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## The value of network neutrality to European consumers

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# The value of network neutrality to European consumers

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<http://www.wik.org/index.php?id=677&id=677&L=1>.

This paper draws in parts directly from our reports.

## Abstract

In light of the lack of studies into the value of network neutrality to consumers, BEREC has commissioned a European (CR; CZ; EL; SE) mixed-methods study to explore this issue. This paper presents selected results of this study. To understand the value of network neutrality to European consumers, one first has to explore the role that the Internet plays in consumers' lives. We find that whilst the Internet has become very important to the majority of consumers across the four test areas studied in this paper, its role in consumers' lives differs greatly depending on the national culture, but also to some extent on the quality of Internet access available in the specific country. Consumers usually find being able to access all content and applications on the Internet fundamental to their quality of experience. They do not want to see their access restricted in any way, but many find it fair if emergency relief services or the police receive prioritised access. The same is true if others pay extra for prioritised access to specific applications as long as this does not compromise the experience of those who do not pay extra. Taking a closer look at consumers' understanding and conceptualisation of network neutrality supports that consumers do not have a clear understanding of the concept. However, they care strongly about the effects deviations from network neutrality have for their own quality of experience or the quality of experience of others. The conjoint analysis conducted for this study highlights the importance of network neutrality-related product attributes for consumers' purchase decisions. In fact, they make up around half of their purchase decisions for at home Internet access. A closer analysis of the part-worth utilities reveals a surprising preference for the best effort Internet access to applications over the prioritised one. It seems likely that this result is due to their lack of experience with prioritised services. The paper discusses various alternative explanations of this preference pattern. In line with expectations, the conjoint analysis also finds that any restrictions of consumers' access results in a significantly reduced willingness-to-pay for their at home Internet access.

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## Introduction

BEREC's recognition of network neutrality as a key policy priority in 2010 has led to various related activities, for instance fact-finding on traffic management practices and an assessment of Internet Protocol (IP) interconnection. These activities have given European regulators a solid basis for understanding issues around network neutrality, but much more in relation to the supply side of Internet Access Service (IAS) than the demand side. How do consumers understand and conceptualise network neutrality? Do consumers value aspects of net neutrality in their purchase choice for IAS offers? These questions drive the consumer research, for which BEREC commissioned an extensive study.

The study was conducted in four carefully selected European countries (Croatia, Czech Republic, Greece, Sweden) in order to examine various market environments across different socioeconomic backgrounds. It comprises both qualitative and quantitative research, which complement each other and enable a better interpretation of both sets of results. Twelve focus group discussions, three per test area, constitute the key qualitative research instrument. They facilitate the study to develop an in-depth exploration of consumers' understanding of network neutrality. A representative online survey performed in all test areas determines the main quantitative research instrument of the study. The survey included an Adaptive Conjoint Analysis (ACA), which identified consumers' part-worth utilities of ten product attributes for Internet access at home. Half of these product attributes are related to network neutrality. The definition of these product attributes profited greatly from the insights gained in the focus group discussions. Furthermore, the impact of an educational information package was quantitatively tested, in order to assess whether an improved understanding of how traffic management works has an effect on consumers' perceptions and evaluation of net neutrality.

The present paper summarises selected results of this study. First, we develop the three research objectives that this paper seeks to fulfil from the literature review conducted for the study described in the above. Second, the paper describes the methods applied to fulfil these research objectives. Third, selected results are presented. The paper culminates in a conclusion that also discusses the major findings and highlights avenues for future research.

## Literature Review

The overarching research objective of the present paper is to understand the value of network neutrality to European consumers. This research objective can, however, hardly be fulfilled without first understanding the role that the Internet plays in consumers' lives. Surprisingly, published research exploring this question is scarce. It is either potentially outdated (e.g. Geissler & Zinkhan, 1998), or it explores only particularly vulnerable groups using specific Internet-based applications (e.g. the elderly – Papa et al., 2011 or rural communities – Macintyre & Macdonald, 2011). As it is difficult to derive any insights for the role of the Internet for consumers' lives in general and in particular the role it plays for the consumers in the selected countries, the first research objective for this paper is

- To explore the role that the Internet plays in European consumers' lives.

Despite the distinct lack of studies, the penetration and relevance of the Internet into more and more areas of everyday life can be taken as an indication of its importance to consumers. On this backdrop, it is even more surprising that the debate around network neutrality - commonly considered the cornerstone of the best effort Internet as we know it today – has made little effort to get a representative picture of consumers' understanding and conceptualisation of network neutrality.

The literature review for the present paper revealed two relevant qualitative explorations of consumers' attitudes to the specific issue of network neutrality. Lawford et al. (2009) conducted a study of immediate relevance. They used focus group discussions to explore Canadian consumers' perceptions of network neutrality. For these groups, they selected "heavy users of the Internet at home (i.e. over 20 hours per week)", who used "applications such as VoIP, P2P file transferring, live streaming of TV or radio programming" and "indicated they were very interested in public policy issues and in issues around the future of the Internet and how it may be regulated."<sup>3</sup> Therefore it can be assumed that the focus group participants were very well-informed and proficient users of the Internet, who were significantly more interested in Internet issues than the average Canadian consumer.

In total, Lawford et al. (2009) conducted six focus group discussions in various Canadian cities in January 2009. Although the debate about network neutrality initiated in part by complaints filed with CRTC in April 2008 was visible in public debate<sup>4</sup>, Quail and Larabie (2010) conclude from their analysis of newspaper articles in the US and Canada referring to it that their "number hardly suggest a vibrant public discussion of network neutrality"<sup>5</sup>. In spite of this, given the profile of the participants as being well-informed, it still seems surprising that one major finding in the focus group discussions was that their "awareness and recognition of the term 'network neutrality' was very limited" and that the majority of them were unfamiliar with it. Those who had heard the term before still lacked a clear idea of its meaning. Perspectives that the participants expressed in the discussions ranged from network neutrality representing the uncensored Internet where everybody connected can access every site and express their opinions freely, to network neutrality representing an Internet unbiased by business interests, such as content or search results being influenced. They often blamed their lack of awareness on being complacent about their ISP's service. In fact, when disturbances occurred, which all participants had previously experienced, they usually did not blame their ISP but rather their own hardware and/or software, or another entity's server. These views can also be seen in Kenny and Dennis (2013).

However, when participants were made aware of issues such as throttling and other means of traffic management that are actually linked to network neutrality, they showed great interest in them. More often than not, they were concerned about what they had learned about Internet traffic management practices, and opposed the idea of the throttling or prioritisation of specific content unless it is really necessary. ISPs' interest in profit represented an insufficient reason for

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<sup>3</sup> Lawford et al. (2009): 13.

<sup>4</sup> E.g. CBC News Article on 21-04-2008: <http://www.cbc.ca/news/technology/ndp-calls-for-net-neutrality-1.740683> or itBusiness Article on 08-07-2008: <http://www.itbusiness.ca/news/controversy-over-traffic-throttling-by-canadian-isps-heats-up/3632>.

<sup>5</sup> Quail, C. & Larabie, C. (2010), p.39.

Internet traffic management to almost all participants. Regarding network neutrality, Lawford et al. (2009) conclude that “[t]his lack of awareness is troubling, since it makes the creation of network neutrality policies more difficult.”<sup>6</sup>

Quail and Larabie (2010) present similar findings, albeit based on less substantial evidence. In addition to their discourse analysis of newspaper articles on network neutrality, they conducted a focus group with communication studies students at a Canadian university in March 2010. Their participants were also largely unaware of the term “net neutrality”, in spite of their studies. When provided with information about it, they understood the concept and engaged more in the discussion. Generally, they also seemed concerned about the influence that corporations might have on the Internet, which they thought of as a public utility.

Although these qualitative studies were able to shed some light on consumers’ attitudes towards network neutrality, they still fail to capture the underlying issues of consumers’ understanding and conceptualisation of network neutrality as well as the role it may play in their purchase decisions. Furthermore, both studies took place in North America and may have – also due to their publication date – have little relevance in the European context. Consequently, the second research objective for the present paper is

- To explore consumers their conceptualisation of network neutrality as well as the role it plays for their purchase decisions.

Besides the (qualitative) role of network neutrality for consumers’ purchase decisions, it is obviously most relevant for policy makers and ISPs alike if and how network neutrality product attributes influence consumer decisions. Furthermore, it is relevant to understand the willingness-to-pay for such product attributes. A commonly applied research method to understand consumer purchase decisions and their willingness-to-pay for individual product attributes is the so-called conjoint analysis.

This method is used frequently to consumer purchase decisions for at home Internet access service products. For the present paper, only studies published after 2009 have been reviewed. Although there is a great variety of papers published in 2009 or earlier<sup>7</sup>, they appeared to have little relevance for the current paper as they often refer to outdated consumer decisions such as 56k as compared to slow ADSL connections.

From the studies reviewed<sup>8</sup>, two major insights can be taken. First, most of these papers apply several similar attributes in addition to broadband speed and price. These features usually stretch either into additional services such as IPTV or into offering additional security. Only two of

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<sup>6</sup> Lawford et al. (2009), 17.

<sup>7</sup> List of additional papers that have been identified in the literature review of the present paper that did not meet the selection criteria: Byun, S., Bae, H., & Kim, H. (2006); Cardona, M., Schwarz, A., Yurtoglu, B. B., & Zulehner, C. (2009); Ida, T., & Kuroda, T., (2006); Ida, T., & Kuroda, T., (2009); Ida, T., & Sakahira, K. (2008); Kim, Y. (2005); Madden, G., & Simpson, M. (1997); OfCom Consumer Panel (2008, September); Plum Consulting (2008); Rappoport, P., Taylor, L. D., & Alleman, J. (2004); Rappoport, P., Taylor, L. D. and Alleman, J. (2006); Savage, S. J., & Waldman, D. (2004); Savage, S. J., & Waldman, D. (2005); Yoo, S.-H. (2002); Yoo, S.-H., & Moon, H.-S. (2006); Yu, K., & Prud’homme, M. (2010).

