preferences observed tracking the kind of device*

Besides the answer to the survey, we also tracked the kind of devices used by all respondents for which we could get this information in each month and country, from January 2013 to June 2014. There are two main advantages in doing so. First, this allows us to look at the evolution through time, taking also into account a much larger number of panellists. Second, when respondents have to report the devices they used to answer the surveys, they can give incorrect answers (e.g. because they are not putting the necessary efforts in properly answering, because they do not remember correctly, or for other reasons<sup>4</sup>). Nonetheless, by tracking the kind of devices, we can check, in a more objective way, which percentage of respondents answer through a certain mobile device. Figure 1 shows these percentages for smartphones and tablets separately, in all countries, and by quarter-year. The numbers of observations vary a lot across time and countries, so they are provided in Appendix 1.

### **Figure 1: Percentages of unintended respondents that already answered through mobile devices**

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<sup>4</sup> Recall that de Bruijne and Wijnant (2013) suggest to carefully treat responses about the completion mode and, mostly, mobile device use (sometimes overestimated by mobile devices owners, as seen in sect. 2.2).



**Note:** AR: Argentina; BR: Brazil; CL: Chile; CO: Colombia; ES: Spain; MX: Mexico; PT: Portugal

In Figure 1 we see that in Q2-2014 (last available data) there are differences in the proportions of participation through mobiles devices across countries: e.g., Colombia, Spain and Mexico have highest percentages of smartphones respondents (higher than 12%), whereas in Brazil the same percentage is about 8%. Spain and Mexico also show the highest percentages of tablet respondents (more than 3% in Q2-2014), whereas the lowest levels are observed for, again, Brazil, Colombia and Argentina (less than 1.5%). Moreover, we notice that there are differences between smartphones and tablets. Overall, smartphones are used much more frequently than tablets: the unweighted average across all countries and quarters is 7.13% for smartphones vs 1.78% for tablets. This is different from what was found by de Bruijne and Wijnant (2014) in the Netherlands in the framework of two probability-based online panels. This might be because the coverage, in terms of smartphones and tablets, is different in the countries that we are studying, where there are currently much less tablets owners than in the Netherlands. Finally, the two graphs of Figure 1 show that there is a clear trend over time: in the second quarter of 2014, the proportions of unintended respondents through mobile devices increase noticeably in comparison to the first quarter of the previous year, achieving, considering the smartphones a minimum of 8.05% in Brazil a maximum of 17.49% in Colombia; on their side, the tablets reached the level of 1.31% in Argentina (country with the lowest value), and of 4.12% in Spain (country with the highest value).

However, Figure 1 does not tell us if the respondents answering through a mobile device are always the same or if they mostly change for different surveys. In order to look at this, we also tracked the information of the kind of devices used for a sample of about 1,000 respondents per country. In January 2014, the sample was drawn randomly in each country from the total list of panellists. The participation of these respondents was then followed across time, observing 1) how many surveys they have answered, 2) how many were completed through a mobile device, and 3) which proportions of the completed surveys were answered through a mobile device. Table 3 shows the percentages of respondents that completed only one survey, 2 to 5 surveys, 5 to 10 surveys, etc., without taking the device into account (first part of the table), and by type of device (smartphones and tablets: details available in the central part of the table). We also computed the ratios of surveys that the respondents completed through mobile device, i.e. the number of surveys completed through mobile device divided by the total number of surveys completed. In the last four rows of the

table, the percentages of respondents for which these ratios are lower than .05 or higher than .80 are shown.

**Table 3: Proportions of panellists that completed x number of surveys (total number of surveys, surveys completed through smartphones, through tablets, and ratios)**

