



The Value of Network Neutrality to European Consumers

A study commissioned by BEREC

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Executive Summary

Network neutrality has been a part of policy and public debate for some time now. Various studies have investigated numerous aspects of the issue from regulatory, legal and other perspectives. Interestingly, consumers have largely been neglected. In light of this obvious lack of insight, the present study set out to discover the value of network neutrality to European consumers from various perspectives. To achieve this overarching objective, a mixed-methods approach was used including both qualitative (focus group discussions) and quantitative research methods (online survey including a conjoint analysis). The research was conducted in four carefully selected test areas across Europe: Croatia, the Czech Republic, Greece and Sweden. Just like the report, the executive summary is structured in line with the major questions relating to the value of network neutrality to consumers.

What is the role of the Internet in consumers' lives?

The importance of the Internet to consumers is clearly reflected in their attitude that equal and unrestricted access to the Internet is a human right. Their freedom online is most important to consumers. Therefore, it is not surprising that one of the statements that received the highest levels of agreement in the survey was "Everybody should have the right to receive all the content and applications that are offered online". Also, it should be noted that despite their awareness of potential dangers on the web, consumers' attitudes about the Internet were overwhelmingly positive. Only a few can imagine living without it.

Are consumers aware of network neutrality and traffic management practices?

If one considers only consumers' awareness of the two terms "network neutrality" and "traffic management", the result is obvious and easy to foresee. Awareness of these terms among the general population of Internet users is minute. In fact, most people have very little knowledge about

how the Internet works in the first place which in turn impedes their understanding and conceptualisation of how data traffic might be managed in any way. In this respect, our study concurs with other studies that have explored consumers' awareness of these specific terms.

However, our results highlight that consumers' awareness of network neutrality cannot be captured by solely examining their understanding of the term. As their awareness of the issue depends on multiple dimensions, it has to be approached as a topic embedded in their view on the Internet and the role the Internet plays in their lives. Our results indicate that consumers care very little for the technicalities of data transport and have a very limited idea of the role that Internet Service Providers (ISPs) fulfil. What they care about, however, is their own quality of experience, commonly thought of as unrestricted, high-quality and reliable access to the content and applications they want to seek out online. Thus, consumers' awareness of network neutrality is not tied to traffic management practices per se; instead, it is tied to their immediate experience of traffic management's effects.

As consumers' satisfaction levels with their at-home Internet access are generally high and as they rarely blame their ISP for disruptions they notice, it seems unlikely that even if consumers notice adverse effects of traffic management they will be able to voice these issues and attribute them correctly. Thus, one major recommendation from our study is that such issues should be addressed primarily in forums of informed stakeholders, which naturally include consumer organisations. This is, of course, not implying that consumers do not play an important role as in the end their purchase decisions will decide the success or failure of quality-differentiated Internet Access Service (IAS) products.

Another important finding of this study is that although it enjoys great popularity among policymakers and other informed stakeholders, the term "network neutrality" itself is misleading for consumers. In particular, for focus group participants the term "neutrality" triggered ideas of freedom, neutral zones in war or gender equality. Most common, however, was the link to censorship of certain content on the Internet. Participants frequently referred to measures imposed by Russia and China. Overall, the term "traffic management" appears to be better suited to discussions with consumers.

What do consumers think about traffic management?

As soon as a basic comprehension of traffic management had been established in the focus group discussions, participants were able to discuss the issues in some detail. Referring to the possibility of purchasing prioritised services for themselves, marked differences between the test areas emerged. In Sweden, almost everyone appears to oppose such practices, while in Greece and the Czech Republic a significant number of consumers appears to be open to such offers. In Croatia, this part of the discussion received less

emphasis; however, the survey results indicate that a significant proportion of consumers may accept these offers too. It should be noted though that independent from their attitude towards quality-differentiated offers, participants in the focus groups were doubtful about ISPs' ability to anticipate and meet their specific preferences.

Although consumers mostly worried about their own quality of experience, it is striking to note that they appear to account for the wider effects of traffic management. In essence, consumers subscribe to the idea that some data can or, in some cases, even should be prioritised, either for extra payment or due to reasons of urgency. On the other hand, consumers do not want prioritisation to take place at the expense of anybody else's access and in particular not their own quality of Internet access. As they consider potential effects of traffic management not only on themselves but also on others, consumers exhibit a pronounced sensitivity for fairness when it comes to network neutrality. In this context, consumers also consider, to some extent, greater societal market effects. The latter issue was raised in the Swedish focus group discussions where several participants were worried that some large market actor may pay the ISP(s) to remove competitors from their network, thus hindering competition and innovation.

Consumers' pronounced desire for fairness implies that ISPs need to understand in depth what consumers are willing to accept. Our research suggests that consumers are in principle open to (the effects of) traffic management, but they draw a line when someone's benefit is to the detriment of someone else. Fairness understood this way defines what consumers would probably perceive as reasonable traffic management. It will be important for ISPs to contain traffic management effects that impair the experience of a consumer to a minimum.

The resulting key questions are of course just how sensitive consumers really are to violations of what they consider fair, whether they would actually attribute the reason for a violation to their ISP's behaviour, and if they translate any dissatisfaction into action (for instance, switch to another provider). The study of these questions deserves further attention from research as the respective insights may help define consumer-driven, clear-cut boundaries between reasonable and unreasonable traffic management.

Would consumers care about traffic management in their purchase decisions?

How consumers' attitudes towards network neutrality are reflected in their purchase criteria was tested in a conjoint analysis (ACA). Previous studies employing similar approaches exhibit some shortcomings that this study overcomes by testing a broad range of IAS product attributes and by building on insights from the preceding focus group discussions in order to select and phrase the network neutrality-related attributes for the conjoint analysis in a way that actually resonates with respondents.

The conjoint analysis tested ten product attributes for IAS, out of which five referred to typical product attributes, such as price or download speed. The remaining five product attributes revolved around applications that may or may not be affected by deviations from network neutrality, such as prioritisation or throttling.

With regard to the product attributes that are relevant to consumers' purchase decisions, network neutrality-related attributes scored relatively high. This result deviates from previous studies, which tended to find network neutrality-related attributes to be of less importance to consumers. Download speed, data caps and video streaming came out as the group of second most important purchase decision criteria behind price.

Out of these three product attributes, data caps and video streaming both relate to network neutrality: the data caps included zero-rated applications and the video streaming attribute offered different levels of normal (unmanaged), prioritised, slowed down and blocked access. It is our assumption that the previous studies would have found network neutrality to play a much more prominent role had it been presented to consumers in a way that they could easily relate to.

Can transparent information about traffic management make a difference?

It is a widely held view that increasing transparency about network neutrality and traffic management practices by giving consumers (fair and neutral) information affects consumer behaviour. Our study is the first that tests this idea with regard to network neutrality and consumers' purchase choice criteria. To this end, half of the respondents in each test area saw an information package in the form of a short animated video that introduced to them how the Internet works and traffic management practices and their effects. It was found that the test and control groups of respondents differed markedly in their knowledge about how the Internet works in general and traffic management practices in particular. However, there was almost no measurable effect on purchase choice criteria.

This finding is very interesting in the specific debate on network neutrality, but also bears importance for other related fields of policymaking. In our case, both the focus group discussions and the survey found that there are strong preconceptions about the nature of the Internet and thus attitudes towards network neutrality. As highlighted in the above, the individual's quality of experience and unrestricted access to content and applications are seen as non-negotiable by consumers. Consequently, it is not surprising that transparency about how the

Internet works and the rationale behind as well as the effects of traffic management alone had little if any effect on consumers' behaviour. If a noticeable change in consumer behaviour had been our objective for this study, we would have had to test different (persuasive) framings for the information package. In fact, this represents a major avenue for future research that is relevant to policymakers, National Regulatory Agencies (NRAs), ISPs and content and application providers alike. Although for different reasons, all these stakeholders ought to be interested in understanding which persuasive messages are likely to resonate with consumers given their strong pre-existing attitudes towards the issue.

What are consumers' preferences?

To understand consumers' preferences as regards the product attributes of IAS, one has to analyse the specific part-worth utilities of the individual levels represented for each attribute. While the results for the five commonly tested product attributes were in line with previous studies, the results of the network neutrality-related attributes merit some further discussion.

The data cap attribute represents one of the two most relevant network neutrality-related attributes for consumers' purchase decisions. Generally, offers without any data caps were clearly preferred to those that included one. This is not surprising, given that this is the most common type of offer found in the market for IAS at home today. Naturally, consumers are unlikely to want the additional concern of a data cap limiting their at-home data consumption.

As regards zero-rating of specific applications, our results indicate that consumers exhibit some consciousness of their own data consumption: zero-rated applications appear to create value to consumers only if they are likely to reach the overall data cap. So, zero-rating of specific applications has almost no effect when it is offered

combined with a data cap of 50 GB. However, zero-rating and within that in particular zero-rating of one's favourite video application had a significant (positive) effect on the part-worth utility when it was linked to a data cap of 10 GB. Again, this finding calls for more in-depth research into this matter. For instance, it will be interesting to know what 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 a significant impact on competition and innovation.

The part-worth utilities for the remaining network neutrality-related attributes also showed some surprising results. The attributes related to the levels of access to different Internet applications (video streaming, VoIP, P2P, online gaming) were featured in the questionnaire in such a way as 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 investigation. It should be noted that the relative part-worth utility of normal access was usually slightly higher than the one of prioritised access, but significantly higher than the one for restricted access. Blocked access was always clearly the least preferred level.

As we can rule out fundamental methodological issues, several other explanations seem possible. 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. 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. However, it fails to

explain why normal is consistently preferred over prioritised access.

This aspect may be better explained by consumers' concept of fairness as regards network neutrality, which transpired from the focus group discussions and has been highlighted above. More likely, consumers at this point simply lack the knowledge about what prioritisation actually means for their own quality of experience given the lack of such offer in the market. Consequently, consumers may have quite simply opted for the most familiar option as they were doubtful about the actual benefit of prioritised access. This explanation is supported by the fact that most respondents were quite satisfied with their current IAS. Finally, it may be argued that respondents already accounted for the 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 group discussions and also the fact that part-worth utilities did not differ between the test and control groups of respondents, this explanation seems unlikely. In sum, to answer the key underlying question of "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.

How do consumer characteristics influence preferences?

Besides this in-depth analysis of preferences for specific levels within product attributes, it was also possible to identify four mutually exclusive consumer segments from the preference patterns captured in the conjoint analysis. As these four segments were built from the choice data, it is not surprising that they show significant differences in their choices. However, they also shed light on what may actually drive these differences, namely both socio-demographic variables and attitudes towards the Internet – or, in essence, the role of

the Internet in one's life. These underlying variables appear to be consistently attached to the respective segments across test areas. This clearly highlights that such underlying variables actually drive choices, not the market environment. However, the market environment is very likely to shape the size of the respective segments in each test area.

Are consumers inclined to switch due to traffic management practices?

To answer this question, one first and foremost has to keep in mind that consumers in all four test areas exhibit little inclination to switch in general as they are satisfied with their current IAS or see little if any better offer. It should be noted that Greece, probably due to the financial crisis, has been experiencing elevated levels of switching over recent years.

Most interesting in the context of this study, however, is the question of whether consumers would be inclined to switch due to their ISP introducing quality-differentiated IAS. Although there was a high agreement from respondents in the survey on items that referred to exactly this question, they should be interpreted carefully. In fact, the agreement shows that the majority of respondents expect people to switch providers if two conditions are met, namely if they disagree with the traffic management practices of their ISP, and if they are informed that these practices take place. Knowing that satisfaction is a key contributor to customer loyalty and knowing that satisfaction in all test areas is higher than average in the EU, one would doubt that awareness about and disagreement with certain traffic management practices alone would give sufficient reason for consumers to actually switch providers. Given the importance of one's own quality of experience, switching due to the introduction of such services may happen on a large scale only if consumers are dissatisfied with their quality of experience, and

attribute the reason for impaired quality to their ISP. We mentioned earlier that consumers tend not to blame their ISP when experiencing major disruptions and are usually not too bothered about minor disruptions.

It should be noted that the identified consumer segments show marked differences as regards their propensity to switch due to traffic management-related issues. In general, two of the identified consumer segments, active multimedia users and dynamic private and business users, would be more likely to switch providers as a result of certain traffic management practices than the other two segments, conservative brand users and pragmatic average users, although there are occasional exceptions to this pattern. In Croatia, dynamic private and business users would be the least likely to switch if access to online gaming was restricted, and in the Czech Republic, active multimedia users would be the least likely to switch if access to VoIP was restricted.

What is the monetary value of network neutrality to consumers?