<sup>8</sup> Deere, G., Brice, L. & Barton, S. (2008); Huck, S. & Wallace, B. (2011); Ida, T. & Sata, M. (2006); Klie, A. (2012); Nam, C.; Lee, H.; Kim, S. & Kim, T. (2011); Rosston, G., Savage S. J., & Waldman, D. M. (2010); Takano, N. (2013); Van Camp, F. (2012).

the papers apply conjoint analysis to understand consumers' ISP choice preferences while also introducing network neutrality-related attributes into the choice experiment<sup>9</sup>. They will be discussed in more detail below. Second, price, access speed and brand commonly emerge as the three most important attributes<sup>10</sup> for consumer's choice.

Huck and Wallace (2011) conducted a choice experiment with 156 students at the University College London, in which they focused on the influence of colour as compared to numerical coding of information about broadband speed and network neutrality in fictitious ISPs' offerings. The subjects were asked to make appropriate decisions for given individual or multi-user scenarios based on usage pattern descriptions. Subjects received an incentive (0.25 GBP for each optimal decision) for correct answers. Each subject had to go through 50 choices (40 single user and 10 multi-user households) and was informed about his/her performance after 25 choices. For each choice, there was the opportunity to "search" for more information by clicking on a button on the computer screen. All subjects completed an IQ-test and a questionnaire probing their general broadband knowledge.

The fictitious packages were developed around their access speed (up to 10, 20 and 50 Mbit/s). For each of these levels, there was a distribution on:

- Average download speed (actual speed)
- Upload speed
- Monthly usage allowance
- Price
- Traffic management (possible measures were download data consistency during peak time, none, download slowdown at peak times, download slowdown of P2P at peak times and prioritisation of real time services (prioritisation of gaming, prioritisation of VoIP, prioritisation of streamed video, prioritisation of P2P)).

Additionally, some fictitious offers included superfluous information such as adult content filtering, free modem, free anti-virus, etc.

The first and most relevant result of Huck and Wallace's (2011) study is that subjects found it difficult to make the rational choices. On average they made the right choice in less than half of the choice exercises, which is less than one would have expected if they had picked the broadband packages at random. Subjects who received the numerical information performed significantly better. They chose the right option in 50.7% of the exercises. The existence of superfluous information did not have a statistically significant influence on the number of optimal choices. Subjects tended to use the additional search too much, and those unable to identify the

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<sup>9</sup> It should be noted that this question was also asked in the qualitative study conducted by Kisielowska-Lipman (2012): "Traffic management" ranked seventh amongst eight items tested. Price, availability in the area and speed were the three attributes perceived to be most important by the 32 participants in the study.

<sup>10</sup> It should be noted that conjoint analysis commonly omits word of mouth, which, however, is known to influence consumer choice most strongly (see for instance: '3G mobile bill-payers' understanding of billing and charging arrangements', ACMA Report May 2011.cf Xavier 2011).

right answer at once seemed to search at random, with the additional information having little or no measureable effect on their choices. Subjects often opted for the more expensive package, suggesting that they use price as a proxy for the quality of service.

With regard to the personal characteristics (IQ and broadband knowledge), their experiment did not reveal any statistically significant differences. They note that one might expect that IQ ought to have some influence, especially if it is too low; however this was not visible in the experiment, as all subjects were above the threshold that allowed them to solve the tasks in the experiment. Meanwhile, it should be noted that Huck and Wallace do not publish the part-worth utilities for the attributes they tested, for obvious methodological reasons. Thus, the importance of network neutrality for the end-user cannot be derived from their paper.

Nam et al. (2011) address this issue. Their objective is to add the end-user's perspective to the network neutrality debate. To achieve this, they conduct a conjoint choice experiment with Korean end-users employing four attributes:

- Price (low 28US\$, medium 34US\$, high 40US\$)
- Access speed in Mbit/s (guaranteed minimum speed/maximum advertised speed: 1/10, 5/50, 10/100)
- Content Availability (free access to all content, access except for some content)
- Quality of the Public (Low-Tier) Network (access speed of public network is guaranteed, access speed of public network can be reduced)

Nam et al. (2011) state that they used "detailed explanations using simple language so that respondents would understand each attribute clearly." However, they do not provide any detailed insight into how they developed these explanations nor whether there was any attempt to measure whether consumers had actually understood them. They conducted their conjoint experiment in an online survey with 1,049 Internet users.

Respondents considered price to be the most important attribute in their broadband choice, followed by access speed. Taken together, these two attributes add up to more than 60 percent of part-worth-utilities. The relative importance of the two attributes directly linked to network neutrality were considerably lower in end-users' choices. The quality of the public network scored 19 percent and content availability scored 14 percent. The latter seems especially surprising given that unblocked access to all content is one of the characteristics of the Internet commonly referred to by consumers as highly desirable.

Nam et al.'s (2011) research seems somewhat limited in comparison to the other conjoint experiments reviewed in that the number of attributes tested is low. Therefore it seems likely that the relative importance of network neutrality is identified unreliably. One would expect it to change significantly if other important attributes such as bundling with TV or the brand of the ISP had been introduced to the experimental setting.

In conclusion, the two papers that include network neutrality-related attributes in their conjoint experiments that were identified in this literature review highlight the need for further research. Both papers fail to establish the actual role that network neutrality in consumers' purchase choices. While the first paper is not investigating this aspect in depth the second in light of the

results of the studies on purchase choices highlighted in the above does not include a sufficient set of other attributes to get a reliable result. Consequently, the third research objective of the present paper is

- To investigate the relevance and value of network neutrality-related attributes in consumers' purchase choices for at home IAS products.

## Methodology

The literature review has demonstrated that network neutrality is a multifaceted issue that has thus far been largely neglected by consumer research. Consequently, the methodology for the present paper reflects both the need to gain a fundamental understanding of consumers' conceptualisation of network neutrality as well as its role for their purchase decisions. While the first objectives lend themselves naturally to a qualitative approach, the third one is better fulfilled by a quantitative approach – in this specific case a conjoint analysis. The following paragraphs briefly summarise the theory of the methods used as well as the specific approach pursued by this paper. The section starts with a description of the qualitative method focus group discussions and proceeds with a description of our conjoint analysis as well as an overview of the remainder of the survey we conducted.

“Focus groups collect qualitative data from homogeneous people in a group situation through a focused discussion.” (Krueger & Casey, 2009: 15). Similar to individual in-depth interviews, focus groups offer the opportunity to explore participants' opinions and attitudes within their concrete social situation. However, for the present paper, they were the method of choice due to their specific advantages as compared to individual in-depth interviews. In particular, the interaction of participants leads to (1) the stimulation of ideas and concepts, (2) opportunities to observe interaction directly, (3) potentially new ideas on the dynamics of attitudes and opinions such as how they are formed and influenced within a group setting, (4) more spontaneity and candour and (5) more emotions. Furthermore, focus group discussions are more economical as they generate a larger number of insights more effectively than individual in-depth interviews. All these points render them well suited to providing a closer understanding of choice processes (Wynberg & O'Brien, 1993).

More concretely, these characteristics of focus group discussions echo the specific aims set for the qualitative research. The stimulation of ideas and concepts through interaction supported us in exploring significant cultural and social differences between test areas and generate insights into consumers' conceptualisation of network neutrality and attitudes to different aspects of it (e.g. performance guarantees, limited data volume). The search for the drivers of these attitudes has been aided by the candour, spontaneity and potential to retrieve new ideas from focus group discussions. Equally, we were likely to learn more (and in less time) about the most decisive attributes of ISP choice. The use of constant comparison<sup>11</sup> yielded useful insights for further policy analysis, but also helped considerably to keep the tight schedule of the project.

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<sup>11</sup> Constant comparison is a qualitative data analysis technique used in grounded theory-based research efforts. It implies that the data is searched for any concept identified in the analysis of a text chunk, e.g. a



The research outcomes of focus group discussions depend to a large extent on the sampling and recruitment processes. As samples should reflect studies' purposes, participants should be selected in correspondence with the research objectives (Krueger & Casey 2009). Therefore, the recruitment procedure for focus group discussions is not aiming for representativeness, and in fact ought to reflect the purpose of the study and enable the researcher to explore behaviour and thoughts as well as to compare scientific with everyday explanations (Calder 1977) However, it's important to pay attention to the composition of each individual focus group, as intra-group homogeneity is crucial for the success of the discussion (Krueger & Casey 2009).

It is commonly agreed that between 8 and 12 participants per group work best in a focus group setting in order for it to be productive (e.g. Krueger & Casey 2009). It should be noted though that for particularly complex tasks or topics, a smaller number of participants appears recommendable. The literature also agrees that theoretical saturation rather than a pre-set, finite number of discussions should dictate how many groups are conducted as part of the research (Krueger & Casey 2009).

In correspondence with the research objectives, we sampled the participants for the planned focus group from the parts of the population of each test area that have Internet access at their homes. The evidence reviewed for the focus groups showed clearly that participants – even if they saw themselves as Internet-savvy and interested in Internet policy issues – had very limited actual knowledge of how the Internet works, nor of network neutrality. Thus it is reasonable to assume that people who have no Internet access at home or otherwise are unlikely to be able to contribute much to the research questions at hand. Furthermore, the subject matter would bear little importance to them from their perspective.

Therefore, all participants had to have Internet access at home and use it at least twice a month, and they must have been involved in the decision regarding the choice of their Internet service provider. In addition to this, we ensured that none of the participants were related to journalism the telecommunications market or market research. To achieve this, we used test area specific screeners for their recruitment.

The duration of a focus group discussion depends to some extent on the complexity of the topic and the level of engagement of the participants. However one would normally expect a length ranging between 90 and 150 minutes (Krueger & Casey 2009).