		Argentina N=969	Brazil N=984	Chile N=972	Colombia N=976	Spain N=982	Mexico N=980	Portugal N=954
Tot no. of surveys	1	4.33	2.85	6.48	6.56	0.71	1.12	0.73
	2-5	15.79	7.93	19.75	19.56	3.16	5.92	5.87
	6-10	14.55	9.96	16.26	16.29	6.62	6.33	6.60
	11-25	28.07	28.05	32.20	28.79	22.00	21.33	37.84
	26-50	28.28	32.22	20.99	22.23	46.84	31.22	47.80
	>50	8.98	19.00	4.32	6.25	20.67	34.08	1.15
	Median	19	26	13	13.5	36	38	25
Max	92	104	70	73	90	128	59	
S: no. of surveys	0	80.08	74.80	64.81	73.67	55.60	66.73	79.66
	1	8.15	10.47	10.39	11.17	12.42	11.94	7.02
	2-5	7.84	9.76	16.77	9.53	15.99	11.63	9.75
	6-10	2.17	3.25	5.45	3.89	7.33	5.31	2.20
	11-25	1.75	1.32	2.57	1.64	6.21	3.37	1.26
	26-50	0	0.30	0	0.10	2.24	0.92	0.10
	>50	0	0.10	0	0	0.20	0.10	0
Max	23	66	22	27	58	51	26	
T: no. of surveys	0	97.52	94.61	96.09	93.24	88.49	89.39	92.98
	1	0.83	2.13	1.54	2.36	3.46	4.08	2.73
	2-5	1.34	1.93	1.44	2.36	3.05	3.67	2.10
	6-10	0.31	0.61	0.51	0.61	2.75	0.92	1.05
	11-25	0	0.30	0.41	0.92	1.83	1.02	1.05
	26-50	0	0.41	0	0.51	0.41	0.92	0.10
	>50	0	0	0	0	0	0	0
Max	9	41	23	47	37	41	28	
Ratio (S/total)	ratio <.05	85.76	83.13	68.52	80.33	67.72	79.29	84.80
	ratio >.80	1.24	1.52	5.25	1.64	3.87	1.63	0.63
Ratio (T/total)	ratio <.05	98.35	96.75	96.91	94.57	91.75	94.18	95.49
	ratio >.80	0.10	0.20	0.10	0.61	0.61	0.71	0.21

In Table 3, we see the total number of surveys completed by the sample of panellists varies quite a lot between and within countries. The median of the total number of participation varies from 13 in Chile to 38 in Mexico. Within a country, some panellists completed only one survey, whereas others did more than 50: for example, in Chile 6.48% of respondents participated to one survey only, whereas 4.32% participated to more than 50; the same percentages for Mexico are, respectively, 1.12 and 34.08. More balanced proportions are observed for Colombia (6.56 vs 6.25%). Noticeable are the percentages of panellists that

completed from 26 to 50 surveys in Spain and Portugal (46.84% and 47.8%, respectively). In Chile, this category represents only the 20.99%. When focusing on the number of surveys completed through mobile devices (second and third part of the table), again we observe differences between and within countries. A large majority of panellists did not complete any surveys through smartphones (minimum: 55.6%, in Spain; maximum: 80.08% in Argentina), and this majority is even bigger for tablets (minimum: 88.49%, in Spain; maximum: 97.52% in Argentina). However, in all countries, there is a small group of panellists that answered quite some surveys through smartphones: between 1.36% of panellists, in Portugal, and 8.65%, in Spain, completed more than 10 surveys through smartphones. Only few panellists answered more than 50 surveys through smartphones. On the other hand, a maximum of 2.24% answered more than 10 surveys through tablets (in Spain), whereas in Argentina no one answered to more than 10 surveys by means of tablets. The ratios shown in the last rows of the table are computed as the total number of surveys completed through a device divided by total number of surveys completed. Considering these data, the percentages of panellists for which this ratio is lower than .05 vary from 68.52% in Chile to 85.76% in Argentina, for smartphones, and from 91.75% in Spain to 98.35% in Argentina, for tablets. Thus, in general, there are quite large proportions of panellists that are not using at all or that are using to a very little extent mobile devices; moreover this phenomenon is even more emphasized for tablets. The ratios higher than .80 confirm these findings. Furthermore, it seems that Argentina is the country with the lower participation through smartphones and tablets, in comparison to the overall level. Still, mostly for smartphones, there is also a small group that shows a very large proportion of mobile participation (more than 80%), with a maximum of 5.25% observed in Chile.

Overall, these results suggest that, even if it is small, there is a group of panellists (varying by country) that have a very clear preference for mobile devices and that are using them to answer many surveys, even if so far, most Netquest surveys are not well-adapted for being completed through mobile devices. The group of panellists that have a preference for mobile devices would be higher if surveys were adapted to mobile participation (as reported in the question about this hypothetical situation). Moreover, although we can assume that it is easier to answer through a tablet than through a smartphone, we also notice that a bigger percentage of respondents is using smartphones to complete surveys, both in general and only considering the subgroup of the ones that are using mobile devices very often. However, this might be linked to a coverage issue: as was shown in Revilla et al. (2014), more panellists have a smartphone than a tablet at their disposal.