In order to further analyse the value of network neutrality offers to consumers, the relationship between price and the network neutrality-related attributes was investigated. This was done by systematically varying the price as well as the levels of access to certain types of applications.

By simulating offers with different price points and different levels of access to P2P, VoIP services, video streaming and online gaming, utility scores for these offers were calculated.

The results of the analysis can give an indication of the monetary value that consumers attach to different levels of the network neutrality-related attributes tested as part of the conjoint analysis. For instance, in Croatia, utility scores for video streaming are slightly lower for prioritised access than for normal access, at the same price point.

Scores for slowed down access are even lower, and blocked access scores lowest. Thus, the option of blocked access at 150 kuna (kn) is below the utility level of the option of normal access at kn 240.

These findings are mirrored in the other test areas, with only minor differences. In sum, they indicate that consumers' willingness to pay is significantly reduced if the service exhibits adverse effects of deviations from network neutrality.

Will a quality-differentiated service pay off for ISPs?

Taken together, these insights indicate that there is a trade-off for ISPs that intend to offer quality-differentiated services. If they were to introduce offers with deviations from network neutrality, they might gain additional revenue from consumers who purchase prioritised services, but they are also likely to lose consumers who strictly oppose such measures, or otherwise they would have to give them a strong incentive to stay through a discount on their monthly price.

Interestingly, many participants in the focus groups, even if they were inclined to purchase products with the prioritisation of certain services, had severe doubts as to whether ISPs would actually be able to provide them with a personalised product that matched their own individual preferences. In our survey, we introduced only a limited number of non-neutral attribute levels for specific applications. Contrary to the indications from the focus groups, respondents were able and willing to choose from these offers. This indicates that ISPs can be successful making standardised offers for quality-differentiated services which are likely to resonate at least with certain consumer segments.

What is next?

The study has explored the value of network neutrality to consumers from numerous perspectives and has identified many novel

insights into the issue. However, as it is the first comprehensive study of its kind, it is not surprising that it raises almost as many questions as it was able to answer. More research into the consumer perceptions is needed as we have highlighted above. Furthermore, this study emphasises the need for more consumer-oriented insights over and above the network neutrality debate to be used in policymaking.



Consumers understand the Internet as a space for information and social interaction, not as a platform for data transport. They are not only unaware of network neutrality, but find the term misleading.



Quality of experience is most important to consumers. Free, unrestricted and reliable access to high quality of content and communication is what they care about.



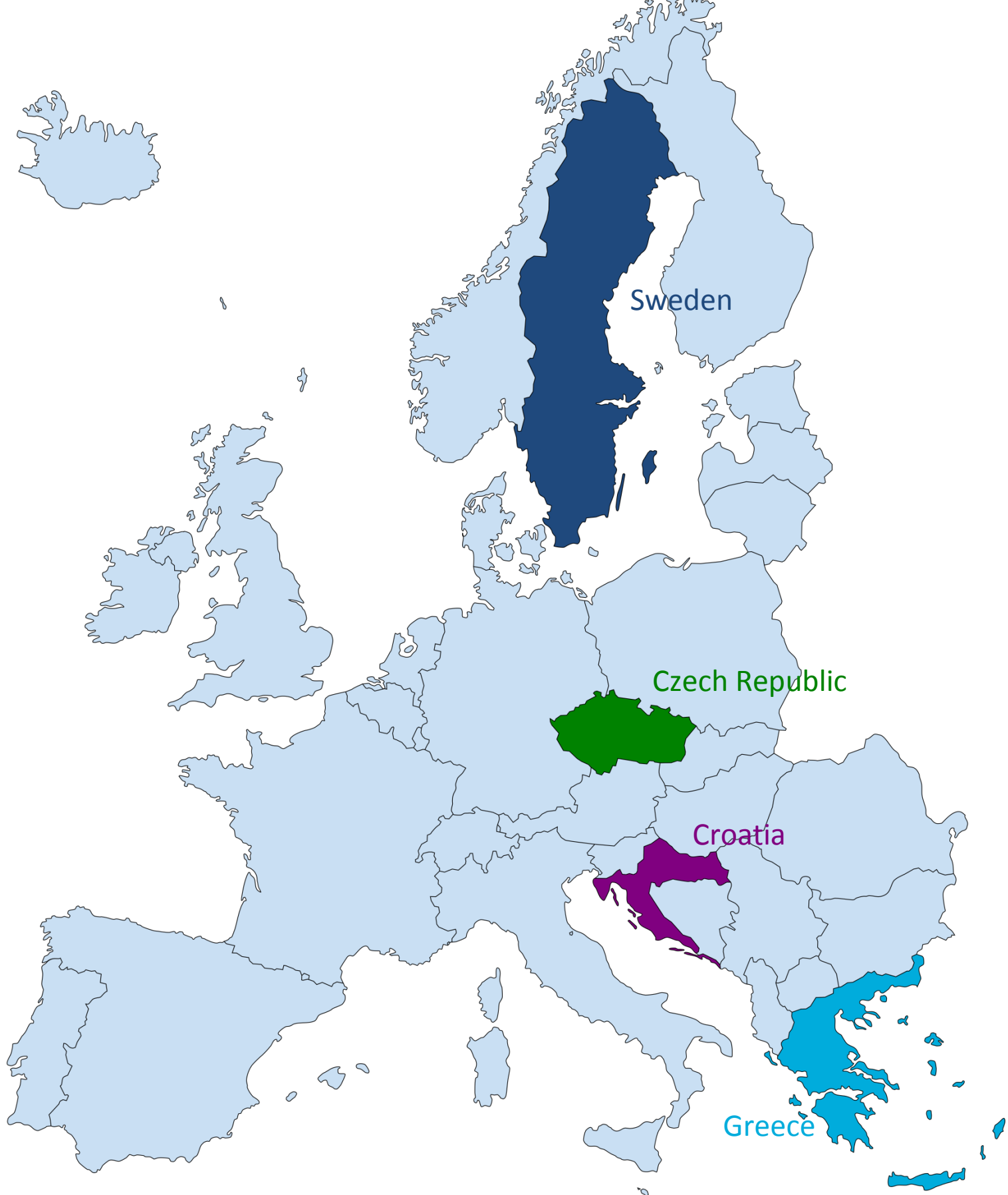
Network neutrality-related attributes make up around 50% of consumers' purchase decisions. There are different consumer segments that show distinct purchase behaviour.



Consumers want fair play. In addition to their own quality of experience, they care about the quality of experience of others. Some may thus be skeptical about quality-differentiated services.

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The qualitative and quantitative research of this study was conducted in four carefully selected test areas.

Introduction

BEREC's¹ 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 network neutrality in their purchase choice for IAS offers? BEREC commissioned an extensive study to answer these questions.

¹ Body of the European Regulators of Electronic Communications, <http://berec.europa.eu/>.

This document is the summary report for this study. The summary report provides a concise overview of the major results of the research conducted by WIK-Consult, Deloitte and YouGov on behalf of BEREC. In addition to this report, there is a full results report that contains all results as well as all methodological notes in full detail. Furthermore, the full results report contains an annex that reproduces all relevant documents used during the research project, such as the discussion guide for the focus groups and the questionnaire for the online survey in English as well as in all four test area languages.

Whereas the full results report is structured according to the qualitative and quantitative parts of the research, the summary report combines the insights gained from the focus group discussions and the survey. The summary report is structured according to the major perspectives that emerged from our research related to the relevance of network neutrality to European consumers. These perspectives refer to (1) consumers' awareness of network neutrality and traffic management as such; (2) their interest in the issue itself as well as the (potential) effects of traffic management

practices; (3) the outcomes and IAS product attributes they desire; and (4) consumers' action as manifested in their propensity to switch providers due to (adverse) effects of deviations from network neutrality as well as their willingness to pay for quality-differentiated services.



The Internet means the world to consumers. It is a place where they find information and social interaction. They are unaware of technical details of data transport.

01 | Awareness

This study set out to discover how consumers value aspects of network neutrality in their purchase choices for at-home IAS offers. Are network neutrality-related product attributes important for consumers to make a decision? To which degree do purchase choices depend on product attributes with relation to network neutrality? The seemingly obvious way to obtain answers to these questions would be to ask consumers. Our research shows that following such a straight-forward approach might have led to responses, but most probably not to actual answers. The challenge lies within consumers' awareness and understanding of network neutrality and traffic management. Consequently, this chapter not only details how consumers conceptualise these terms; it also demonstrates that consumer information can make a marked difference and increase consumers' awareness of traffic management substantially – when presented accordingly.

Investigations into consumers' understanding and conceptualisation of network neutrality and traffic management are generally scarce. Only consumers' awareness of the term as such is well documented in the literature. The literature concurs that consumers are by and large unaware of the terminology and its meaning. For example, only around one in ten UK consumers are aware of the term "traffic management", and even these consumers do not think that ISPs in the UK use it.² This is one of the rare published quantitative insights. Most studies, however, employ qualitative methods. Our study approaches the topic from various perspectives, using both qualitative and quantitative research methods, in order to provide deeper analysis. This chapter first introduces the studies published so far, and it then presents our results and insights as regards

consumers' awareness of network neutrality and traffic management.

One of the most relevant studies in this area is that of Lawford et al. (2009)³, who conducted six focus group discussions in various Canadian cities. The participants were heavy Internet users, yet one major finding was that their "awareness and recognition of the term 'network neutrality' was very limited". The majority of them were unfamiliar with it, and those who had heard the term before still lacked a clear idea of its meaning; suggestions ranged from a lack of online censorship to an Internet where business interests have no influence. They often blamed their lack of awareness on being complacent about their own ISP's service. All participants had previously experienced disruptions, but they did not usually blame their

² Summary document published at: <http://stakeholders.ofcom.org.uk/binaries/research/broadband-research/1145655/traffic-research.pdf>.

³ Lawford, J.; Lo, J. & De Santis, M. (2009): Staying Neutral: Canadian Consumers and the Fight for Network Neutrality. Public Interest Advocacy Centre: Ottawa, 17. Available at: <http://tinyurl.com/6fnbu73>.

ISP for these and instead thought the problem lay with their own hardware and/or software, or another server. These views can also be seen in Kenny and Dennis (2013)⁴. Once participants were made aware of network neutrality, they showed great interest in it. Many were concerned about what they had learned about traffic management practices, and opposed the idea of the unnecessary throttling or prioritisation of certain content. Almost all of them saw ISPs' interest in profit as an insufficient reason for traffic management.

Quail and Larabie (2010)⁵ presented similar findings from a single focus group discussion with communication studies students at a Canadian university. Their participants were also largely unaware of network neutrality, despite the fact that they studied communications. When provided with information about it, they understood the concept and engaged more in the focus group discussion than before. Generally, they also seemed concerned about the influence that business interests might have on the Internet, which they thought of as a public utility.

The present study was conducted in four carefully selected European countries to enable examination of 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. This allows the study to provide an in-depth and detailed exploration of consumers' understanding of network neutrality and its

importance to them. Furthermore, the impact of an educational information package was tested in order to assess whether an improved understanding of how traffic management works has an effect on consumers' perceptions and evaluation of network neutrality.

An important insight the present study was able to confirm is that consumers' awareness of network neutrality cannot be captured by solely examining their understanding of the term. Consumers' awareness of network neutrality depends on multiple dimensions. This means that one has to approach consumers' awareness of network neutrality as a topic embedded in their view on the Internet and the role the Internet plays in their lives. In the present study, the focus group discussions in particular were able to shed light on these aspects.

In each group, a breadth of subjects were covered ranging from general thoughts that participants have about the Internet, the role it plays in their lives and their immediate experiences with it, to an in-depth discussion on network neutrality.⁶ At the start of the discussion about network neutrality, participants were asked to come up with words that they associated with the term (at first without being given a definition of the term). It became apparent that the term "network neutrality" itself was a major obstacle to their correct understanding of the concept. On the whole, they found it challenging to find word associations with the term and also struggled to engage in the discussion afterwards. Being given a definition of the term "network neutrality" did not help participants to overcome these

⁴ Kenny, R. & Dennis, A. (2013): Consumer Lock-in for Fixed Broadband. Communications Chambers.

⁵ Quail, C. & Larabie, C. (2010): Network Neutrality: Media Discourses and Public Perception. Global Media Journal – Canadian Edition 3(1), 31–50.

⁶ The full discussion guide for the focus groups (in English and the respective test area languages) can be found in the Full Results Report.

challenges. As was the case with previous studies, these difficulties were due to the fact that with very few exceptions, participants were completely unaware of the term and had difficulty understanding its meaning and its potential impact.

It was almost immediately clear that the word “neutrality” in particular easily misled participants into discussing democratic concepts, sometimes neutral zones in war, or even gender equality. When they tried to come up with ideas related to the Internet, they found it easier to approach the issue from a perspective familiar to them, which meant referring to the content and applications that they themselves use the Internet to access. Within that, the role of the ISP remained largely unclear to them.