A discussion guide usually steers the conversation, and they need to strike a balance between guidance to retrieve data with relevance to the research objectives and keeping the discussions

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part of a focus group transcript. The process of constantly searching and comparing similar/contrasting concepts, and of grouping similar concepts, allows a researcher to integrate data analysis with theory building. Groups of similar concepts constitute the basis for generating theories. This procedure is therefore drastically different from research approaches that first state hypotheses (a theory) and then assess available data whether a hypothesis may be verified or falsified. Onwuegbuzie et al. discuss constant comparison as a suited technique for the analysis of focus groups "[...] especially when there are multiple focus groups within the same study, which, as noted previously, allows the focus group researcher to assess saturation in general and across-group saturation in particular." (Onwuegbuzie, A. J., Dickinson, W. B., Leech, N. L., & Zoran, A. G. (2009).

as open as possible to be potentially “surprised” by new themes or concepts that the participants come up with.

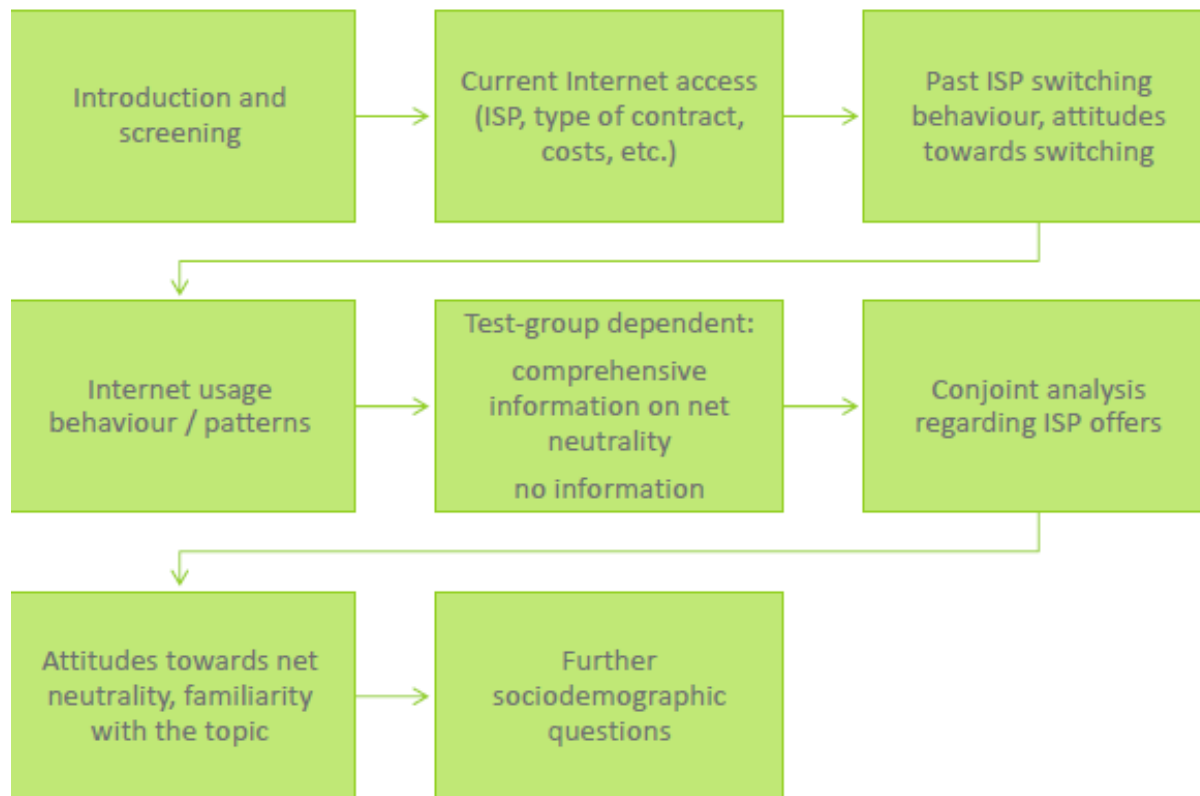
In order to compose the focus groups we recruited participants largely based on their Internet usage patterns, which reflects the study’s purpose and should ensure that none of the participants feels either misrepresented or overwhelmed by the knowledge of the other participants, and can therefore express himself/herself more freely. Thus, we gain a broad understanding of the motives, terminology and tone of language, we strived for a good mixture of gender, age groups and educational background within each of the groups.

We held focus group discussions with 7 to 10 participants in each group, as in our view this number reflected a good trade-off between generating a large number of insights in the limited time available and the complexity of the topic at hand. The first group in each test area was composed solely of ‘expert’ consumers, whilst the following two groups featured a mix across all levels of Internet expertise with the majority of participants having low or medium levels of expertise. In line with expectations, the ‘experts’ tended to be somewhat more capable of describing how the Internet works, and tended to have more knowledge about the specifics of their Internet access contracts. Otherwise, differences between the two kinds of groups were largely negligible and were not analysed further unless they were relevant to the research objectives of the study. All moderators were briefed extensively by the project team leaders.

Overall, it is our impression that the focus groups conducted as part of this project have yielded much more in-depth results about consumers’ understanding and conceptualisation of network neutrality and how the Internet works. We also achieved a good coverage of all the other themes intended for these focus groups in the discussion guide. In particular the topic of the role of the Internet in consumers’ lives provides additional insights to those in the existing literature. As expected, three groups were sufficient to reach theoretical saturation in each of the test areas.

For the quantitative research, we conducted a survey representative for the population with Internet access at home in each of the selected test areas. Respondents should be familiar with, and informed about, the product of interest (Internet access at home) to give valid information about usage experience, product preferences, and product-related attitudes. For each test area, at least 1,000 usable questionnaires were collected for this paper. Thus, the population of consumers having Internet access at home rather than the normal population was subject to this survey. The sections of the survey concurred with the research objectives set out for this paper. As this paper is part of a larger research project, Figure 1 illustrates the overall layout of the survey questionnaire. The most important section of the questionnaire for the present paper is section 6. The following paragraphs describe this section in more depth and qualify the methodological decisions we have made as regards the conjoint analysis.

Figure 1: Preliminary outline of the survey questionnaire



Source: YouGov

Taking into account commonly used conjoint analysis methods<sup>12</sup>, three options appear to be useful to fulfil the third research objective of the present paper:

- **Choice Based Conjoint Analysis (CBC):** This method is based on discrete choices and does not utilise additional questions to derive preferences. From a selection of two or more offers, respondents choose the most appealing one / the one they would choose in reality. Concepts are usually shown as *full profile* random concepts, i.e. each concept includes a level from each attribute. CBC can also include a *non-option*, which allows a respondent to answer that they would choose neither of the product offers shown. It is also possible to use partial profile concepts in CBC, where each choice between concepts only includes a subset of the attributes being researched.
- **Adaptive Conjoint Analysis (ACA):** This method is based on rating questions and utilises additional questions to derive preferences. Respondents are shown two concepts per question and indicate on a rating scale which they would prefer and to which degree. Concepts are only shown in partial profile, unless the total number of attributes does not exceed five. Before being shown rating questions, respondents answer direct questions regarding attribute importance and attractiveness of attribute levels. Those are used to *adapt* the concepts shown in the ratings. Instead of showing two random concepts, levels are combined in a way that forces respondents to *think thoroughly* about trade-offs by focusing on levels that base on the results of the preceding questions and therefore omit obviously unattractive levels within attributes.
- **Adaptive Choice Based Conjoint Analysis (ACBC):** This method is based on discrete choices and utilises additional questions to derive preferences. Choice questions in an ACBC are CBC-like. Beforehand, respondents answer a question in which they build

<sup>12</sup> For a more elaborated description of the conjoint analysis method in general, please refer to the Full Results Report published at: <http://www.wik.org/index.php?id=677&L=1&id=677>

their own optimal product (also called *build-your-own, BYO*) from available attributes and levels. The method also employs several questions in which they indicate whether they would at all consider a certain attribute level to identify “must-have” levels and “unacceptable” levels. Similar to ACA, this information is used to adapt choice tasks to force respondents to make more difficult trade-offs.

Of the methods outlined above, CBC is the most commonly used. ACA is a predecessor of CBC, while ACBC is a relatively new derivative of CBC. For the purpose of this research, ACA appeared to be most appropriate as it is well-suited for identifying product attributes and their actual impact on consumers’ choices that may be of less relevance as one would expect from the results found in the literature review. ACA forces the respondent to perform, in conjunction with the information at prior stages of the questionnaire provide reliable insights regardless of whether an attribute is a primary decision driver or not. Furthermore, more attributes can be analysed in an ACA than is feasible in a CBC. Given the complex structure of Internet Access Service offering, this may also be considered an important advantage for the planned study. Furthermore, ACA surveys are more engaging for respondents as the method „adapts“ to the answers a respondent gives and forces increasingly difficult trade-offs. Those advantages come at the cost that ACA requires more space in the questionnaire as it combines decision tasks between possible offers with additional questions regarding attractiveness and decision importance. Decision tasks are less realistic than CBC tasks as only a selection of all possible attributes is shown in each task and decisions are not choices but instead scaled statements of preference. Price effects are underestimated, limiting the applicability to pricing research and predicting market shares. An analysis of respondents’ willingness-to-pay appears still possible in ACA.

## Focus Groups Results

The role that the Internet plays in consumers’ lives is the backdrop for all of the following insights this paper creates. This role differs greatly across test areas. In Sweden the Internet is woven into consumers’ lives and they often use it almost without realising, such as when streaming music or videos on a smart stereo system or TV. On the other hand, Czech consumers explained that they are very conscious of their Internet use and do not constantly use it. They predominantly use it for organisational purposes, such as arranging to meet friends. The role it plays in the other two test areas falls between these two extremes. Meanwhile it is interesting to note that there is a high usage of desktop computers in Greece, and that they can even act as a gathering point for the family, in a similar way to the television. Families use the computer to access the Internet together, which allows parents to exert some degree of control over children’s online activities. In Greece the Internet is considered a necessity for both people’s private lives and their work lives, and participants use it as a retreat from the real world, as do those in Croatia. In the Czech Republic, participants rarely reported that the Internet plays an equally important role across both their work and private lives, as many employers prohibit the private use of it at work.