### **3.3. Going further: about tolerance for mobile web and for new tasks**

Even if some people prefer to use another device to answer survey, in this section we also want to investigate what we call the “tolerance” for mobile web of the panellists (for a definition of “tolerance”, see section 2.2). Thus, if the researchers ask panellists to answer exclusively by mobile, which level of participation can they expect? At this regard, Table 4 shows the percentages of respondents to the survey about mobile that stated they will accept to participate, if they would be explicitly asked by Netquest to use a mobile device (out of the

ones that own or have access to the corresponding mobile device). Table 4 also shows further interesting details. Research on mobile mentions a lot of potential interesting uses of mobile devices to survey people in new ways: e.g., just when they are in a specific place, or just when the researcher wants to reach them. For instance, a popular idea is that GPS information could be used to follow the respondents or to track their movements, or researchers could ask them to take and send pictures, instead of answering questions (e.g., pictures of what they have in their fridge). However, little is known about the tolerance of panellists for such additional tasks that ask more (or different) effort than the one asked to answer to a questionnaire. In fact, privacy aspects are often mentioned as a barrier to these kinds of usage. Table 4 reports the percentages of respondents that expressed that they will accept (“*Yes for sure*”; “*Probably*”; “*Maybe*”; will not accept, “*No*”) to be involved in these following tasks: a) “install an application on their mobile device”, b) “take pictures and send them”, and c) “share their GPS position”. The same set of questions was asked in relation to both tablets and smartphones. These questions were only asked to the respondents that said that they own (or can regularly have access to) the corresponding device.

**Table 4: Percentages of respondents that would accept other tasks**

Countries		Answer survey		Install application		Take pictures		Share GPS position	
		Smart.	Tablet	Smart.	Tablet	Smart.	Tablet	Smart.	Tablet
Argentina (N <sub>T</sub> =498) (N <sub>S</sub> =769)	Yes for sure	<b>53.58</b>	<b>42.57</b>	34.85	30.72	37.84	26.71	24.06	17.47
	Probably	<b>21.72</b>	<b>31.73</b>	29.13	30.72	26.14	30.32	20.42	25.10
	Maybe	<b>13.78</b>	<b>14.46</b>	18.08	21.69	18.47	22.09	20.94	22.09
	No	<b>10.92</b>	<b>11.24</b>	17.95	16.87	17.56	20.88	34.59	35.34
Brazil (N <sub>T</sub> =583) (N <sub>S</sub> =842)	Yes for sure	<b>53.33</b>	<b>50.60</b>	40.50	37.22	37.53	31.73	30.76	28.13
	Probably	<b>23.04</b>	<b>23.84</b>	23.52	28.82	25.06	27.96	19.71	24.53
	Maybe	<b>14.49</b>	<b>13.72</b>	21.38	20.41	21.73	21.44	24.23	21.78
	No	<b>9.14</b>	<b>11.84</b>	14.61	13.55	15.68	18.87	25.30	25.56
Chile (N <sub>T</sub> =641) (N <sub>S</sub> =893)	Yes for sure	<b>68.20</b>	<b>56.79</b>	50.62	43.84	48.71	38.07	36.84	29.80
	Probably	<b>17.69</b>	<b>25.90</b>	23.85	31.05	23.74	30.73	19.26	26.21
	Maybe	<b>8.51</b>	<b>9.52</b>	14.00	15.44	15.79	17.78	17.58	18.88
	No	<b>5.60</b>	<b>7.80</b>	11.53	9.67	11.76	13.42	26.32	25.12
Colombia (N <sub>T</sub> =703) (N <sub>S</sub> =785)	Yes for sure	<b>56.43</b>	<b>54.34</b>	45.10	45.38	39.11	36.13	29.94	26.74
	Probably	<b>25.10</b>	<b>26.88</b>	30.57	33.00	28.15	30.01	26.62	29.02
	Maybe	<b>10.45</b>	<b>11.24</b>	14.90	14.22	18.34	20.20	19.87	21.19
	No	<b>8.03</b>	<b>7.54</b>	9.43	7.40	14.39	13.66	23.57	23.04
Spain (N <sub>T</sub> =693) (N <sub>S</sub> =912)	Yes for sure	<b>50.88</b>	<b>51.52</b>	35.53	37.09	29.17	24.68	24.23	20.63
	Probably	<b>25.55</b>	<b>26.84</b>	27.30	30.74	25.44	25.83	19.41	22.22
	Maybe	<b>14.04</b>	<b>12.70</b>	22.26	20.35	26.21	31.17	23.79	25.97
	No	<b>9.54</b>	<b>8.95</b>	14.91	11.83	19.19	18.33	32.57	31.17
Mexico (N <sub>T</sub> = 744) (N <sub>S</sub> = 833)	Yes for sure	<b>68.67</b>	<b>65.86</b>	57.14	53.90	51.62	43.82	34.45	29.97
	Probably	<b>19.21</b>	<b>24.19</b>	26.41	30.91	26.41	32.39	26.41	30.24
	Maybe	<b>7.08</b>	<b>6.45</b>	10.32	11.16	13.57	13.84	17.17	21.37