This points to the Internet being an experience good (Nelson, 1970)⁷ for consumers, which means that consumers’ own experiences when using their IAS are what shape their perceptions of its quality. It follows that their awareness of traffic management practices is also likely to develop through experiencing these practices themselves. Consequently, it is important to separate consumers’ inability to define network neutrality from the fact that they may have experienced the effects of traffic management. It might be difficult for consumers to determine whether any effect they notice originates from traffic management or from another reason, but what consumers most certainly are able to do is rate an effect’s impact on the perceived quality of Internet experience.

⁷ Nelson, P. (1970): Information and Consumer Behavior. The Journal of Political Economy, 311–329.

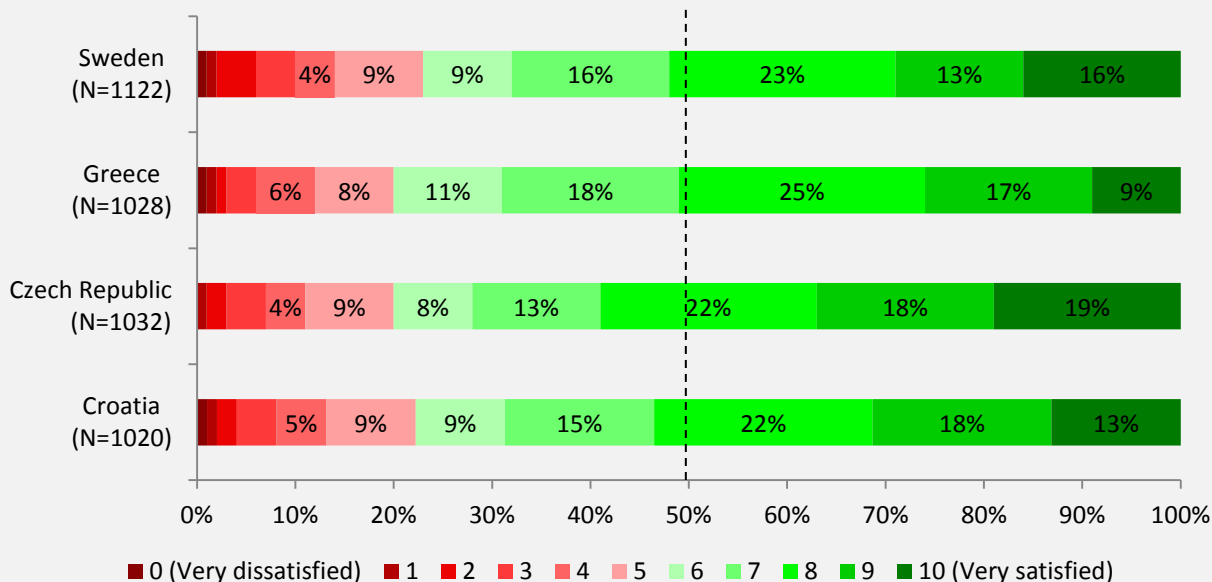


Figure 1 – Satisfaction with current ISP in test areas

More than 50 % of consumers are satisfied with their IAS.

In essence, experienced quality is a key factor for consumers' satisfaction with their IAS. Therefore, in order to understand if and how consumers might become aware of traffic management practices, it is necessary to start by exploring consumer satisfaction with their IAS.

The results of the survey⁸ conducted in the four test areas show that current levels of consumer satisfaction with ISPs are high across all the test areas, with around half of the respondents reporting a level of satisfaction of 8/10 or above for their home Internet access, and on average less than 5% giving a rating of 2/10 or less. Generally, respondents with a faster download speed are more satisfied than those with a lower speed. Respondents in the Czech Republic gave the highest

⁸ The survey methodology used, detailed sample characteristics and the full questionnaire (in English and the respective test area languages) can be found in the Full Results Report.

	Losing connection entirely – I never experienced this	Losing connection entirely – Less than once per week	Losing connection entirely – About once a week
Sweden (N=1122)	18%	45%	12%
Greece (N=1028)	22%	43%	14%
Czech Republic (N=1032)	10%	59%	14%
Croatia (N=1020)	12%	42%	19%

Figure 2 – Experience of disruptions: losing home connection entirely

	Duration of Disruption – From seconds to a few minutes	Duration of Disruption – Up to 2 hours	Duration of Disruption – Up to 1 day
Sweden (N=1122)	43%	20%	7%
Greece (N=1028)	47%	18%	8%
Czech Republic (N=1032)	48%	23%	9%
Croatia (N=1020)	48%	24%	6%

Figure 3 – Duration of disruptions: losing home connection entirely

satisfaction ratings, despite the fact that in the focus groups, participants often complained about poor-quality services. However, they also stated that they were used to a bad-quality service and were aware that they could purchase a better, more expensive solution, but preferred to stay with a low-cost option; hence, their satisfaction could be a result of the low price that they are paying. The focus group discussions also showed that the factors that contribute to a lack of satisfaction are mostly technical problems, such as slow connections and disruptions, as well as insufficient or non-existent support from the providers' customer service department. In fact, good customer service appears to be the most important driver of customer loyalty.

In spite of the generally high consumer satisfaction levels, disruptions to the IAS do happen in all of the test areas. They tend to occur less than once a week, and the majority of them last no more than a few minutes, and some only last a few seconds. The focus groups indicated that consumers tend

not to be overly bothered by such disruptions. Severe disruptions during which the connection is completely lost for more than a day are rare; between 2% (Croatia, Czech Republic and Sweden) and 3% (Greece) of respondents have experienced these. For such disruptions, the focus group discussions showed that it was the response of the ISP that had the most impact on consumers' overall satisfaction.

As has also been reported in other studies, participants mostly attribute disruptions to insufficient network capacity at peak times, or more commonly to malfunctions of their own equipment or servers elsewhere on the web. They only rarely blame ISPs, and in fact are more likely to blame them for not reacting appropriately. It is important to note that participants very rarely suggest traffic management practices as a possible source of the disruptions that they had experienced.

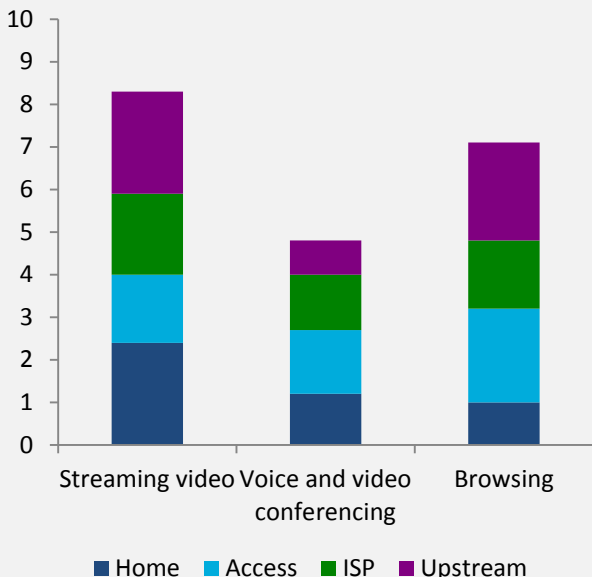


Figure 4 - Relative sources of impairment across applications

Source: Actual Experience (2014)

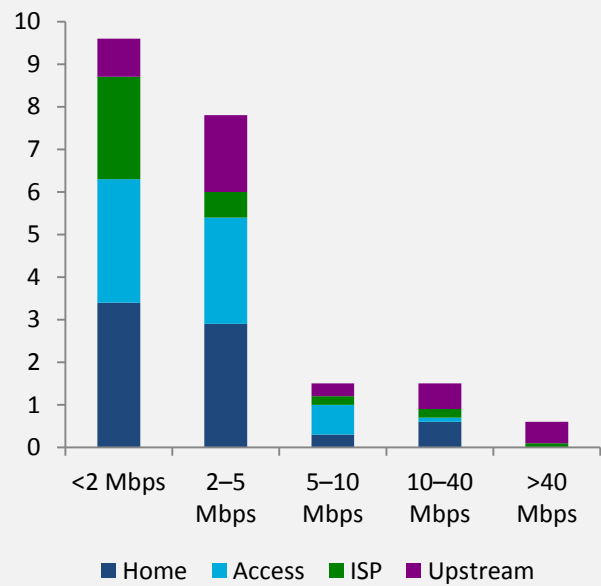


Figure 5 - Relative sources of impairment across line rates

Source: Actual Experience (2014)

Our focus group discussions also indicated that consumers have very little if any knowledge (or interest) in how the Internet works.

This limited understanding of how the Internet works is likely to restrict consumers' understanding of potential sources for impaired quality of experience. A recent Internet performance study⁹ by Actual Experience shows that there are several possible causes for impairment. The study investigates where along a digital value chain an impairment originates, namely whether the reason is within the respective user's home network, in the ISP's access network, in the ISP's regional and national network, or in an upstream network. The study reveals that reasons for impairment differ significantly for different applications.

⁹ Actual Experience (2014): Internet Performance Evaluation for Ofcom. <http://stakeholders.ofcom.org.uk/binaries/research/technology-research/2014/performance-eval.pdf>.

Network neutrality issues should be addressed among informed stakeholders

Traffic management may affect consumers' access to content and applications, as well as their quality of experience. However, the focus group results show that consumers are unlikely to attribute minor disruptions in particular, such as the slow loading of websites, a stuttering video stream or unclear VoIP transmission, to traffic management. Instead, they will attribute such disruptions to problems with their own devices, their own lack of skills to configure them correctly or peak time reductions in server capacity. Severe disruptions such as loss of access to the Internet for more than a day rarely occur at all, as reported by participants. If they occur, participants attribute them to faulty wires, broken routers or generally bad infrastructure. The latter attribution was particularly prevalent in Croatia and the Czech Republic. The role of the ISP or traffic management practices hardly registers with consumers at all.

In light of these results, issues arising from the adverse effects of traffic management are unlikely to be recognised as such by consumers or attributed to the actual cause. This renders it unlikely that consumers will address these issues with their ISP even if they notice adverse effects. Therefore, there is a role to play for NRAs who can detect these adverse effects and act to resolve them when it is in consumers' interest for them to do so. Should any network neutrality issues occur, the task of resolving them should reside with informed stakeholders such as NRAs, ISPs, content providers and consumer organisations.

It is important to add that this research did not find any immediate need to address specific network neutrality issues. Neither the focus group discussions nor the survey identified widespread occurrences of adverse effects stemming from deviations from network neutrality. Satisfaction levels with their IASs are generally high among consumers. It should be noted that the study did not intend to investigate such incidences objectively, for example by employing technical measurement tools.

In the long term, consumers will nonetheless play an important role in the success of quality-differentiated services as the purchase decision lies with them. Our results indicate that the specific effects of introducing such services are difficult to foresee for ISPs and will require further market research. In fact, introducing them may be a difficult trade-off for ISPs as some consumers indicated that they would be inclined to switch if their ISP introduced services that deviate from network neutrality.

The figures 4 and 5 shows two effects in this context. First, the relative importance for a specific source of impairment varies from one application to another. For instance, if an impairment occurs while streaming video or browsing, upstream networks are more likely to be the reason for the impairment than they are for disruptions when using a voice application. Second, impairments are more frequent for video streaming and browsing than for voice.

The Actual Experience study also shows that the relative sources for impairments vary depending on the speed of an IAS. For instance, access networks are hardly ever the cause of an impairment at higher speeds, while they are often the source for speeds up to 10 Mbps.

The results of our study clearly show that consumers' satisfaction is linked to their experiences of disruptions, and their ISP's response to these problems. Where there has been a lack of severe disruptions, there is a generally high level of satisfaction. Furthermore, the results show that consumers are likely to incorrectly attribute the cause of at least some of the disruptions that they experience to factors other than their ISP, which is actually the likely source of impairment according to data from the Actual Experience study.

In short, consumers are not only unaware of the term network neutrality, but they also do not realise that traffic management could be a possible cause of disruptions they notice in their day-to-day usage of the Internet. Even if their own quality of experience suffers, they are likely to attribute the cause of these two factors to something other than the interference of their ISP. However, given the generally high satisfaction and low levels of disruptions that they experience, this is not particularly concerning.

Nevertheless, it is relevant to explore how consumers conceptualise network neutrality in order to approach the overarching research objective of finding out how they evaluate it. As described above, participants in the focus group discussions quickly linked the term to general political and societal issues. When prompted to interpret it in terms of the Internet, the topics that came up most frequently were the absence of online censorship and the idea of free access to all content for everyone. Some participants in Croatia, Greece and Sweden even thought that only one ISP would be available, and that ideally this provider would be state-controlled, meaning that the Internet would be free for everyone as it would be paid for by taxes.