Communication and information were frequently mentioned across all test areas as being the major purposes for which participants use the Internet. However, the framing of these purposes and the actual usage differ substantially. In Sweden, communication using applications like Skype, Viber, WhatsApp and so forth is natural and part of modern life. Consumers use these

applications to communicate with friends and family regardless of whether they are located on another continent or just around the corner. They particularly enjoy being able to have a video connection while communicating. Someone reported even having dinner together with friends in London via Skype. Again, the picture in the Czech Republic is very different. Participants there are certainly aware of such applications and some reported that they use them. However, their usage remains focused on organisational tasks. They contact friends to arrange meeting them rather than weaving this form of communication as actively into their lives as the Swedes appear to do. For the Greek consumers, communication revolves around their mobile phones. Therefore it is not surprising that the amount of free minutes in their mobile plans is important to them, as will be illustrated later on. In Croatia, the use of the Internet for communication currently seems to be of somewhat lesser importance, as it did not feature prominently in participants' reports of their own usage.

With regard to accessing information, there were few noticeable differences across the test areas. In all discussions, there were participants who checked the news on their mobile devices even when they are still in bed in the morning. In general, participants highlighted the fact that anyone can gain immediate access to information as the Internet's most important characteristic. Many participants explained that this free access to information gives them a sense of freedom and individuality.

There were also consumers in all four groups who showed great awareness of the dangers associated with the Internet. In Croatia, this particular side of the Internet seems to be less of an issue to consumers. Examples given of these dangers included people with criminal intent, fraudulent websites, spam and other criminal behaviour. In addition, some participants mentioned cyberbullying and other forms of misbehaviour online. Many were also aware of the amount of time that one can spend, or rather lose, on the Internet. In Greece and Croatia in particular, many participants described the feeling of getting into a flow when using applications or websites such as Facebook or YouTube, and that this only stops when they realise that several hours have passed, leaving them with a feeling of guilt. By and large participants agree that all these problems are more serious when children use the Internet. Some even fear that youths may lose the ability to communicate in a 'normal' way.

With the exception of those in the Czech Republic, consumers cannot imagine a world without the Internet, neither in their private nor their business lives.

Apart from those in Croatia, participants displayed a generally correct rudimentary knowledge of the concept of the Internet and how it works. Their descriptions and explanations included various aspects: a network, a network of many networks, devices, servers, communication and the exchange of data via codes (zeros and ones). In a more illustrative way, the Internet was compared to the television or the telephone, because these devices also transport data in a similar manner, and it was also compared to a spider's web. In a more symbolic and usage-related way, it was compared to a library or encyclopaedia that everyone has access to, or to a hotel's pass key that allows people to enter certain rooms.

In all four countries, the Internet is thought of as a public domain that is paid for mainly by its users, who are also seen as providing most of the content. While Croatian participants stated that the users are the ones who mostly pay for and create content, the Swedish participants also suggested that big companies such as Google create content. Participants in the Czech Republic stated that providers also have to pay for it, and Greek participants agreed that everybody who uses it also has to pay for it, not only consumers but also companies, advertisers and the state.

Swedish participants also showed some awareness of the more subtle ways of paying for the use of the Internet. They referred to companies such as Google or Facebook, which use personal data within their business models. This awareness was rare or barely existent in the other test areas, where, mainly in Croatia, it was replaced by a latent fear of being watched online to the extent that 'someone' might come knocking on your door if you type some suspicious terms into Google or similar sites.

Participants across all the test areas share the feeling that there ought to be some rules that apply to the Internet. They frequently suggested behavioural rules such as netiquette, as well as child protection issues and data protection. They very rarely mentioned the technical rules that are needed to guarantee that the Internet works.

When discussing rules that apply to the Internet, participants expressed the strong desire that their governments would bring some rules into force to guarantee some basic principles regarding their personal rights when using the Internet. Consumers in all four countries would prefer governmental legislation to rules that are set by companies, and thus an absence of vested and financially-driven interests. ISPs are only rarely seen as the ones that define such rules. Only some Greek consumers elaborated on this possibility (ISPs' role in defining rules) to a greater extent.

Rules are accepted as long as it is guaranteed that consumers are free to follow their own interests but in a protected environment. In fact, the idea of introducing some rules or rather control of the free nature of the Internet, which was often linked to the absence of rules, is a theme that dominated many of the groups. Overall, participants agreed (that) they would like to be as free and uncontrolled as possible when online. On the other hand however, they also agreed that they would like some sort of guardian angel in the background that anticipates what they would deem as offensive, fraudulent or dangerous and filters only this content. Others have a different attitude and want to perform this task themselves, probably severely underestimating its magnitude. As hard or even impossible it would be to achieve this consumer ideal, the only institution most of the participants would have faith in performing it is their own government.

The definition of how the Internet works was rated as understandable but too technical for all of the consumers. In particular, participants frequently criticised the lack of interesting aspects, as well as the lack of descriptive pictures and easily understandable examples. Instead of a large amount of technical vocabulary in the description of how the Internet works, it was clear that participants would prefer a description that uses everyday language. Instead of terms such as 'electronic devices' consumers prefer words like 'laptop' or 'PC'. Participants would also prefer a

definition that is as simple and straightforward as possible, even though this again may lead to a less detailed description. For example, participants prefer to use the term “network” instead of a “network of networks”, as it is easier to understand. It should also be mentioned however, that a noticeable number of participants were already familiar with the concept of a network of networks even before they had read the definition provided in the discussion guide. Participants would also prefer pictures instead of technical terms and cumbersome textual explanations. Some spoke about spiders’ webs instead of networks when they explained how the Internet works in their own words, while others compared the transport of data to individual addresses with sending letters, with postal addresses being necessary for the postman to know where to deliver the information. In essence, consumers asked for a much more figurative, vivid and simple way of presenting this information.

The phrase ‘a set of common technical rules’ was rated as particularly unclear in all four countries as it does not explain which rules apply and how, but only vaguely mentions that some exist. Only some consumers stated that two examples are described later in the definition, but still miss information how exactly the rules are enforced. Therefore the explanation used in the final information package should play down this specific aspect, as it is difficult to understand and does not add substantially to the major topics to be covered in the questionnaire.

The phrase ‘arbitrary digital data’ was a source of misunderstanding for participants in all four countries, especially in Greece as in Greek it also has the meaning of ‘randomised digital data’.

This misunderstanding that data is somehow exchanged randomly is especially problematic when it comes to the role that is attributed to providers in relation to traffic management and regulations, because this definition implies that providers are not able to influence the path that data takes. The implications for the survey explain how the study team intends to address this concern.

As could be predicted from the few other studies that have attempted to shed light on the topic of network neutrality using qualitative research methods, this part of the discussion was the most difficult for participants. With very few exceptions, they were completely unaware of the term and constantly had trouble working out what it means, describing its nature and understanding its potential impact. Still, as can be seen from the description of the results for each test area, as well as in the overarching description here, the discussions conducted for the present study yielded much deeper insights into the topic than any previous published study.

As described in the discussion guide<sup>13</sup>, participants were first asked to make word associations with the term. These usually revolved around fundamental policy issues rather than the technical way in which the Internet works. In particular, the term ‘neutrality’ seemed to mislead participants easily into discussions of democratic concepts, war (in relation to neutral zones) or even gender equality. Suggestions that followed when participants focused on the Internet when trying to interpret the term were frequently related to the absence of Internet censorship and free access for everyone to all content. When participants made a link to how the Internet works, they usually

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<sup>13</sup> See Annex of the full results report published at: <http://www.wik.org/index.php?id=677&L=1&id=677>.

thought that the term referred to the idea that all ISPs would have to conform to the same set of rules and therefore would provide exactly the same quality of experience to every user.

In Sweden, Greece and Croatia, some participants even thought that only one provider would be available. Ideally, they explained that the state would have control over this provider, which would result in the Internet being free of charge for everyone, since it would be paid for by taxes.

Therefore, one major discovery from these discussions is that terminology itself is very misleading for the average consumer. Judging from some of the comments and examples that many participants gave in later parts of the discussion, it appears more sensible to use a term that reflects 'traffic management' more closely, as this concept is likely to be better understood by consumers.

The definition of the term 'network neutrality' that was read out by the moderator was mostly rated as comprehensible by participants. However, similarly to the description about how the Internet works, they found it too technical and unengaging for normal consumers. The definition did not necessarily help participants' comprehension of the term, as the discussions were more political and related to the term 'neutrality' rather than the term 'network'. They also kept using the word 'equality' and only stopped discussing this concept after being guided away from it.

With minor exceptions, participants were convinced that network neutrality does not exist today. Again, they linked this fact predominantly to issues revolving around the censorship of specific content online. They often referred to countries such as Russia, China or the US as examples of countries where the Internet is not neutral, in other words where it is censored in some way. Furthermore, participants in the Czech Republic identified access barriers to certain websites as not being neutral. Along with Swedish and Greek participants, they also strongly believe that search engines ranking results and including adverts in them is evidence that network neutrality does not exist at the moment.

Interestingly, participants had very different attitudes towards network neutrality's effect on the telecommunications market. Consumers in the Czech Republic consider it a threat to free market competition as it would flatten all differences between competitors, whereas consumers in Sweden are worried about the effects of not having it, as some institutions or companies may pay for prioritisation and those that cannot afford this would be at a disadvantage if it didn't exist.

Despite the general mistrust that many participants have of their ISPs, they failed to see that they have any role to play in the question of network neutrality. Even after being prompted by the moderator, they still adamantly blamed disruptions on their own equipment malfunctioning, the ISP's network infrastructure, or the website itself, rather than traffic management by the ISP. Some Swedish and Greek participants were exceptional in this respect and able to make the link.

Therefore, participants were asked to read the text on deviations from network neutrality, which is reproduced in the annex to this report. This text was confusing for some, as in later stages of the discussions it became more and more unclear whether they were talking about network neutrality or deviations from it. Once again the definition was generally rated by participants as



too technical and somewhat difficult to understand. However, most of them gained a rudimentary understanding of deviations from network neutrality and were able to discuss the topic further.