	No	<b>5.04</b>	<b>3.49</b>	6.12	4.03	8.40	9.95	21.97	18.41
Portugal	Yes for sure	<b>44.01</b>	<b>52.49</b>	30.99	33.55	24.61	25.84	18.88	17.01
(N <sub>T</sub> =623)	Probably	<b>24.09</b>	<b>22.63</b>	27.73	32.91	26.82	27.93	24.09	28.73
(N <sub>S</sub> =768)	Maybe	<b>16.93</b>	<b>12.04</b>	24.87	20.87	25.00	25.04	25.91	25.20
	No	<b>14.97</b>	<b>12.84</b>	16.41	12.68	23.57	21.19	31.12	29.05

From Table 4, we firstly notice that the distributions of the answers for tablets and smartphones are very similar, mostly for the two tasks “Install application” and “Take pictures” and, in general, for “Answer surveys”, whereas some bigger differences are noticed in the distribution of the answers for the task “share GPS position” for some specific countries. Nevertheless, overall the kind of mobile device does not seem to play a role in most of the cases for determining the willingness of panellists to be involved in specific tasks. However, there are a few exceptions: for instance, in Chile and Argentina, the proportions of respondents that would accept “for sure” to complete a survey through a smartphone are more than 10 percentage points higher, if compared to the ones observed for tablets. Even if tablets seem to be a device through which it is simpler to answer to surveys, the tolerance for smartphones appears to be larger, in these two countries. The percentages of respondents willing to take and send pictures through smartphones is also bigger than the one observed for tablets; this happens in several countries, and particularly in Argentina (37.84 vs 26.71%, for the category “Yes for sure”), Chile (48.71 vs 38.07%) and Mexico (51.62 vs 43.82%). For “Sharing GPS position” the percentages for the different categories vary by country, but what is common to all the countries is a bigger willingness to share this data for smartphone users than for tablets ones.

Overall, there are small proportions of respondents that answered “no” to the different questions, even if there are differences across countries. Mexico seems to have the most tolerant respondents toward these new tasks (rates lower than 10, excluded the sharing of GPS position). Nevertheless, in all countries the question about sharing the GPS information is the one that lead to the highest refusal rates (ranging from a minimum level of 18.41% observed for tablets in Mexico to a maximum level of 35.34% observed for tablets in Argentina). This is expected, since this activity is considered as a more sensitive question, implying more privacy concern, in comparison to the other tasks. Still, even for this question, there are about 65% to about 82% of respondents that did not refuse. This means that we could expect a relatively high participation of the panellists, if one would like to make use of some of these new survey techniques.

#### 4. Differences across groups

In the previous parts of the paper, we analysed the preferences and tolerance of Netquest panellists for mobile devices and their tolerance for additional tasks that the new technologies made available. To go a step further, this section of the paper studies if there are characteristics that vary across groups of panellists that differ in their relationships with mobile devices. We focus our analysis on the following main variables (for which we have

the information): gender (dummy variable: 1 = men), age (numeric), education (lower to higher diploma; categories vary by country) and number of household's members (numeric).

In Table 5 the coefficients for a logit of the respondents that use only the PC to answer the surveys are provided, comparing them with the ones that use (at least sometimes) other devices. In its second part, the table shows the coefficients of a logit for the respondents that have a smartphone at their disposal, but would not accept to complete a survey using it (answer "No").

**Table 5: Logits of: respondents that use only a PC to answer surveys (first part), and respondents with a Smartphone that will not accept to complete the survey through it (second part)**