Later the moderator read participants a definition of network neutrality, and they were then given written information about the potential effects of deviations from it. Once the link was made to how the Internet works, they often thought that the term meant that all ISPs would have to conform to the same set of rules, and therefore would provide the same quality of experience to every user.

Interestingly, the majority of participants in the focus groups were convinced that network neutrality does not exist today. Again, they linked this fact predominantly to the censorship of particular online content. They frequently gave examples of certain countries where the Internet in their opinion is not neutral, or in other words, where it is censored in some way. They also expressed the strong belief that search engine ranking results and including adverts in them is evidence that network neutrality does not currently exist. In essence, participants by and large had great difficulty comprehending the term and drawing the right linkages. Although they found the explanations generally

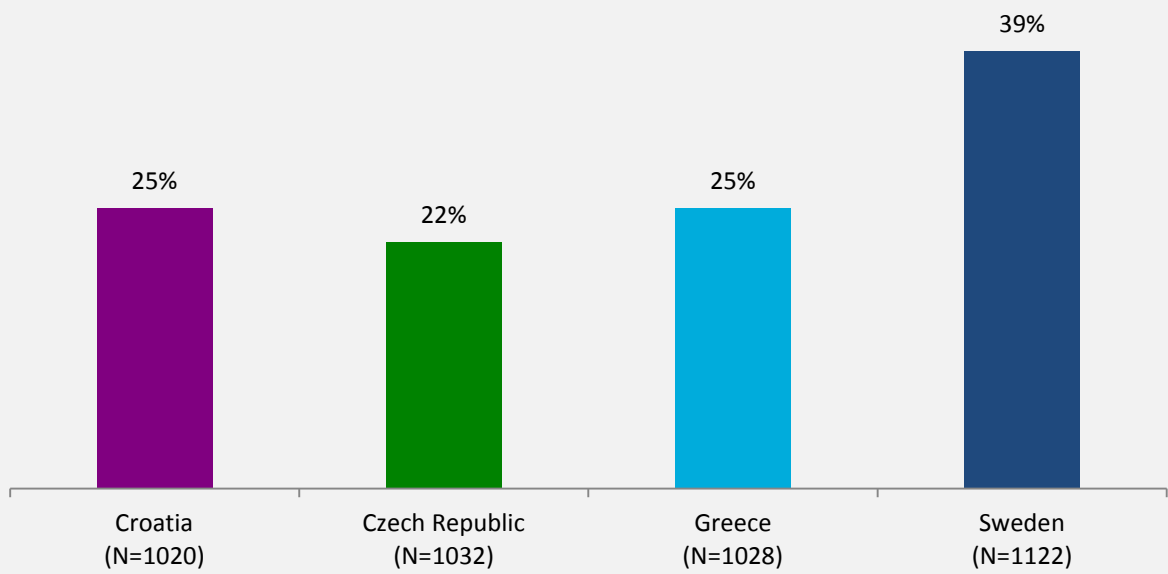


Figure 6 - Attitudes towards prioritisation of Internet usage by government and emergency services – “completely agree” only

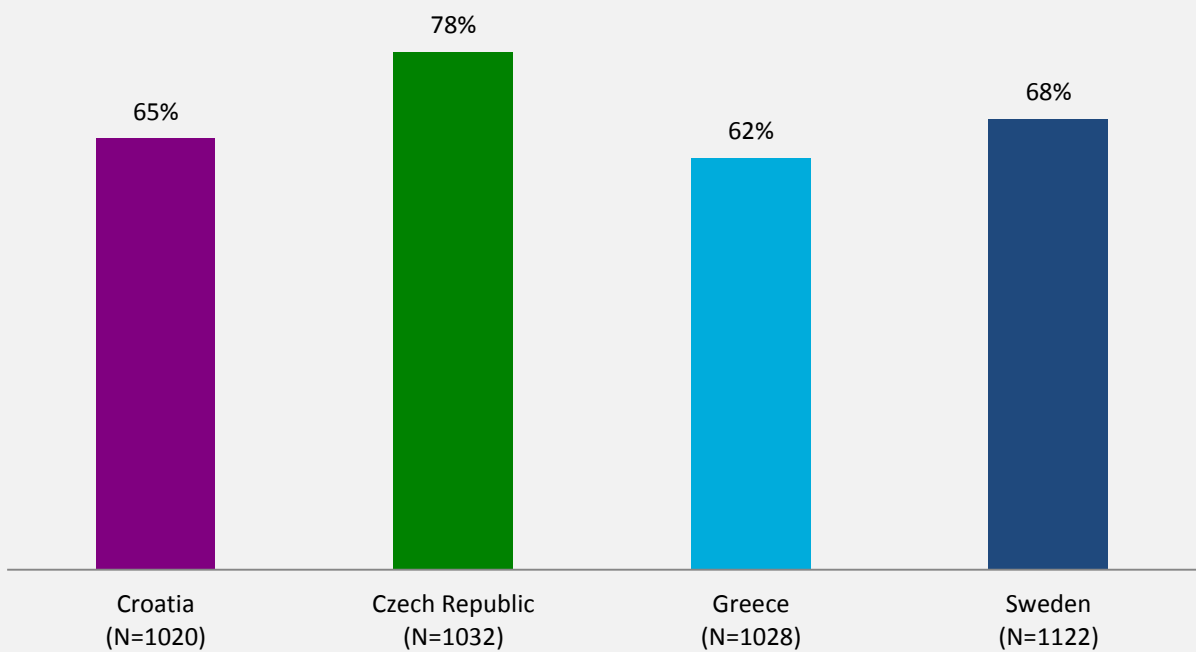


Figure 7 - Attitudes towards traffic management for technical reasons – only “completely agree” and “rather agree” (Top2Boxes)

helpful, most participants agreed that they were rather cumbersome and boring.

When the topic of the throttling and prioritisation of specific applications was stressed in the focus group discussions, participants doubted that prioritised services are available for most consumers and that it would be possible to customise such services. If they were available and the service quality could be guaranteed, consumers in Greece and the Czech Republic would accept private users receiving them as long as they paid more for them. In Croatia, this issue was a less important part of the focus group discussions. However, the results of the survey indicate that many Croatians may also accept such practices. Participants in Sweden classed such services as undemocratic and contrary to the fundamental idea of the Internet being a free medium. They felt that everyone should have unrestricted and good-quality access to it.

The prioritisation of certain important data, such as that of the government and the emergency services, was accepted by consumers in all four test areas. This feeling was particularly strong in the Swedish focus group discussions. The survey results support this finding with 39% of Swedish respondents strongly agreeing with this idea. Meanwhile, participants disapproved of any type of blocking. Unsurprisingly, consumers support traffic management measures that keep their Internet experience stable. This was particularly pronounced in the Czech Republic where the participants in the focus groups reported generally bad quality of their Internet access at home.

Generally, participants could not understand how providers would be able to manage the data traffic. Should they choose a prioritised

service, it would be very important to them to be able to make their own individual choices regarding the applications and services that are prioritised. However, they expressed doubt that they would be able to find a provider that could offer them a contract that met their exact needs. Furthermore, they remained generally fearful that traffic management could be used without them realising. Some showed a fear of being spied on as a result of the analysis of Internet traffic that ISPs would have to perform to ensure that the right types of traffic are prioritised.

To sum up, the findings from the focus group discussions support the conclusions of previous studies about consumers' awareness and understanding of network neutrality and deviations from it. However, the focus group discussions also highlighted that awareness may be raised through prompting consumers to consider the specific effects of traffic management. Furthermore, our insights show that approaching consumers with written information only may not be sufficient as participants found the explanations given to them cumbersome and boring. Even after reading them, they often had great difficulty comprehending the term network neutrality.

As a result of these findings, the information package was developed in the form of a short video clip, which gave a figurative and vivid illustration of how the Internet works, as well as an explanation of network neutrality and the possible effects of deviations from this principle. The video's main objective was to present the appropriate amount of information: too much or too little information would have limited the video's effectiveness. The video started by addressing the effects of traffic management that are likely to resonate with consumers, given

Consumer information should relate to applications and content

For consumers, the Internet is primarily about high-quality and reliable access to content and applications. They are not particularly concerned with how the data is transported, unless they directly experience any adverse consequences as a result of this. The role of ISPs remains somewhat unclear to them. Consequently, it is not surprising that they quickly move on to debates about broader issues such as democracy, freedom of speech and equality when discussing issues that they link to the topics of network neutrality and traffic management.

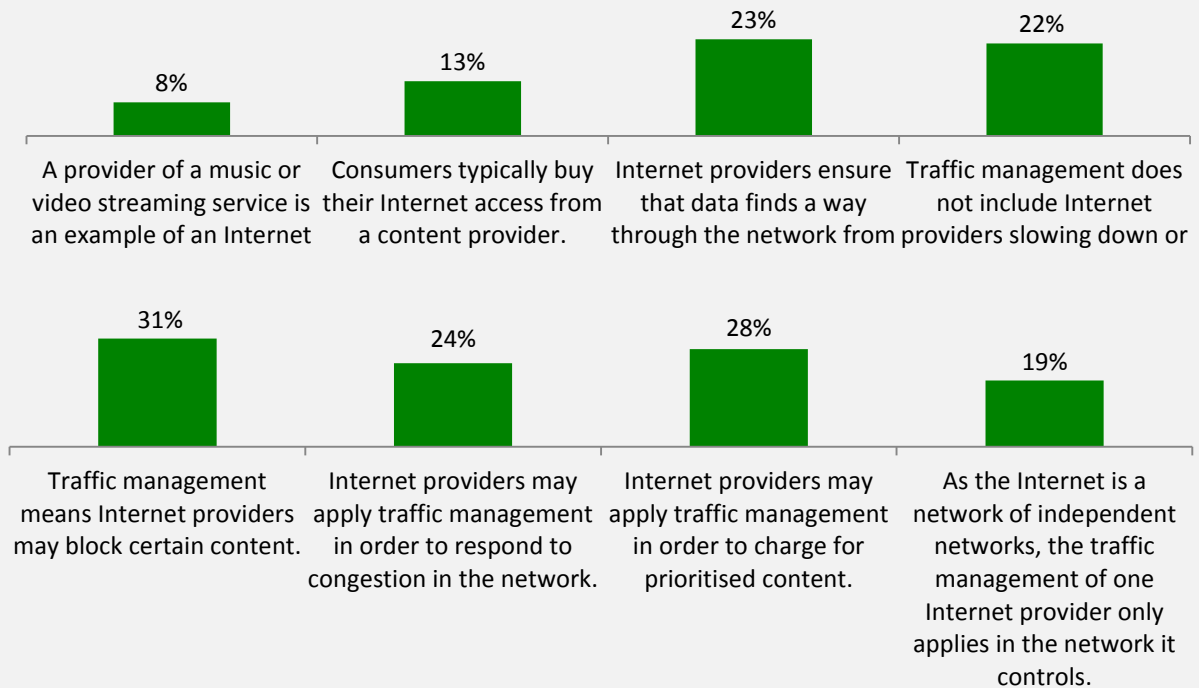
The fact that consumers define the Internet in terms of the applications and content that they can access and the quality that they experience has important implications. Consumer information about network neutrality should reflect this viewpoint, so it should therefore relate to access to applications and content, and should not primarily address the technicalities of data transport. This applies to both consumer information from NRAs and advertising by ISPs.

their conceptualisation of the Internet as a gateway to access content and applications. It avoided the term “network neutrality”, which consumers had found confusing in the focus group discussions, and replaced it with “traffic management”. The information was given in consumers’ everyday language rather than more technical terms, so for example “slowed down” was used instead of “throttling”.