Deviations from network neutrality were rated as acceptable by consumers in all four countries, as long as they help to give priority to important content and data, especially when it helps governmental or healthcare institutions to react in the case of a disaster. Content blocking is only desired when it leads to the protection of the users, especially children, for example by blocking sites with dangerous content.

While consumers are convinced that deviations from network neutrality already occur to some extent, they doubt that such services are available for 'normal' consumers and able to be customised. If they were available and service quality could be guaranteed, consumers in Greece and the Czech Republic would accept private users receiving prioritised services as long as they pay more for them. Consumers in Sweden believe such services to be undemocratic and contrary to the original idea of the Internet being a free medium. They feel that everyone should have unrestricted and good quality access to it.

In conclusion, the prioritisation of certain applications is accepted by consumers in all four countries, while any type of blocking is disapproved of. However, participants were not able to understand how providers could be able to manage the data traffic. It is very important to them to be able to make their individual choices regarding the applications and services that are prioritised, but they doubt that they would be able to find a provider that could offer them a contract that meets their exact needs. Furthermore, they remained fearful that traffic management could be used in a dictatorial manner, without realising them. Also, some participants showed a fear of being controlled associated with the analysis of Internet traffic that ISPs would naturally have to perform to ensure that the right types of traffic are prioritised.

While Internet usage is primarily focused on accessing certain content, the discussions did show that consumers are most comfortable with discussing their Internet usage based on the applications that they use. The idea of restricting access was particularly well understood when it related to specific applications, for example throttled access to video streaming. We therefore propose to adopt an application-driven view of Internet usage in the quantitative survey, both in terms of the general questionnaire and the attributes tested in the conjoint analysis.

## Survey Results

As outlined in the above, the survey covered many more areas than the value of network neutrality to consumers. These results have been documented fully in the full results report of the study that is available online<sup>14</sup>. For the purpose of this paper, we report only the results of the part with immediate relevance to the third research objective of this paper investigating the relevance of network neutrality-related product attributes for consumers' purchase decisions as well as their willingness-to-pay for the specific levels within these attributes. The following, first gives an overview of the product attributes tested in the conjoint analysis; second the relevance

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<sup>14</sup> See <http://www.wik.org/index.php?id=677&L=1&id=677>.

of network neutrality-related product attributes is discussed and hence the value of them to European consumers is presented.

The conjoint analysis conducted as part of the online survey for the present paper featured ten product attributes. Five product attributes had been selected based on the literature review. These represented the most important product attributes for at home IAS:

- Price
- Brand
- Speed
- Bundle
- Contract duration

Results for these product attributes are not reported as part of this paper in order to focus on the third research objective as deduced from the literature review. The five network neutrality-related product attributes tested as part of the conjoint analysis were:

- Data caps (with and without zero-rating of specific applications)
- Quality-differentiated P2P file sharing
- Quality-differentiated VoIP service
- Quality-differentiated video streaming
- Quality-differentiated online gaming

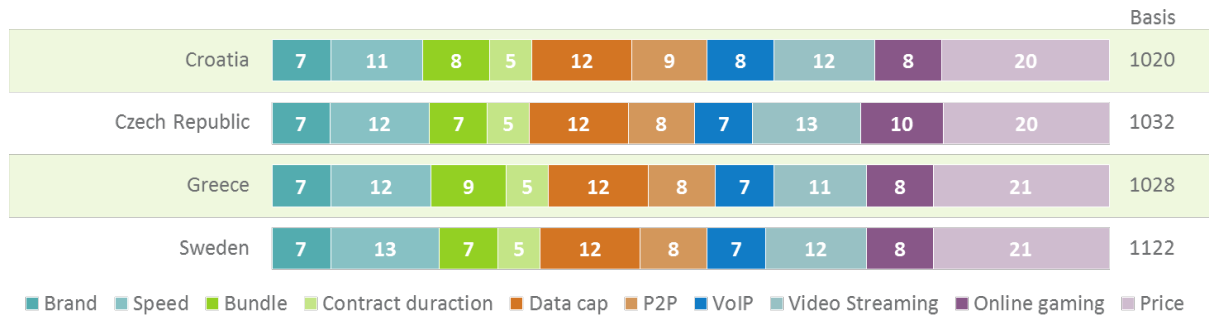
These attributes and their specific levels were developed based on the insights gathered in the focus group discussions. Accordingly, the items tested and the descriptions employed focussed on the effect on the consumer's quality of experience.

Figure 2 shows the relevance of the attributes tested in the conjoint analysis for each country. The overall picture shows similar patterns across all countries. Price is the most important attribute in all countries accounting for about 20% of respondents' decisions made in the conjoint analysis. Yet, it has to be kept in mind that the method of ACA tends to underestimate the relevance of price in most empirical studies<sup>15</sup>. Download speed, data cap, and video streaming are second most important, yet being roughly half as important as price. Download speed is slightly more important in Sweden than in Croatia. The Czech Republic and Greece fall in between. The accessibility of video streaming is slightly more important in the Czech Republic. Also, Czechs are more attuned to the accessibility of online gaming applications than respondents in other countries. The attribute bundle is more important to Greeks than to Czechs and Swedes, Croatians fall in between. The accessibility of P2P / Files haring applications, VoIP applications, and the attribute brand are almost equally important with only minor deviations across countries. Contract duration is the least important attribute by far across all countries.

Figure 2: Relative importance of attributes by country

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<sup>15</sup> Reasons for ACA underestimating the relevance of price may be that respondents (a) perceive other attributes than price not being independent from each other and thus these attributes may count multiple times in respondents' preferences or (b) have difficulties in differentiating large numbers of attributes resulting in more similar relevancies for all attributes. Due to this bias, other techniques (i.e. Choice Based Conjoint) should be applied when pricing issues are main focus. See Pinnell, J. (1994).



Basis: All respondents  
 Values shown in %

While the relevance of attributes reflects the importance of whole attributes in the decision making process of respondents, it does not give any information on which specific levels of attributes are preferred by respondents. Conclusions on preferences with respect to attribute levels have to be made on the basis of part-worth utilities<sup>16</sup>. In order to focus this paper on fulfilling the research objectives drawn from the literature review, we report only the part-worth utilities for the network neutrality-related product attributes<sup>17</sup>. They are reported in the same order as listed in the above.

With respect to different characteristics of *data cap*, offers without data cap are clearly preferred over those containing any type of data cap. As this is the economically most favourable option from a respondent’s perspective and as well as the most common configuration of existing offers, this finding is not surprising. In line with rational thinking, data cap options of 50 GB per month are preferred over 10 GB options. Notably, offers including data cap options of 50 GB reach only about 60% to 75% of the attractiveness of offers not including a data cap.

Differences in utilities among specific data cap options of 50 GB are minor. In Croatia, the Czech Republic, and Greece, options with zero-rated applications (i.e. the use of a specific application is exempted from the data cap) are more attractive than the data cap of 50 GB without any exemptions. Among options with zero-rated applications, zero-rating of video streaming applications is most attractive (yet, zero-rating options of offers of 50 GB data cap are almost equally attractive in Greece).

Data cap options of 10 GB are least attractive. As within 50 GB data cap options, the option including a zero-rating for video streaming applications is most attractive among 10 GB data cap options across all countries. It should be noted that there is a strong decrease in the part-worth utility from the zero-rated video 10GB data cap to the other zero-rated options. The latter reach only around half of the attractiveness that respondents give the 10GB data cap with zero-rated

<sup>16</sup> For ease of interpretation, raw part-worth utility values were transformed by scaling the part-worth utility value of the least attractive level of an attribute to zero. This does not mean that the least preferred level is not attractive to consumers at all, yet it is least attractive among all the levels tested within an attribute. Other than that, part-worth utilities are interval scaled and do not carry an inherent meaning. In consequence, they are to be interpreted in a relative fashion (e.g. level A is twice as attractive as level B). A detailed description of how to interpret part-worth utilities can be found in both the summary and full results report at <http://www.wik.org/index.php?id=677&L=1&id=677>.

<sup>17</sup> The part-worth utilities for the remaining five product attributes are reported in the full results report available at: <http://www.wik.org/index.php?id=677&L=1&id=677>.

video streaming. As expected, the data cap option of 10 GB not including any exemption is least attractive overall.

Figure 3: Part-worth utilities attribute data cap by country

	Croatia (n=1020)	Czech Republic (n=1032)	Greece (n=1028)	Sweden (n=1122)
No data cap	81	64	60	70
50 GB, your favourite video streaming application does not count towards the cap	51	47	39	51
50 GB, your favourite VoIP application does not count towards the cap	49	42	39	45
50 GB, your favourite online game does not count towards the cap	49	44	39	43
50 GB	46	40	35	44
10 GB, your favourite video streaming application does not count towards the cap	13	11	11	14
10 GB, your favourite online game does not count towards the cap	6	7	6	5
10 GB, your favourite VoIP application does not count towards the cap	5	6	5	6
10 GB	0	0	0	0

Basis: All respondents  
Part-worth utilities shown

Part-worth utilities of the levels of the attribute *P2P / File sharing* show clear preferences for normal usage of *P2P / File sharing* applications (see Figure 4). Unrestricted and not prioritised access to *P2P / File sharing* applications is the most attractive across all countries. Prioritised access is ranked second. For slowed down accessibility of *P2P / File sharing* applications, a substantial loss in utility can be observed. Across all countries, slowed down accessibility is only about half as attractive as normal use. As to be expected, blocked access of *P2P / File sharing* is least attractive.