		Argentina	Brazil	Chile	Colombia	Spain	Mexico	Portugal
Use only PC	Men	.28	.19	.12	.11	.37**	.18	.36*
	Age	.08	.18**	.14*	.30**	.30**	.03	.05
	Educ.	.15	.06	.11	-.19	.12	.04	-.10
	No. hh	-.16**	-.03	.06	.05	-.04	-.02	-.12*
	OnlyPC	1.39**	.42	2.27**	1.34**	1.76**	2.13**	1.72**
	Cst	1.46	1.06*	-.02	1.65**	.21	1.17*	2.38
	PseudoR <sup>2</sup>	.0458	.0137	.0377	.0439	.0351	.0317	.0422
	N=1000	N=1011	N=1000	N=1001	N=1002	N=1005	N=1000	
Tolerance Smart: No	Men	-.12	-.28	.09	.38	-.22	-.52	-.45**
	Age	.32**	.44**	.43**	.31**	.58**	.61**	.28**
	Educ.	-.24*	-.24*	.08	-.23*	-.17	.03	-.14
	No. hh	-.02	-.17*	-.08	.09	-.06	.08	-.03
	Cst	-1.90**	-1.65**	-4.08**	-2.70**	-2.86**	-4.92**	-1.59**
	PseudoR <sup>2</sup>	.0269	.0458	.0379	.0241	.0661	.0681	.0216
		N=769	N=842	N=893	N=785	N=912	N=833	N=768

**Note:** \*\* p<.05; \* p<.10; Educ. = education; No. hh = number of members in the household; Cst = constant.

Observing the data about panellists that use only a PC to complete the survey, in almost all countries (except Brazil) we find that there is a significant effect of having only a PC, which seems logical, and confirms previous results about the current preference for participation by means of PCs: if panellists have only a PC, they probably will mostly answer through it. Besides that, education does not play a relevant role (whereas in previous works referenced in sect. 1 it was a discriminant variable) and age has a significant effect only in four countries out of seven (Colombia, Spain, Brazil, Chile). Gender has an effect in only two countries, Spain and Portugal: there, men have a higher probability to use only the PC to complete the surveys.

Finally, the panellists that have a smartphone but would not accept to use it to complete the surveys are older (significant effect of age in all countries; p< .05). In Argentina, Brazil and Colombia, they are also less educated (p< .10). Gender and the number of persons in the household do not usually play a relevant role, in general, but they are significant, respectively, in Portugal (p< .05) and Brazil (p< .10).

## 5. Conclusions

Revilla et al. (2014) highlighted that a majority of Netquest panellists have access to several devices and, therefore, can choose to participate to the surveys using one or the other. Therefore, in order to study if there is a real need for adapting surveys to mobile devices, it is necessary to consider the preferences. Some respondents already show their preferences by using mobile devices even when this is unintended. However, the group of unintended mobile respondents is currently still relatively small in the countries considered in this analysis. Within Netquest panellists, participating through PCs is still the favourite option (both if we track the device used to answer and if we ask them directly). Nevertheless, a general increasing trend is observed for tablets and, mostly, for smartphones: people are more and more likely to participate to surveys by mobile phones. Besides, when panellists are asked which kind of device they would prefer to use if the surveys would be adapted for mobile participation, a larger proportion of panellists declare that they would prefer to use a mobile device. PC still remains the preferred option, but the choice of this device decrease noticeably. This is a further confirmation of the need to adapt surveys to mobile devices.

Moreover, some respondents prefer to vary device. This suggests that the preferences may depend on the specific survey (length, topic, if the survey is adapted to mobile devices or not, and so on) and on the context in which they are answering (moment, place where they are, time available at this moment, etc.). However, studying the places of survey participation, our results confirm previous findings showing that home is the most common place where to participate to surveys also for those who participate by means of smartphones or tablets. In addition, most panellists seem to have a preference for a specific device, more than for varying from one to the other. Smartphones are preferred by much more panellists than tablets, both currently and in the hypothetical situation where the surveys would be adapted to mobile devices.

In this paper, we also studied the tolerance for participating by means of mobile devices and about completing new tasks that the new technologies make available. A majority of respondents were at least not completely opposed to the idea of participating in other tasks, like taking pictures or installing an application. In general, the willingness for these tasks was higher by smartphone than by tablets. Sharing the GPS information was the task that led to more refusals. But even for that, still a majority of panellists seems willing to accept it. This suggests that there is space for new kinds of data collection. We should notice that for all the results describes so far, even if the general trends hold, there are clear differences in the figures from country to country.

Finally, the need of adapting depends on the characteristics of the panellists that we will lose in case we will not adapt the surveys to mobile devices. If this group that only accepts to participate through mobile devices (and would stop participating in case they would be forced to use a PC) is similar to the group of respondents that would continue participating, then there is no real need to “cover” it, because it does not affect the representativeness. Our analyses highlight that, contrary to what expected and to what was found by others, there seems to be no significant effect of education on using only PC to answer surveys. These may

be a consequence of the rapid changes of the evolution of the characteristics of the population, the spread of mobile devices among more age-classes, and the increased ability to deal with the new technologies. But in some countries, the variables “age” and “gender” are discriminating. If we consider the aversion to use smartphone for survey participation, age is usually significant and, in some countries, also the level of education is. This supports the idea that there is a need to adapt surveys to mobile participation. This can be useful to reach groups of potential respondents with different profiles, and to get a more complete coverage of the target population.