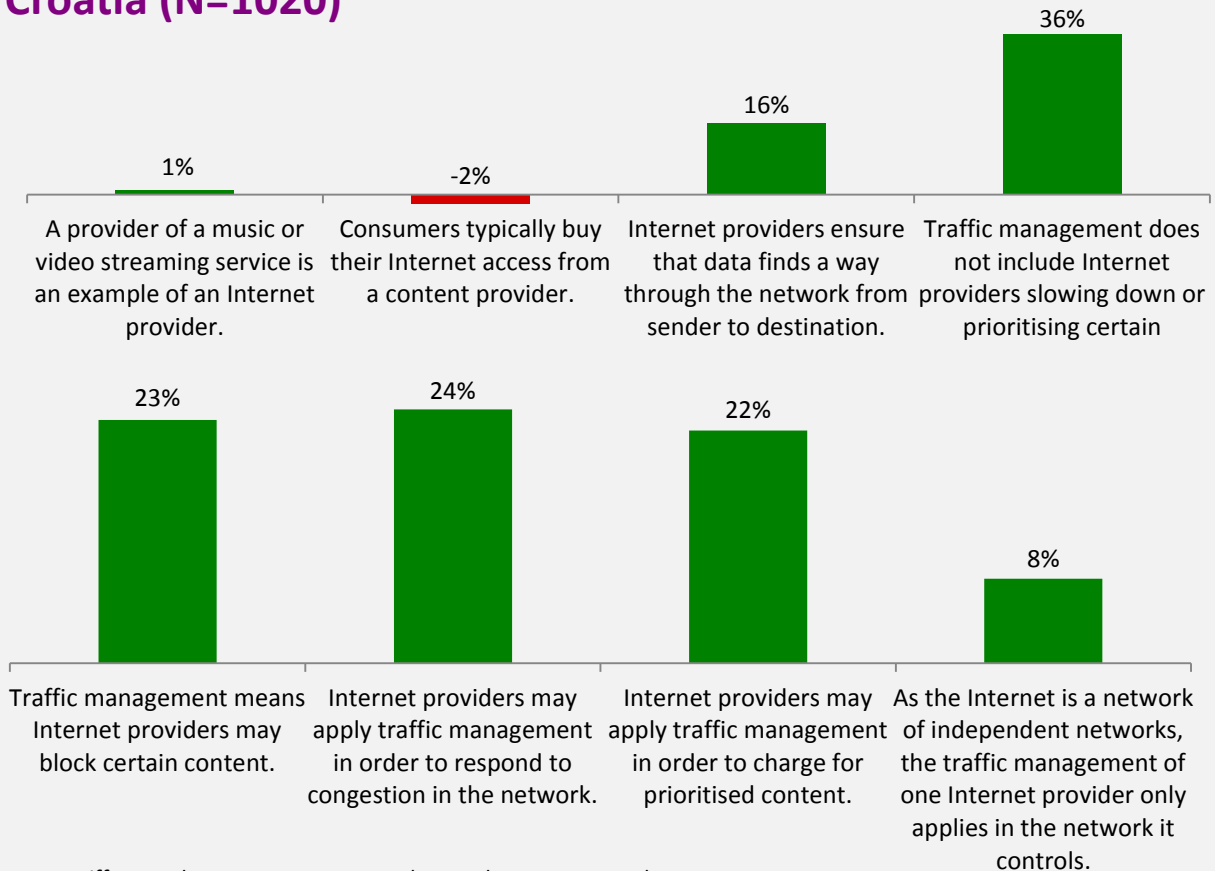
The information package was only shown to half of the respondents before taking the survey. In order to measure its educational effect, all respondents were asked eight true or false questions. The percentage of correct answers given by those who had seen the video clip was consistently higher than that of those who had not (although in two cases the difference was not statistically significant), demonstrating that the information package did indeed have the intended effect. The increase in correct answers was greatest for the questions related to traffic management, as this is a term that consumers weren’t previously familiar with.

Test group performs significant better than control

Sweden (N=1122)

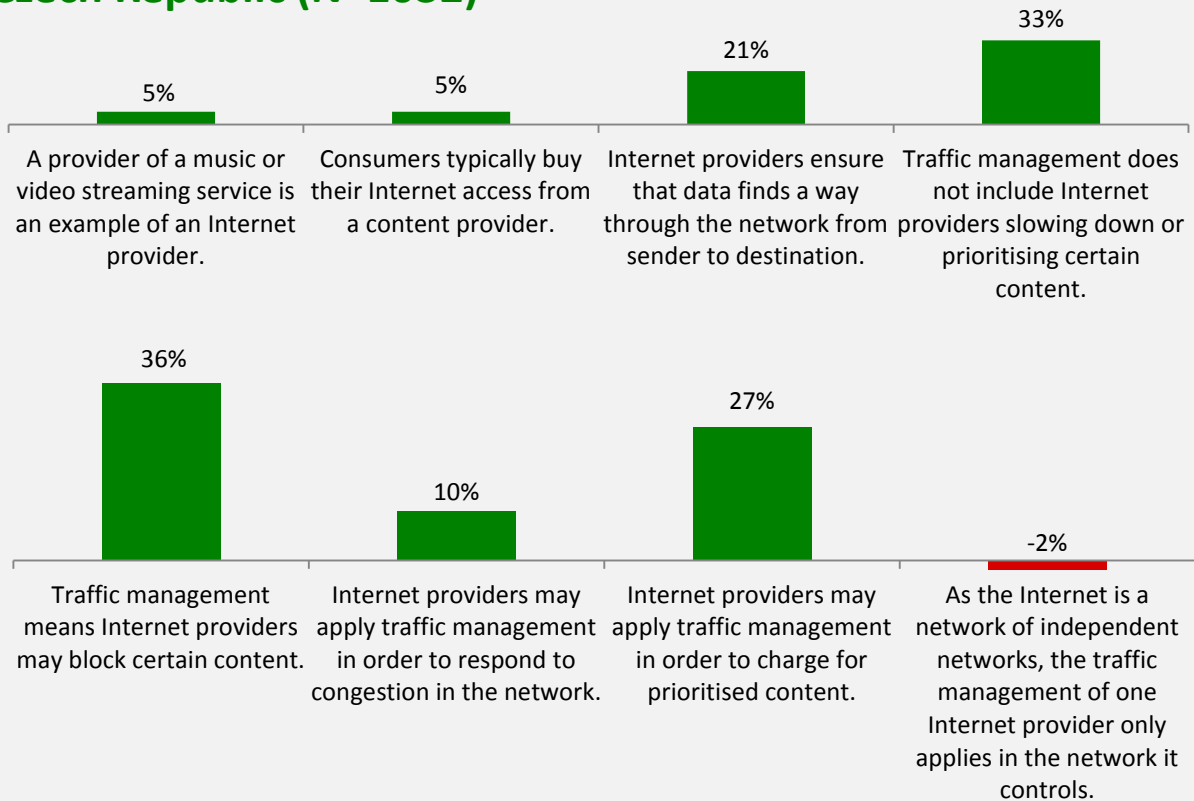


Croatia (N=1020)

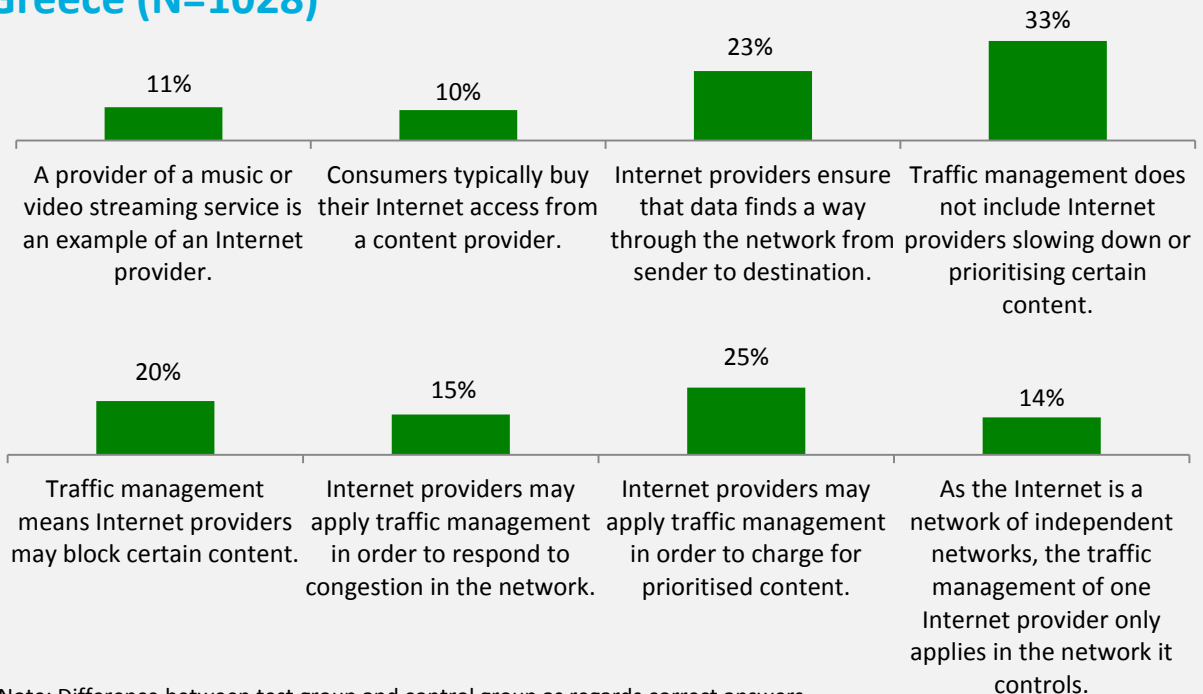


Note: Difference between test group and control group as regards correct answers.

Czech Republic (N=1032)



Greece (N=1028)



Note: Difference between test group and control group as regards correct answers.

Figure 8 – Manipulation test – educational effect of the information package in the test area



Consumers care about free, unrestricted, reliable access to and high quality of content and communication. For them, that is quality of experience.

02 | Interest

In order to fully understand the meaning of network neutrality to European consumers, one first has to understand the role that the Internet plays in their lives. One would expect that this topic has been studied from all perspectives possible. We were surprised to learn that this is not the case. Thus, this chapter provides novel insights. For instance, we find that there are marked differences in the role that the Internet plays in consumers' lives. Furthermore, it is most crucial to learn about consumers' attitudes towards the Internet and what access to the Internet means to them. This chapter provides the answers to these questions, which are critical in understanding consumers' conceptualization of network neutrality.

There is little published qualitative research on the role that the Internet plays in consumers' lives. What has been published is either potentially outdated, as a result of being published a long time ago and revolving around the Internet's potential effects on consumer behaviour (for example, Geissler & Zinkhan, 1998¹⁰), or explores particularly vulnerable groups using specific Internet-based applications (for example the elderly (Papa et al., 2011)¹¹ or rural communities (Macintyre & Macdonald, 2011)¹²). Our research adds new insights into the role that the Internet plays more generally for consumers.

As one would expect, the Internet plays a central role in consumers' lives across all the test areas.

Around 90% of them use it almost every day at home.¹³ However, the character of this role differs quite significantly as the focus group discussions indicated. 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. Thus, it is not surprising that we observed much higher expectations as regards the reliability of respondents' Internet connection in Sweden than in any other test area. Independent from where they are, even in rural areas, Swedes simply expect their access to the Internet to work. On the other hand, Czech consumers explained that they are very conscious of their Internet use and do not use it all of the time. They use it predominantly for organisational purposes, such as arranging to meet friends. The role that the Internet plays in the other two test areas falls between these two extremes. Within that, it is interesting to note that according to participants' reports, families in

¹⁰ Geissler, G.L. & Zinkhan, G.M. (1998): Consumer Perceptions of the World Wide Web: An Exploratory Study Using Focus Group Interviews. *Advances in Consumer Research* 25, 386-392.

¹¹ Papa, F.; Sapio, B. & Pelagalli, M.F. (2011): User Experience of Elderly People with Digital Television: A Qualitative Investigation. *EuroITV 2011 - Proceedings of the 9th international interactive conference on Interactive television*, 223-226.

¹² Macintyre, R. & Macdonald, J. (2011): 'Remote from what?' Perspectives of distance learning students in remote rural areas of Scotland. *The International Review of Research in Open and Distance Learning* 12(4).

¹³ As having stationary access to the Internet at home was a selection criterion for the samples, these findings are in line with expectations. They are however not necessarily representative for the general population in the respective test areas.

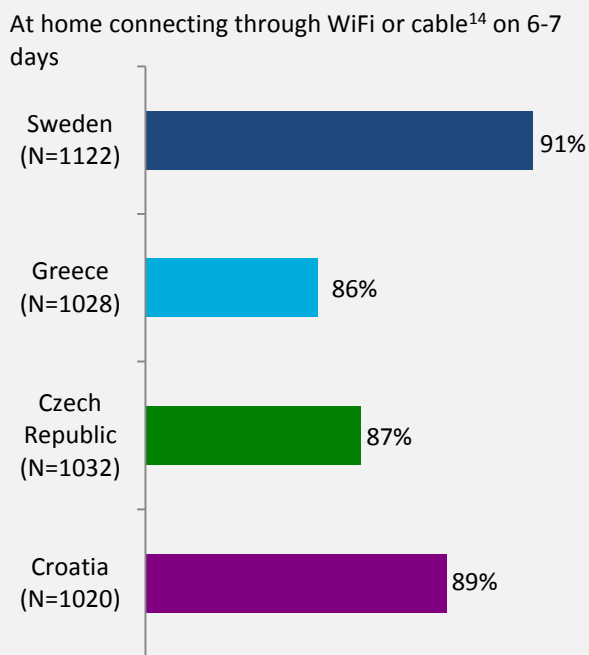


Figure 9 - Frequency of Internet usage at home

Greece use the Internet together on a computer, which allows parents to exert some degree of control over children’s online activities. Numerous participants use it as a retreat from the real world, as they do in Croatia.