Figure 4: Part-worth utilities attribute P2P / File sharing by country

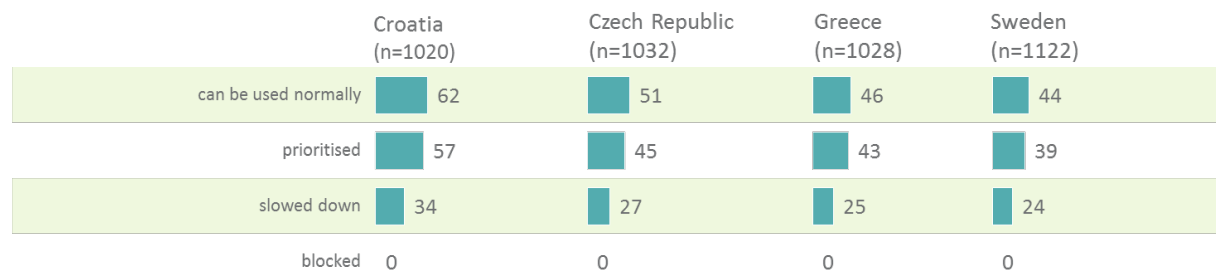
	Croatia (n=1020)	Czech Republic (n=1032)	Greece (n=1028)	Sweden (n=1122)
can be used normally	72	56	55	52
prioritised	62	49	47	45
slowed down	39	29	26	27
blocked	0	0	0	0

Basis: All respondents  
Part-worth utilities shown

Similar patterns of the preference structure found with respect to the accessibility of *P2P / File sharing* applications are observed for the other network neutrality-related attributes reported subsequently. With respect to the accessibility of *VoIP services*, normal usage is the most attractive option as well across all countries (see Figure 5). As reported for the accessibility of

P2P / File sharing applications, attractiveness is substantially lower for slowed down access to VoIP applications.

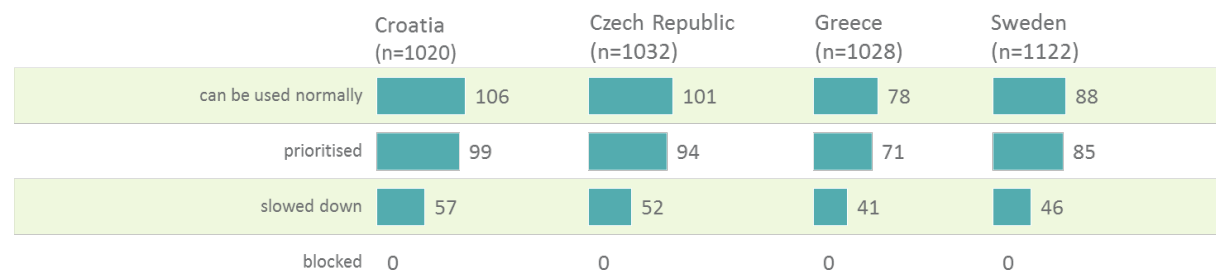
Figure 5: Part-worth utilities attribute VoIP services by country



Basis: All respondents  
Part-worth utilities shown

Figure 6 shows the part-worth utilities for the accessibility of *video streaming* applications. The preference structure is similar to those of the network neutrality-related attributes reported above. Normal usage is most attractive. Part-worth utilities decrease substantially for restricted accessibility of video streaming applications.

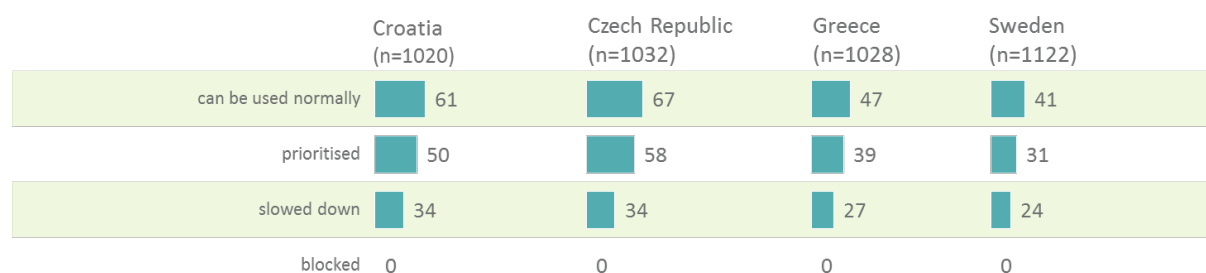
Figure 6: Part-worth utilities attribute video streaming by country



Basis: All respondents  
Part-worth utilities shown

With respect to accessibility of online gaming applications, normal usage is most attractive as well across all countries (see Figure 7). Again, restricted accessibility in terms of slower speed is about half as attractive as normal usage.

Figure 7: Part-worth utilities attribute online gaming by country



Basis: All respondents  
Part-worth utilities shown

Whilst existing offers for Internet access at home have fewer deviations from network neutrality than mobile offers<sup>18</sup>, we may see more such offers in the future. Thus, it is important to learn whether consumers appreciate or disfavour offers with deviations from network neutrality. The results presented in the following paragraphs provide such insights and qualify consumers' preferences further by an estimate of their willingness-to-pay for network neutrality-related product attributes.

To arrive at such an estimate for the value of network neutrality to consumers, the relationship of price and network neutrality-related attributes was investigated. Analyses<sup>19</sup> were performed by systematically varying price as well as the accessibility of specific Internet applications. By simulating offers with different price points and different types of access to P2P / File sharing, VoIP services, video streaming, and online gaming utility scores for these offers were calculated. Other attributes were held constant by including the most attractive level across all offers simulated per country. Brand was excluded from this principle. As interactions of brand and price (as well as other performance-orientated attributes) are likely, each combination of price and network neutrality-related attribute level was simulated for all brands included in the conjoint analysis. Subsequently, utility scores of one offer (i.e. a specific price and network neutrality-related attribute level) were averaged across all brands.

Figure 8 to Figure 11 show raw utility scores (averaged across brands) for each network neutrality-related attribute per country. Utility scores are reported for each price point tested in relationship to attribute levels of P2P / File sharing, VoIP services, video streaming, and online gaming. Absolute values of utility scores may not be interpreted rather than ratios of scores dependent on different types of access to Internet applications.

Utility scores for combinations of price and different types of access to Internet applications in Croatia are shown in Figure 8. Results show that utility scores decrease slightly for prioritised access compared to normal access. This pattern holds true for all Internet applications and all price points tested. Utility scores for blocked access options decrease substantially. When comparing utility scores of the combination of blocked access options and the lowest price point

<sup>18</sup> For a comprehensive overview of traffic management practices in Europe see: BEREC (2012): BEREC findings on traffic management practices in Europe. A view of traffic management and other practices resulting in restrictions to the open Internet in Europe. BoR (12) 30.

<sup>19</sup> Analyses were performed using the Sawtooth SMRT (Sawtooth Software Market Research Tools) tool.

(150 kn; in orange colour) with the combination of normal access options and the next higher price point (240 kn; in purple colour), the first only reaches about the utility level of the latter. With respect to video streaming, the blocked access option at 150 kn is below the utility level of the normal access option at 240 kn. This finding shows that an offer including blocked access to video streaming at 150 kn is of lower utility to Croatian consumers than an offer including normal access to video streaming at 240 kn. Slowed down access options typically fall in between the range of utility scores of normal access options and blocked access options.

Figure 8: Association of price and accessibility of Internet applications (Croatia)



These findings are replicated in the Czech Republic (see Figure 9), Greece (see Figure 10), and Sweden (see Figure 11) with only minor deviations. In the Czech Republic, the pattern described for access options to video streaming (such that utility scores for blocked access options fall below utility scores of the normal access option of the next higher price point) is also found for the accessibility to online gaming applications. In Sweden, the decrease in utility from prioritised to slowed down access to online gaming applications is less distinct.

Figure 9: Association of price and accessibility of Internet applications (Czech Republic)

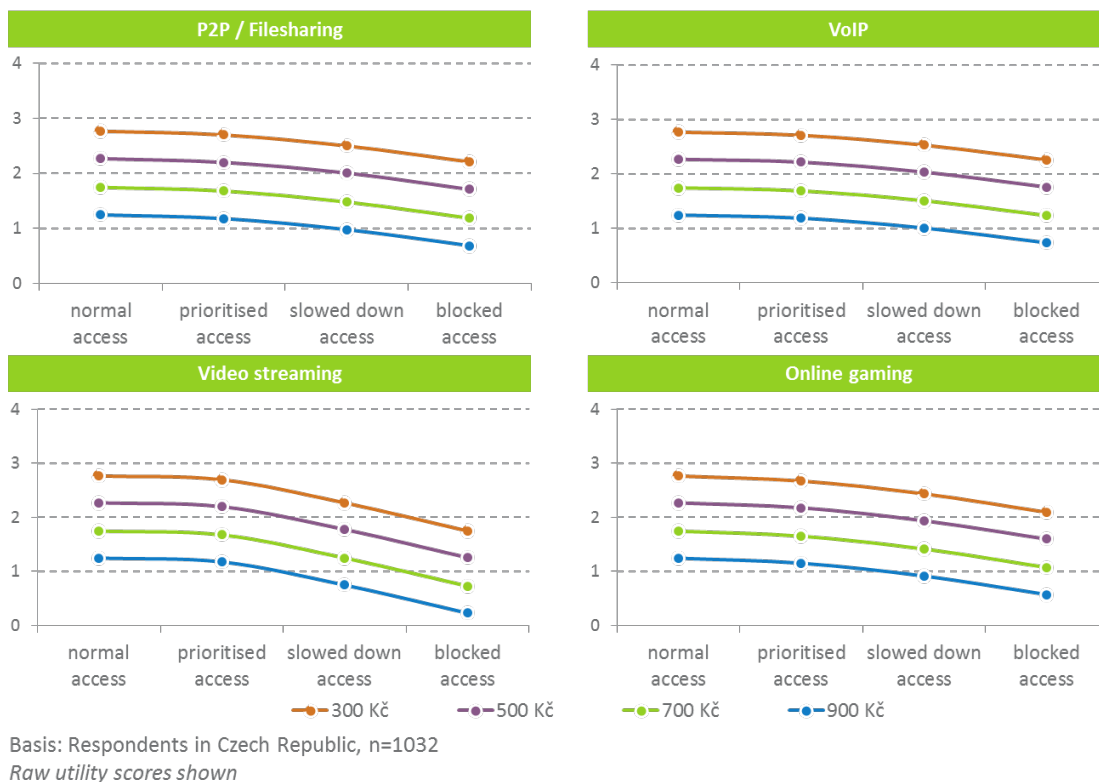


Figure 10: Association of price and accessibility of Internet applications (Greece)