Nevertheless, further research is still needed about many different aspects linked to mobile web survey participation, and about the adaptation of surveys to a mobile involvement. What are the real costs to adapt a survey to mobile web, in comparison to the costs of a classic web survey? Which facilities do we lose in the adaptation process (e.g. format of questions that cannot be adapted to mobile)? Is it possible to control the device used by respondents (i.e., force them to participate to the survey by means of a specific device), without losing a lot of participants? What is the impact on the representativeness? Which are the features that really make the difference among devices (size of the screen, portability...)? How do these differences affect the comparability of the results? What is the difference in the effort that we could obtain by means of participation through mobile devices, rather than through PC? What are the consequences of the survey context for the quality of the answers? In some situations users can prefer to answer by mobile, rather than by PC: for example, due to availability of the device itself (or of the wi-fi connection), due to their personal preferences, to the contents of the questions, to what is less time-consuming, to the availability of time in specific part of the day, and so on. Moreover, can the preferences for PCs or mobile be considered stable over time? Or, will it be easier in the future to involve them through mobile devices rather than by means of PCs? Moreover, how and how often the respondents switch from a device to another one (and from mobile to PCs, or vice versa)? And which are the factors that push them to do so?

These are just few examples of the many questions that can be considered for further research.

## References

- Arthur, A. (2007). *The birth of a cellular nation*. New York: Mediamark Reserach.
- Baker-Prewitt, J. (2013). *Mobile Research Risk: What Happens to Data Quality When Respondents Use a Mobile Device for a Survey Designed for a PC?*. CASRO Online Research Conference, San Francisco, US, March 6-8, 2013. Available at: [http://c.ymcdn.com/sites/www.casro.org/resource/collection/0A81BA94-3332-4135-97F6-6BE6F6CEF475/Paper\\_-\\_Jamie\\_Baker-Prewitt\\_-\\_Burke.pdf](http://c.ymcdn.com/sites/www.casro.org/resource/collection/0A81BA94-3332-4135-97F6-6BE6F6CEF475/Paper_-_Jamie_Baker-Prewitt_-_Burke.pdf).
- Bech, M., Kristensen, M. B. (2009). Differential response rates in postal and Web-based surveys among older respondents. *Survey Research Methods*, 3(1), 1–6.
- Blumberg, S. J., & Luke, J. V. (2007). *Wireless substitution: Early release of estimates based on data from the National Health Interview Survey, July–December 2006*. Hyattsville, MD: Division of Health Interview Statistics, National Center for Health Statistics.
- Boreham, R., Wijnant, A. (2013). *Developing a web-smartphone-telephone questionnaire*. Conference paper. IBUC 2013 15th International Blaise Users Conference. Available at: [www.blaiseusers.org/2013/papers/4c.pdf](http://www.blaiseusers.org/2013/papers/4c.pdf); last access: June 2014.
- Bosnjak, M., Metzger, G., & Gräf, L. (2010). Understanding the willingness to participate in mobile surveys: Exploring the role of utilitarian, affective, hedonic, social, self-expressive, and trust-related factors. *Social Science Computer Review*, 28, 350–370.
- Bosnjak, M., Neubarth, W., Couper, M. P., Bandilla, W., Kaczmirek, L. (2008). Prenotification in web-based access panel surveys: The influence of mobile text messaging versus e-mail on response rates and sample composition. *Social Science Computer Review*, 26, 213–223.
- Bosnjak, M., Poggio, T., Becker, K. R., Funke, F., Wachenfeld, A., & Fischer, B. (2013). *Online survey participation via mobile devices*. Conference Paper, The American Association for Public Opinion Research (AAPOR) 68th Annual Conference, 2013, Boston.
- Buskirk, T. D., Andrus, C. (2012). Smart surveys for smart phones: Exploring various approaches for conducting online mobile surveys via smartphones. *Survey Practice*, 5(1).
- Callegaro, M. (2010). Do you know which device your respondent has used to take your online survey? *Survey Practice*, 3.
- Chae, M., Kim, J. (2004). Do size and structure matter to mobile users? An empirical study of the effects of screen size, information structure, and task complexity on user activities with standard web phones. *Behaviour & Information Technology*, 23, 165–181
- Couper, M. P., Tourangeau, R., Conrad, F. G., Crawford, S. D. (2004). What they see is what we get: Response options for web surveys. *Social Science Computer Review*, 22, 111–127.
- Couper, M. P. (2008a). *Designing effective Web surveys*. New York: Cambridge University Press.
- Couper, M. P. (2008b). Technology and the survey interview/questionnaire. In F. G. Conrad, M. F. Schober (Eds.), *Envisioning the survey interview of the future* (pp. 58–76). New York: Wiley.
- Couper, M. P. (2013). *Is the sky falling? New technology, changing media, and the future of surveys*. Keynote speech presented at 5th European Survey Research Conference,