The importance of the Internet to consumers is clearly shown by their agreement with the statement “Equal and unrestricted access to the Internet is a human right”. More than half of the respondents from Croatia (58%) and Greece (55%) strongly agree with this statement. It seems that fewer respondents in Sweden agree with it, but

¹⁴ The term “cable” refers to any type of wired network access, as opposed to wire-free network access. This use of terminology reflects how participants in the focus groups typically referred to network access by wire. Participants commonly differentiated wired from wire-free network access at home by speaking of cable and WiFi, respectively. The survey consequently adopted this use of terminology.

there was a high percentage of non-response here so interpreting this figure is somewhat difficult. From the focus group discussions, it is clear that Swedes are likely to support this statement fully.

Their freedom online is most important to consumers. Therefore, it is not surprising that one of the statements that received the highest levels of agreement in the survey was “Everybody should have the right to receive all the content and applications that are offered online”. To understand just how convinced consumers in the test areas are about this item, one should consider the percentage of respondents that “completely agree”: Croatia (50%); Czech Republic (46%); Greece (54%); and Sweden (45%).

On the other hand, the high degree of freedom that users have online also triggered the feeling in participants that the Internet can be a dangerous place, especially for children. Ideas about the dangers lurking on the Internet were expressed most clearly in the focus group discussions. There were participants in all of the focus groups who showed great awareness of these dangers and gave examples that included people with criminal intent, fraudulent websites, spam and cyberbullying. By and large, participants agreed that all these problems are more serious when children use the Internet. In the survey, around half of respondents stated that they think that the Internet is a dangerous place.

Many participants demonstrated an awareness of the amount of time that one can spend online, sometimes without realising, and which can result in a feeling of guilt. Again, participants found this aspect to be aggravated in children and youths. Some were even fearful that youths may lose the ability to communicate in a “normal” way. Interestingly, while they highlighted this as a fear when it involves young people, around half of Greeks and Czechs enjoy getting lost on the Internet and forgetting about their surroundings.

Equal and unrestricted access to the Internet is a human right.

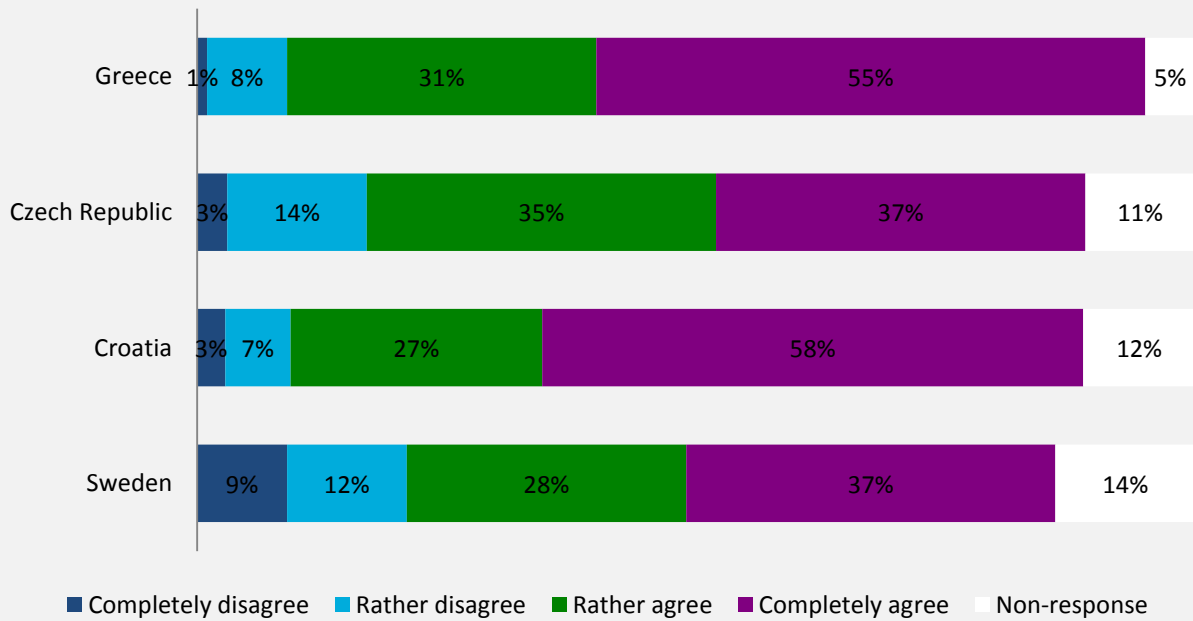


Figure 10 - Importance of the Internet to consumers (I)

Everybody should have the right to receive all the content and applications that are offered online.

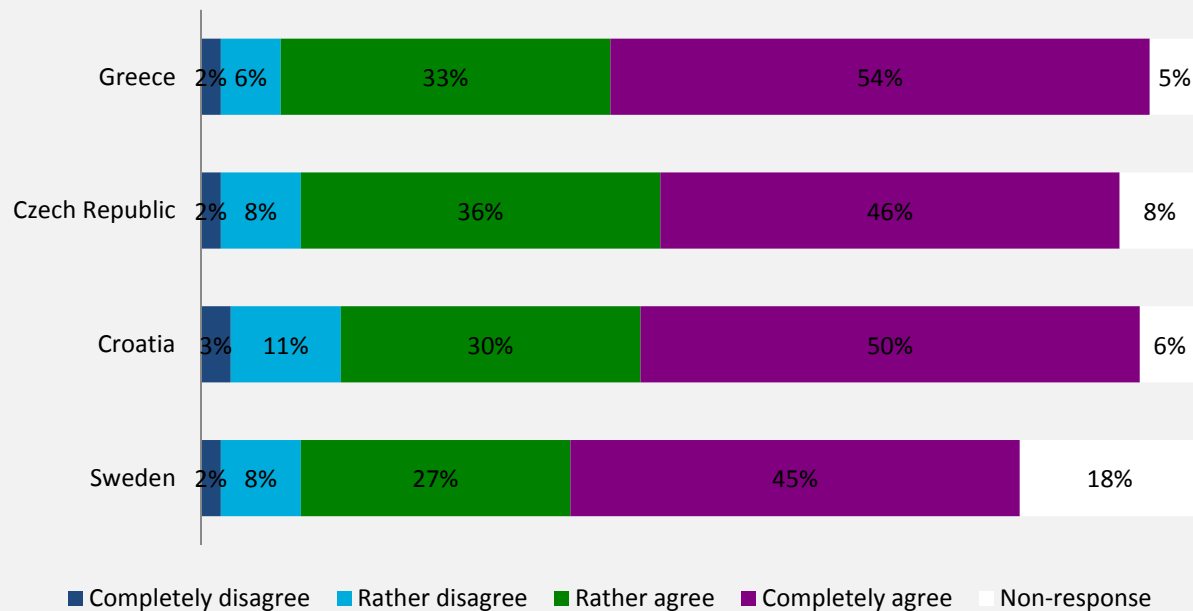


Figure 11 - Importance of the Internet to consumers (II)

The result for the Czech Republic differs markedly from the conscious use of the Internet that Czech participants reported in the focus group discussions. This difference may be attributed to participants' self-representation in the group setting. Throughout all focus group discussions, there was a latent notion of being used to insufficient supply with goods, bad service experiences and inferior quality of their Internet access. In this light, the reported conscious use of the Internet may be interpreted as emancipation from generally unreliable service provision. Consumers want to project to others that, naturally, they do not depend on the Internet in order to maintain their emotional independence. As respondents most likely filled in the questionnaire alone, this effect was not prevalent in the survey responses. For Croatia, we found an effect in the opposite direction. Here, as described above, participants in the focus groups reported that they enjoyed forgetting their surroundings when they are online. This was less prevalent in the survey responses. In this case, it should be noted that there was a tendency to feel liberated by the emergence of the Internet and its possibilities. So, Croatian participants exhibited a much more positive attitude towards the Internet, which they probably sought to project to the other participants as this is what is socially expected and desired.

Nevertheless, respondents' overall attitudes about the Internet are overwhelmingly positive. In particular, they value that it allows them to connect to the wealth of information and services that are available online, and to communicate with friends. Few can actually imagine living without the Internet anymore.

Coming back to Internet usage patterns, it is interesting to see that despite similar usage frequencies in the four test areas, the average duration of usage varies. The Czechs claimed to spend the most time online per day and the

Swedes the least. This result is surprising in light of the market environment in these countries, as well as the insights on conscious use gained from the focus group discussions. However, it may actually be the case that as Czechs use the Internet very consciously, they also have a better, or perhaps exaggerated, perception of how much time they actually spend online per day. In Sweden, however, the Internet has become an integral part of consumers' lives, with offline and online lives blurring more and more. Consequently, it is possible that Swedes actually spend significantly more time online than the consumers in the other test areas, but do not register this consciously anymore.

The most typical online activities are emailing, browsing, reading the news, using social networks and streaming videos. Music streaming is significantly more common in Sweden, while VoIP has a surprisingly low level of usage there. This may be attributed to Swedish respondents having a higher level of income¹⁵ than those in the other three test areas. The generally low usage of Internet applications of Swedish respondents in the survey seems surprising, especially given the results found in the focus group discussions that clearly indicate that the Internet is tightly woven into Swedish consumers' lives. Again, this may be attributed to an (often) unconscious use of Internet applications in Sweden. Additionally, a deeper look into data splits by usage situation and age group may shed some light on the respective sources for the surprising results. Generally, Swedes show a tendency towards mobile usage of almost all Internet applications which supports the findings from the focus group discussions. The table only refers to at-home usage of Internet applications. Splitting the data by age groups

¹⁵ Other factors such as applicable tariffs and market structure may also influence the substitutability of VoIP and traditional telephony.

reveals that most differences observed for the Swedish respondents in this survey stem from a bigger decrease in usage of applications as people get older than in the other test areas.

To conclude, both the qualitative and quantitative research demonstrates that the Internet plays a crucial role in consumers' lives, as they value reliable and high-quality access to content and applications. Our results also indicate differing socially desired expectations about how the Internet should be used as compared to how it is used by consumers. The importance of the Internet in consumers' daily lives further supports the finding of the previous chapter that consumers experience the Internet through the applications they use and the content they consume, giving little (or any) thought to how the data is transported.

Participants in all test areas frequently mentioned in the focus group discussions that two of the main purposes for their Internet usage are communicating and finding information. However, the actual ways in which consumers use the Internet for communication differ substantially. With regard to accessing information, there were few noticeable differences across the test areas. 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 the ability to express their individuality.