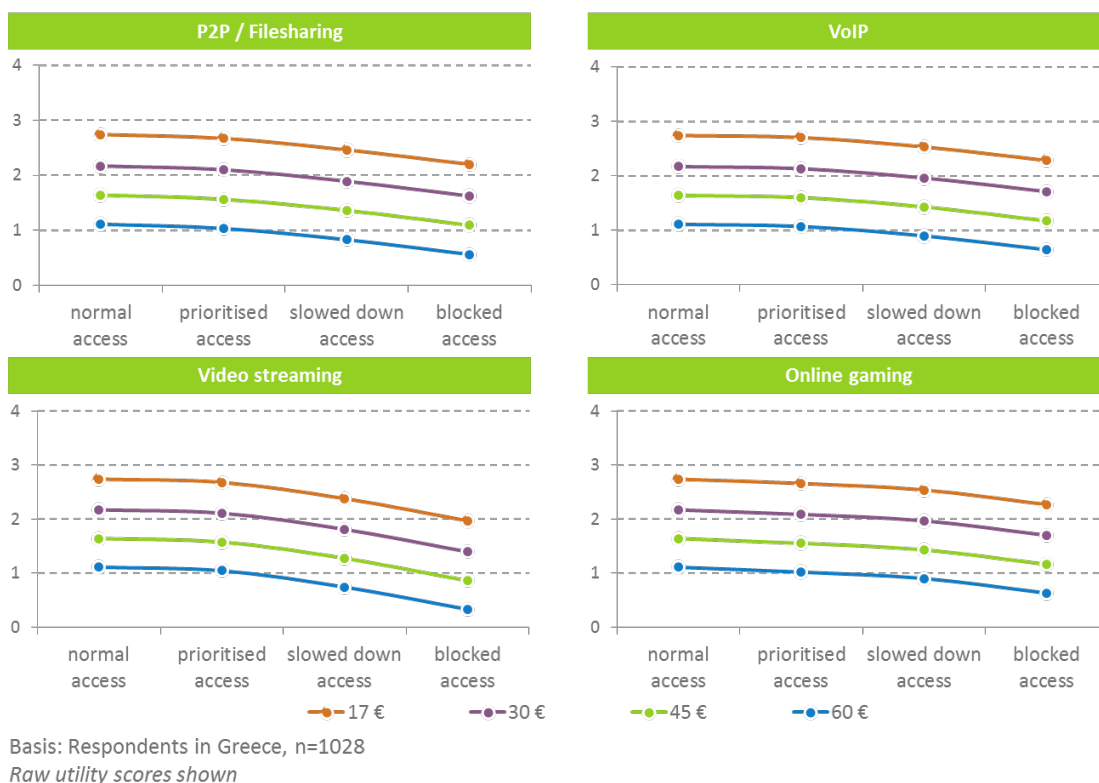
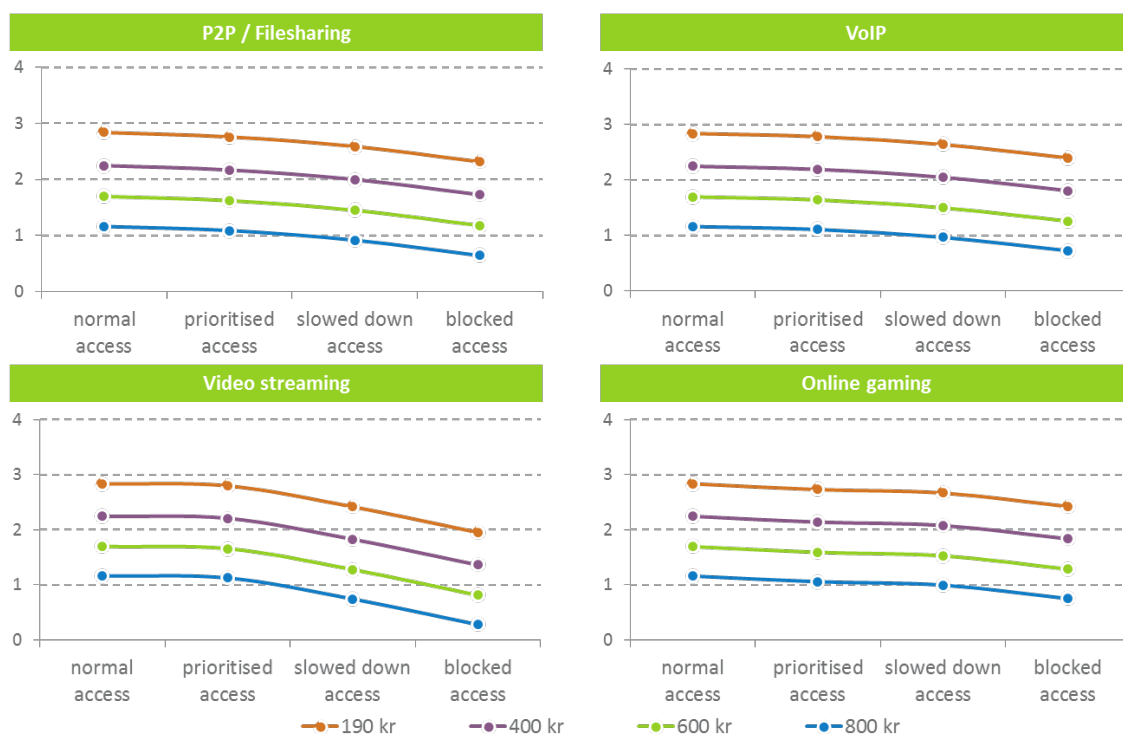




Figure 11: Association of price and accessibility of Internet applications (Sweden)



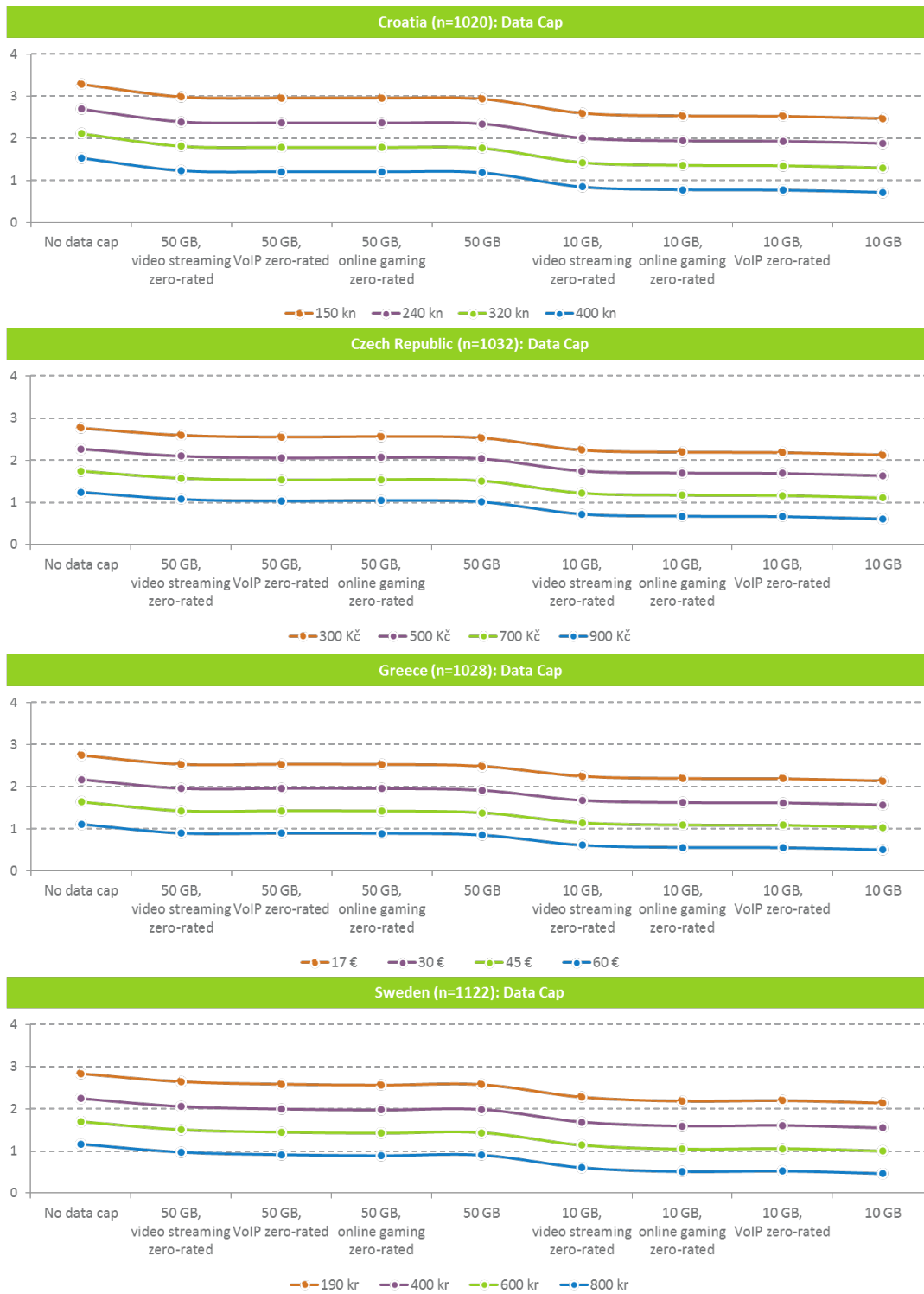
Basis: Respondents in Sweden, n=1122

Raw utility scores shown

Overall, these findings clearly indicate that deviations from normal access are penalised by decline in utility. This holds true for slowed down and, to a lesser extent, prioritised access. Utility for offers with blocked access options declines to an extent that offers with normal access options at a higher price point can compete or even exceed blocked access options in terms of utility.