Ljubljana, 18 July 2013. Available online at [www.europeansurveyresearch.org/conference/couper](http://www.europeansurveyresearch.org/conference/couper). Last access: June 2014.

- de Bruijne, M., Wijnant, A. (2013). Comparing survey results obtained via mobile devices and computers: An experiment with a mobile web survey on a heterogeneous group of mobile devices versus a computer assisted web survey. *Social Science Computer Review*, 31, 483–505.
- de Bruijne, M., & Wijnant, A. (2014). Mobile Response in Web Panels. *Social Science Computer Review*, March 2014, 1-15. Available at: <http://ssc.sagepub.com/content/early/2014/03/26/0894439314525918>; last access: July 2014.
- Dillman, D. A. (2007). *Mail and Internet surveys: The tailored design method: 2007 Update with new Internet, visual, and mixed-mode guide*. New York: Wiley.
- Eurobarometer (2012). *E-Communication Household Survey – Special Eurobarometer 381 report*. Available at: [http://ec.europa.eu/public\\_opinion/archives/ebs/ebs\\_381\\_en.pdf](http://ec.europa.eu/public_opinion/archives/ebs/ebs_381_en.pdf) (Accessed: October 2014).
- Fuchs, M. (2002). Kann man Umfragen per Handy durchführen? Ausschöpfung, Interview-Dauer und Item-Nonresponse im Vergleich mit einer Festnetz-Stichprobe [Is it feasible to conduct surveys with mobile phone? Participation, duration of interview and item non-response in comparison to a landline sample]. *Planung und Analyse*, 29(2), 57–63.
- Fuchs, M. (2008). Mobile Web Survey: A preliminary discussion of methodological implications. In F. G. Conrad, & M. F. Schober (Eds.), *Envisioning the survey interview of the future* (pp. 77–94). New York: Wiley.
- Fuchs, M., Busse, B. (2009). The coverage bias of mobile web surveys across European countries. *International Journal of Internet Science*, 4, 21–33
- Giannotti F., Rinzivillo S. (2014), “Understanding Human Mobility with Big Data”, Proceedings of the “SIS 2014 – 47th Scientific Meeting of the Italian Statistical Society” (Cagliari, Italy, June 11-13 2014). Available at: <http://www.sis2014.it/proceedings/>.
- Guidry, K. R. (2012). Response quality and demographic characteristics of respondents using a mobile device on a web-based survey. Conference paper, presented at the American Association for Public Opinion Research (AAPOR), 67th Annual Conference, in Orlando, Florida, May 18, 2012.
- Hancock, J. T., Thom-Santelli, J., Ritchie, T. (2004). Deception and design: The impact of communication technologies on lying behavior. Paper presented at the Conference on Computer Human Interaction (April, 2004), Vienna, Austria.
- Jones, M., Buchanan, G., Thimbleby, H. (2003). Improving web search on small screen devices. *Interacting with Computers*, 15, 479–495.
- Kreuter, F., Presser, S., Tourangeau, R. (2008). Social desirability bias in CATI, IVR, and Web surveys: The effects of mode and question sensitivity. *Public Opinion Quarterly*, 72, 847–865.
- Mavletova, A. (2013). Data quality in PC and mobile web surveys. *Social Science Computer Review*, 31.
- Maxl, E., Baumgartner, T. (2013). Influence of Mobile Devices in Online Surveys. Poster presented at the General Online Research Conference (GOR), Mannheim, 4-6 March 2013.