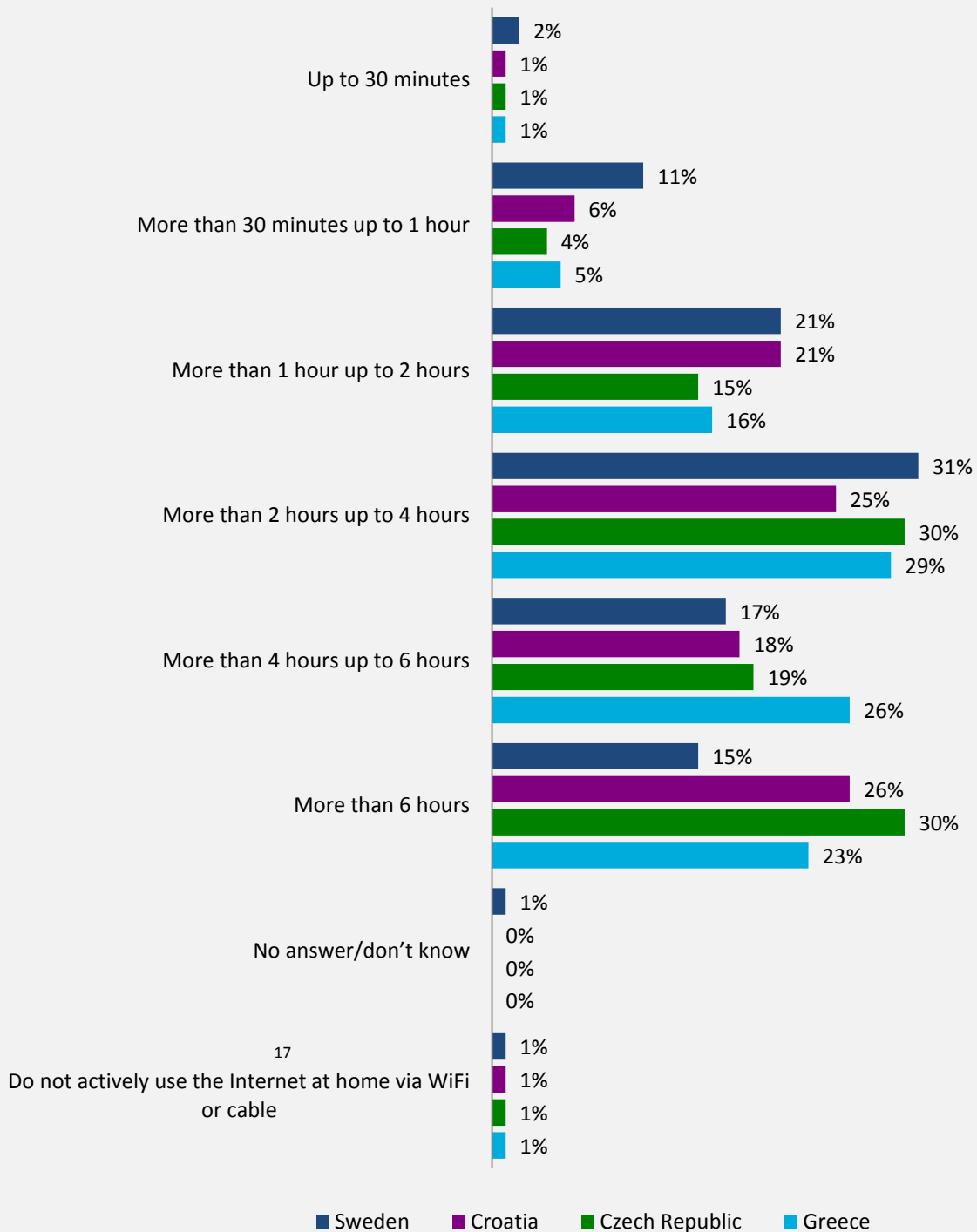


Figure 12 - Duration of Internet usage per day (only at-home usage)

¹⁷ The term “cable” refers to any type of wired network access, as opposed to wire-free network access. This use of terminology reflects how participants in the focus groups typically referred to network access by wire. Participants commonly differentiated wired from wire-free network access at home by speaking of cable and WiFi, respectively. The survey consequently adopted this use of terminology.

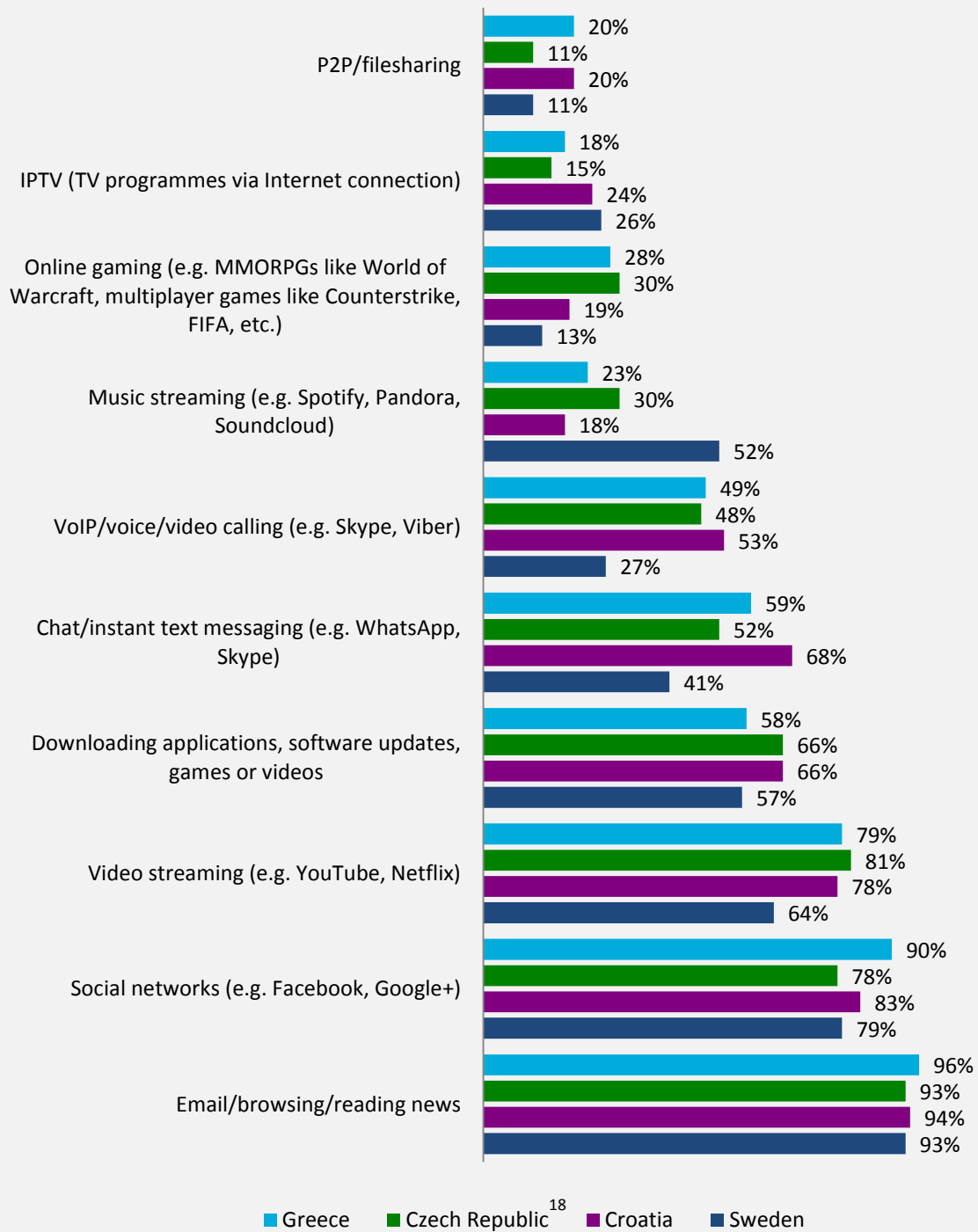
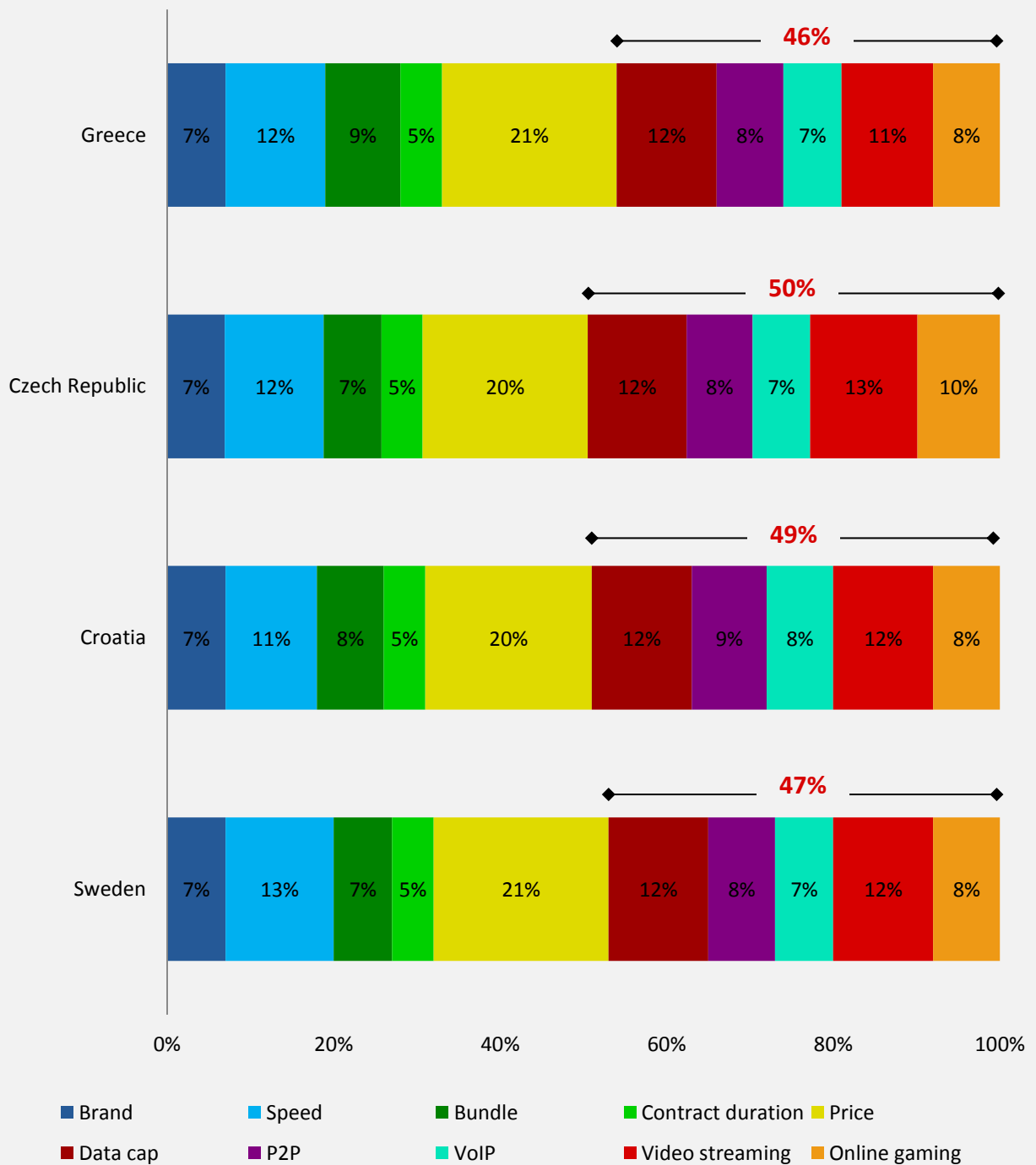


Figure 13 - Usage of Internet applications

¹⁸ These figures appear high for the Czech Republic when compared to the focus group results. They may be explained by the self-image that participants wanted to project in the interaction with other participants in the Czech Republic, as we have explained previously.

Network neutrality-related attributes make up



...of consumer purchase criteria.

Figure 14 - Relative importance of attributes by test area

03 | Desire

Consumers' desires as regards network neutrality are much more nuanced than a simple preference for or against this principle. In fact, our research finds that they do see the bigger picture. This chapter presents answers to the questions: What do consumers consider fair? What is the role of network neutrality attributes within the purchase choice criteria when choosing an IAS? It is obvious that not all consumers act in the same, thus this chapter also presents a segmentation of consumers based on their preference patterns. Finally, we test whether consumer information about how the Internet works and network neutrality effects has got any impact on their purchase choice criteria.

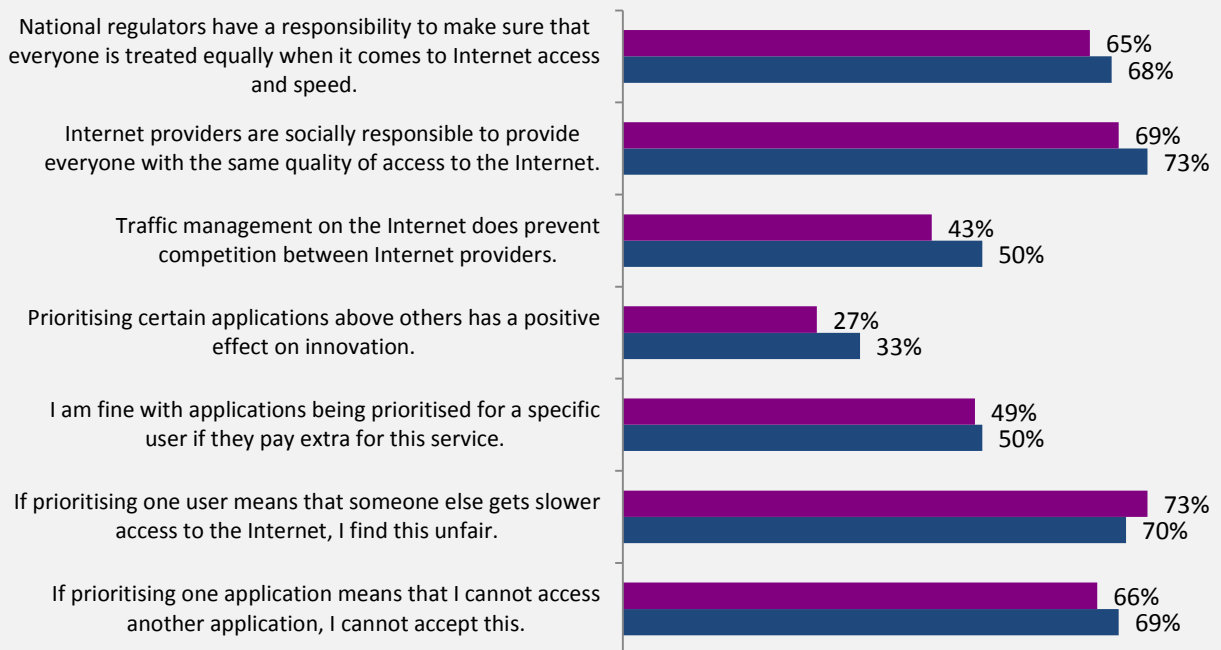
Previous chapters have highlighted that consumers are mainly concerned about their own personal online experience and they do not want to see this compromised. This is not surprising given the important role that the Internet plays in many of their lives. This finding is reinforced by the responses given to the questions in the survey on attitudes towards network neutrality, as can be seen by the high level of agreement with the statement "If prioritising one application means that I cannot access another application, I cannot accept this". Even the guarantee of high-quality access to a particular application is not seen as a strong enough incentive for a consumer to accept losing access to another and thus risk a negative impact on their online experience as well as the unrestricted access to all content and applications that they value so highly.