Figure 12 shows raw utility scores per price point for the data cap options tested in the conjoint analysis. As outlined above, analyses were performed by varying data cap options and price for each brand tested while holding everything else constant. Utility scores were averaged across brands. Results show the characteristic decrease in utility for 50 GB options versus the no data cap option and for 50 GB options versus 10 GB options have been described earlier (see Figure 3). Utilities for 10 GB options roughly score on the level of the no data cap option given the next higher price point (e.g. the utility of the 10 GB option with video streaming zero-rated on the level of 150 kn is about as attractive as the option without data cap on the level of 240 kn in Croatia).

Figure 12: Association of price and data cap options by test area



Raw utility scores shown

In essence, from the above analyses, one may deduce that consumers would be willing to pay significantly less for offers whose access is restricted in one way or another.

## Conclusion

This paper set out to fulfil three research objectives. First, the role that the Internet plays in European consumers' lives was explored. Using focus group discussions in four test areas across Europe, it was found that whilst the Internet is important to most consumers today, the specificities of its role differ quite substantially. These differences appeared to be linked to the quality of Internet access that is available as well as to cultural and societal backgrounds in the test areas. Second, consumers' understanding and conceptualisation of network neutrality as well as the role it plays for their purchase decisions were explored in the focus groups as well as in the following representative surveys in the test areas. It was found that consumers respond best to messages that refer to the effects of deviations from network neutrality rather than descriptions of the technicalities. Furthermore, we found indications in the focus group discussions that consumers are likely to value the effects of quality differentiation as regards specific Internet applications highly as part of their purchase decisions for at home IAS products. The survey confirmed this indication. It was found that network neutrality-related attributes make up for half of consumers' purchase decisions. Third, the value of network neutrality to European consumers was further qualified by analysing the part-worth utilities of the individual levels applied to network neutrality-related attributes in the conjoint analysis. It was surprising to find that the best effort level was consistently the most preferred one. Otherwise, we found that restrictions in access to applications result in significantly lower willingness-to-pay. The following paragraphs discuss our major findings. First, we elaborate on the implications we found on how to approach the topic network neutrality with consumers including the relative importance network neutrality holds for them. Second, we try to answer the question whether the preference patterns found in the conjoint analysis can be taken as an indication for an actual consumer preference for the best effort Internet.

As regards product attributes that are relevant for consumers' purchase decisions, network neutrality-related attributes scored relatively prominently. The product attributes download speed, data cap, and video streaming determine the second most important purchase decision criteria after price. Data cap and video streaming are both attributes with relation to network neutrality – data cap via zero-rating and video streaming via attribute levels of normal (unmanaged), prioritised, slowed down, and blocked access.

The insight that network neutrality-related attributes have an influence on consumers' choice is surprising. This result differs fundamentally from existing (previous) studies. What really sets this study apart from previous studies is the qualitative research that preceded the quantitative survey and conjoint experiment. The qualitative insights most probably set the right path for the quantitative research. They shaped the way the survey questionnaire, as well as the product attributes for the conjoint experiment, were presented to participants. We find that addressing consumers on the level of their access to applications and content (as opposed to the level of data transport) is paramount for an accurate estimation of network neutrality-related attributes.

The insight of network neutrality's relative importance in consumers' choice has a number of relevant implications. It means that ISPs need to understand in depth what consumers are willing

to pay for. The initial analysis of willingness-to-pay presented in this study may provide a first glimpse on the value consumers assign to network neutrality-related attributes in IAS offers. New products will need persuasion to be successful. Here our insights on how to approach consumers can be most useful.

The detailed analysis of the data cap product attribute raises, in addition, the question if, and to which extent, zero-rating is attractive for stationary Internet access at home. Zero-rating has almost no effect on consumer preferences. What counted, overall, was the volume at which data is capped. The comparison of data cap options at 50 GB and at 10 GB with the no data cap option shows a characteristic decrease in utility for 50 GB options versus the no data cap option and for 10 GB options versus 50 GB options. The detailed analysis of these options reveals that zero-rating does not lead to substantially increased product attractiveness as long as the monthly allowance is set at a data volume which consumers presumably would not reach (the case of 50GB). However, zero-rating of a consumer's favourite video streaming, VoIP or P2P / file sharing application adds substantially to the attractiveness of an IAS product if case data is capped at a data volume that consumers are likely to surpass (the case of 10GB). Most strikingly, the most data hungry application i.e. video streaming was the one that on average was twice as attractive as the other zero-rated option at the 10GB data cap. Thus, one may deduce that consumers actually show some awareness of their data consumption and how it may eat up their monthly data allowance.

This finding has non-trivial consequences. For instance, it will be interesting to know which combination of data cap and zero-rating may offer most value to consumers, whether there are combinations that lead to consumer dynamics in the market for IAS, and whether this would have significant effects on competition and innovation.

The attributes related to the levels of access to different Internet applications (video streaming, VoIP, P2P, online gaming) were featured in the questionnaire in a way to not exclude one another. Consequently, the most rational behaviour for any respondent would have been to show a preference for prioritised service across all four applications at the lowest price. In this light, the consistent preference for normal access across all applications is surprising and merits further discussion. It should be noted that the relative part-worth utility of normal access was usually only slightly larger than the one of prioritised access, but significantly larger than the one for restricted access. Blocked access was always, clearly, the least preferred level.

First, it may be argued that respondents did not understand the meaning of the specific attribute levels. We were able to test this by comparing two groups of respondents – one that received an information package prior to the conjoint exercise in the survey and one that did not<sup>20</sup>. If this had been the case, one would have expected the part-worth utilities of respondents, who had seen the information package, to differ from those of the ones who had not seen it. As part-worth utilities did not differ, there is no indication that there was an issue with respondents' comprehension of the attributes themselves.

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<sup>20</sup> The results of this experimental design are not reported in this paper, but can be found in the reports available at: <http://www.wik.org/index.php?id=677&L=1&id=677>.

Having ruled out a fundamental methodological problem, several other explanations seem possible. Given that this is the first study researching consumers' preferences for network neutrality related attributes in depth, all these explanations should be interpreted with care.

A first potential explanation is that normal access, referring essentially to the best effort Internet as consumers know it in their respective country, should be understood as a must-be quality<sup>21</sup>. In light of the focus group results indicating that unrestricted access to any content or applications is the core characteristic of the Internet and is often equated to network neutrality, this explanation seems sensible. Whilst this is a convincing explanation for the substantial drop in part-worth utility for the restricted and blocked access levels as well as the importance of normal access, it fails to fully explain why normal is consistently preferred to prioritised access.

This aspect may be better explained by consumers' concept of fairness as regards network neutrality that transpired from the focus group discussions. Consumers appear to find it fair that certain government, disaster relief or security relevant applications are prioritised on the Internet. Some groups, also, were interested in purchasing prioritised services. However, no one was really in favour of receiving such prioritised services at the expense of other consumers. This underlying construct could be an explanation for the observed preference patterns.

Another explanation, in particular in the at home usage situation that has been investigated in this study is that consumers are simply unfamiliar with the benefits that a prioritised access to a specific application may bring them. Such offers are very rare at the moment as the research of the specific market environment in the test areas showed<sup>22</sup>. As the Internet is primarily an experience good<sup>23</sup>, the actual benefit can only be experienced after the purchase. Consequently, the consumers may have quite simply opted for the most familiar option being doubtful about the actual benefit of prioritised access. This explanation is supported by the fact that most respondents were quite satisfied with their current Internet access service.

Whilst consumers are not familiar with network neutrality related attributes for at home Internet access, such attributes are already widespread in the out of home usage situation and within this mostly in contracts for mobile Internet access via 3G and 4G networks. Thus, one may expect that consumers familiar with such options from their mobile Internet access may act differently. When the results of the survey for the network neutrality related attributes are split by respondents with and without mobile Internet access, we do not find much evidence to support this explanation. There are no significant differences for the attributes referring to access. Nonetheless, it should be noted that there are some noticeable differences as regards data caps

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**21** This refers to Kano's theory of customer satisfaction. A must-be quality describes an attribute that is essential to the product's use, but is commonly not mentioned in any customer satisfaction survey, because it is so fundamental. An example that is typically used is a leaking milk carton or a butcher's shop that is not clean. No one would opt to purchase such a carton or any meat from this butcher. Nonetheless, these are attributes that are not mentioned unprompted as they are all too obvious. Note that in our survey by mentioning the specific level we did prompt respondents.

**22** For an overview of the market analysis conducted as part of this research please refer to the full results report at <http://www.wik.org/index.php?id=677&L=1&id=677>.

**23** An experience good describes a good whose actual quality a consumer can only learn about by using or consuming it.

(incl. zero-rating), which is in line with expectations as this is the most common network neutrality-related attribute in mobile Internet access contracts.

Finally, it may be argued that respondents accounted already for the (potential) long-term effects of the prioritised level such as less innovation or foreclosure on the Internet. Given the small role such arguments played in the focus groups discussions and also the fact that part worth utilities did not differ between respondents who had seen the information package and those had not, this explanation seems unlikely.

In sum, to answer the key underlying question “Do consumers actually prefer the best effort Internet, or do they rather prefer the Internet they know over an Internet they have not yet experienced?” more research has to be undertaken. This research needs to address all the possible explanations outlined in the above. As it seems unlikely that one study could test all the explanations at once, the most relevant starting point appears to be a study that can investigate consumers’ preferences for normal (unmanaged) and quality-differentiated access to Internet applications based on actual experience. Such a study could measure consumers’ satisfaction with different experiences, investigate the impact on purchase choices (in comparison of ex ante and ex post purchase choices), and it could provide in-depth results on the trade-offs consumers would be willing to make. Most importantly, it would contribute to the discussion on whether network neutrality should be understood as a must-be quality for consumers.

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