- Millar, M. M., Dillman, D. A. (2012). Encouraging survey response via smartphones: Effects on respondents' use of mobile devices and survey response rates. *Survey Practice*, 5.
- Nicolai, S. (2009). Representativity of mobile data collection based on the example of Germany. In N. Döring, A. Ließ, & E. Maxl (Eds.), *Mobile market research* (pp. 205–216). Köln: Herbert von Halem.
- Nielsen Mobile. (2008). *Critical mass: The worldwide state of the mobile Web*. Nielsen Company.
- Peterson, G. (2012). Unintended mobile respondents. Conference paper, CASRO Technology Conference, May 31 2012, New York City.
- Peytchev, A., Hill, C. A. (2008). Experiments in visual survey design for mobile devices. Paper presented at the American Association for Public Opinion Research (AAPOR) 63rd Annual Conference, New Orleans, May 20, 2008.
- Peytchev, A., Hill, C. A. (2010). Experiments in mobile web survey design: Similarities to other modes and unique considerations. *Social Science Computer Review*, 28, 319–335.
- Poggio, T., Bosnjak, M., Weyandt, K. (2013). Online survey participation via mobile devices: Implications for nonresponse. ESRA Conference, Ljubljana, July 15-19, 2013.
- Revilla, M., Toninelli, D., Ochoa, C., Loewe, G. (2014). Who has access to mobile devices in an online commercial panel? An analysis of potential respondents for mobile surveys. *Webdatanet-AIAS Working Papers number 150*. Available at: <http://webdatanet.cbs.dk/index.php/research/webdatanet-aias-working-papers>
- Scagnelli, J., Bristol, K. (2014). Scan All: Smartphones for Measuring Household Purchases in Developing Markets. 69<sup>th</sup> AAPOR Conference, Anaheim, CA, May 15-18, 2014.
- Smart Insights (2014). 21 Internet trends from the annual KPCB trends report. Available at: <http://www.smartinsights.com/digital-marketing-strategy/internet-trends-2014-mary-meeker/> (Accessed on October 2014)
- StatCounter Global Stats (2014). Available at: <http://gs.statcounter.com/> (Accessed on October, 2014).
- Statista (2014). Global fixed broadband and mobile internet penetration 2008-2017. Available at: <http://www.statista.com/statistics/280430/worldwide-fixed-broadband-and-mobile-internet-penetration/> (Accessed on October 2014).
- Statistics Netherlands (2012). Mobile internet use continues to grow. [Press release], PB12-060, 23 October 2012. Available at: <http://www.cbs.nl/en-GB/menu/themas/vrije-tijd-cultuur/publicaties/artikelen/archief/2012/2012-060-pb.htm> (June 2, 2013, from)
- Stapleton, C. E. (2013). The smart(Phone) way to collect survey data. *Survey Practice*, 6. Available at: [www.surveyppractice.org/index.php/SurveyPractice/article/view/75](http://www.surveyppractice.org/index.php/SurveyPractice/article/view/75), last access: June 2014.
- Toepoel, V., Lugtig, P. (2014). What happens if you offer a mobile option to your web panel? Evidence from a probability-based panel of Internet users. *Social Science Computer Review* 32(4). doi: 10.1177/0894439313510482.
- Verkasalo, H., Lopez-Nicolas, C., Molina-Castillo, F. J., & Bouwman, H. (2010). Analysis of users and nonusers of smartphone applications. *Telematics and Informatics*, 27, 242–255.

- Wells, T., Bailey, J. T., Link, M. W. (2013). Filling the void: Gaining a better understanding of tablet-based surveys. *Survey Practice*, 6
- Wells, T., Bailey, J. T., Link, M. W. (2014). Comparison of smartphone and online computer survey administration. *Social Science Computer Review* 32(2), 238–255.
- Yeager, D. S., Krosnick, J. A., Chang, L., Javitz, H., Levendusky, M. S., Simpser, A., & Wang, R. (2011). Comparing the accuracy of RDD telephone surveys and internet surveys conducted with probability and non-probability samples. *Public Opinion Quarterly*, 75, 709–747.
- Yu, L. (2006). Understanding information inequality: Making sense of the literature of the information and digital divides. *Journal of Librarianship and Information Science* 38(4), 229–252.
- Zhang, Y., Levinsohn, J., Olive, B., Hill, C. (2008). Best practices for developing smart phone based Web surveys and systems. Paper presented at the International Field Directors and Technology Conference, New Orleans, May 20, 2008.

## Appendix:

### Appendix 1: Unintended respondents: number of observations by country

	Q1-13	Q2-13	Q3-13	Q4-13	Q1-14	Q2-14
Argentina	8,799	19,529	58,535	38,247	42,855	40,276
Brazil	9,326	69,482	204,051	130,296	69,618	106,293
Chile	2,896	17,814	61,564	32,827	44,172	47,318
Colombia	11,122	51,042	99,747	38,467	35,406	33,874
Spain	75,912	206,741	144,681	246,786	214,219	367,795
Mexico	15,238	63,011	159,598	107,608	74,145	68,392
Portugal	41	6,707	19,979	13,411	2,571	19,617