The quality of experience for all users also appears to shape respondents' initial attitude towards the fairness of offering prioritised services at an extra cost. Across all test areas, around 75% agreed with the statement "If prioritising one user means that someone else gets slower access to the Internet, I find this unfair". Strong agreement was particularly high in the Czech Republic.

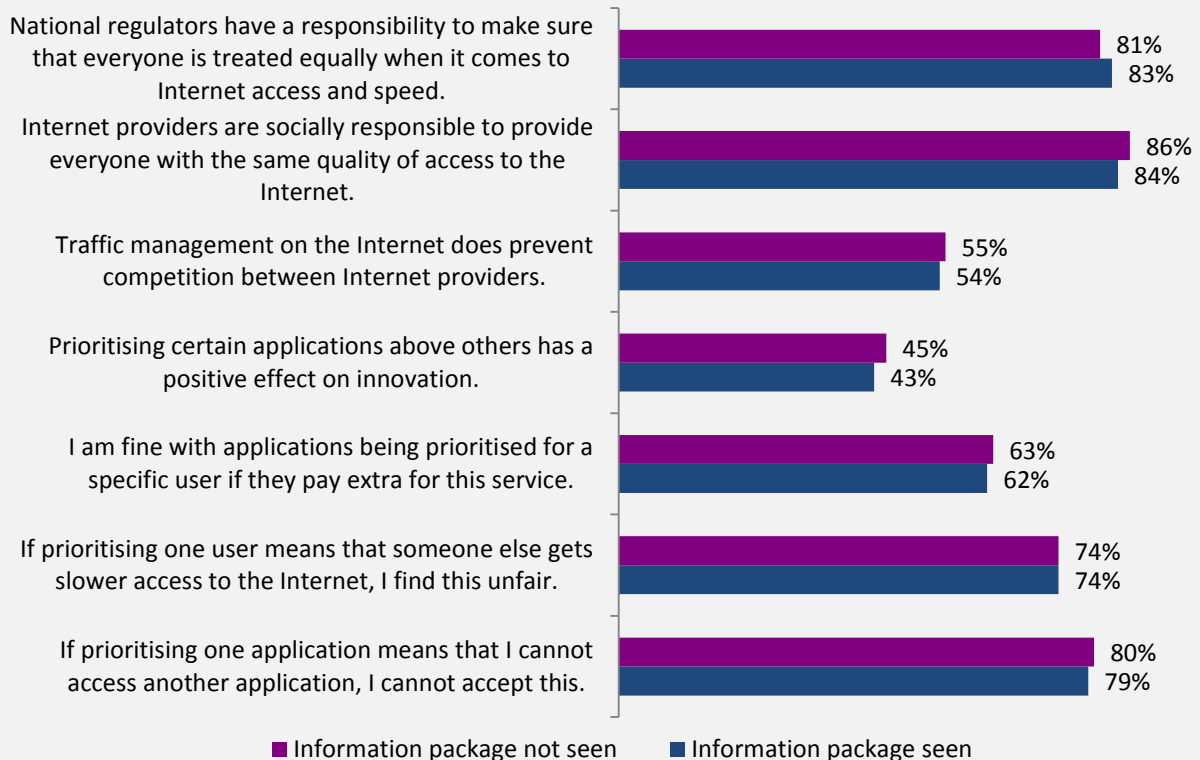
As could be predicted from the focus group discussions, the Swedish respondents showed the lowest levels of agreement with the statement "I am fine with applications being prioritised for a specific user if they pay extra for this service". Here, just 50% of respondents agreed with this statement. Although a few Swedish focus group participants indicated an interest in purchasing prioritised services, the majority of them either did not consider such services to be fair, or would only purchase them if they did not reduce the speed of other users' connections. Meanwhile, Czech respondents showed the highest levels of agreement with the statement that they would be fine with applications being prioritised for those who pay extra. This may be a result of the fact that Internet access in the Czech Republic is generally more unstable than in the other test areas, and respondents may therefore have empathised more strongly with others wishing for prioritised access to certain applications or content.

Moreover, ideas about the wider effects of potential prioritisation of content and applications on competition and innovation also registered to some extent with consumers. This is demonstrated in a range of results from our study. In the focus

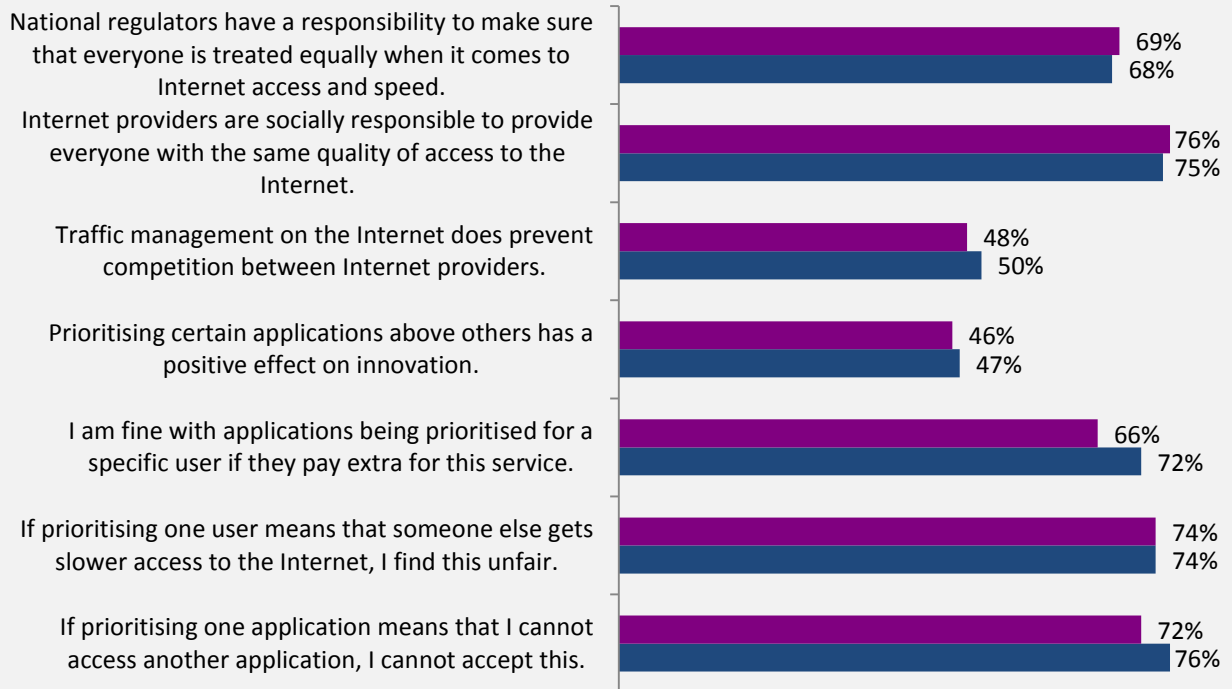
Sweden (N=1122)



Croatia (N=1020)



Czech Republic (N=1032)



Greece (N=1028)

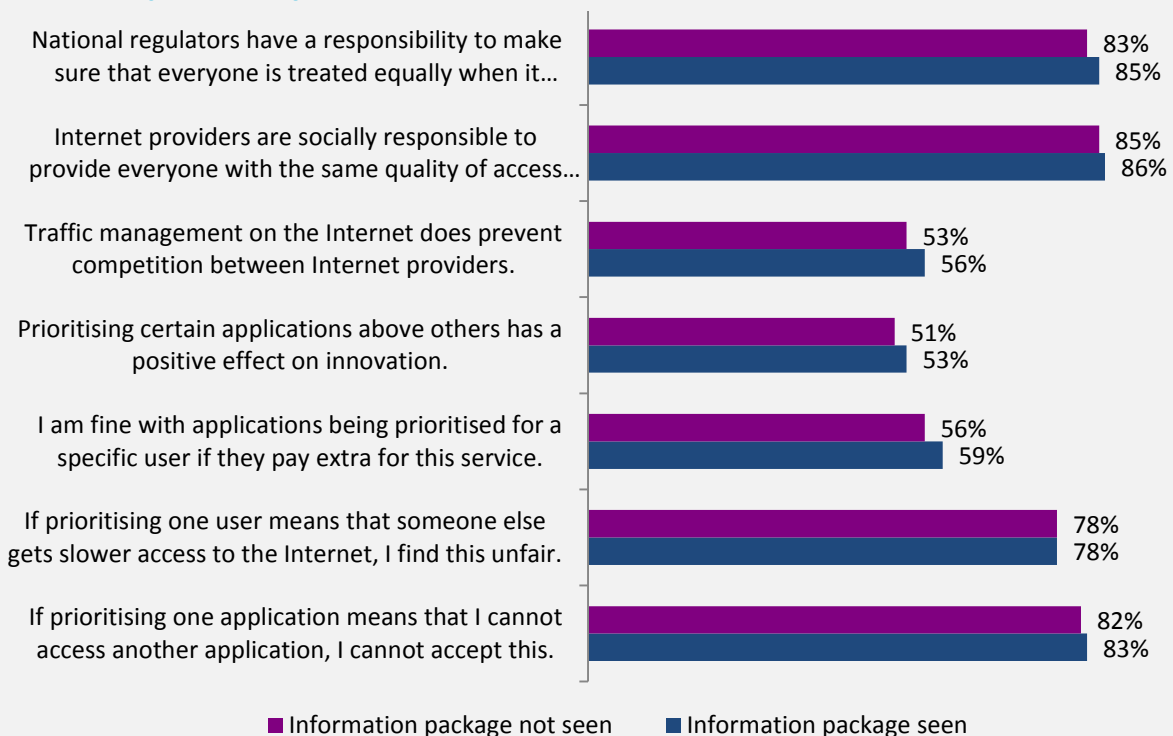


Figure 15 - Attitudes towards traffic management across test areas and towards network neutrality in general across test areas – (Top2Boxes)

group discussions, Swedish participants were concerned about potentially harmful effects on competition if content and applications providers were able to pay for prioritisation of their services or might even pay for their rivals to be slowed down or removed from an ISP's network. They also feared that such practices might prevent small start-ups gaining a foothold in the market. Consequently, it is not surprising that Swedish respondents were least likely to agree with the item "Prioritising certain applications above others has a positive effect on innovation".

The item "Traffic management on the Internet does prevent competition between Internet providers" was meant to further assess respondents' concern about traffic management measures on competition in the market. In Croatia (54%) and Greece (55%), more than half of the respondents agreed with this statement, while in the other two areas statistically significantly fewer respondents did so: Czech Republic (49%) and Sweden (46%). Still, we found that consumers appeared to have great difficulty assessing the potential wider economic impact of traffic management. First, this is reflected in the fact that the focus groups in the test areas other than Sweden did not mention this aspect. Second, this is reflected in the high percentage of non-response for the items reported here, which ranged from 11% to 36%.

Societal issues revolving around traffic management appear to resonate stronger with consumers than those to do with economic effects. The item "Internet providers are socially responsible to provide everyone with the same quality of access to the Internet" showed consistently high levels of agreement in all test areas. However, there are some noticeable differences. Levels of agreement were statistically higher in Greece and Croatia (both 85%) than in the Czech Republic and Sweden with 76% and 71% of respondents agreeing respectively. Turning from

the top two boxes to the share of respondents that stated they "completely agree" with this statement, the picture becomes even clearer. In Croatia (58%) and Greece (52%), more than half of consumers were likely to feel strongly about this issue. In the Czech Republic (38%) and Sweden (41%), the percentage of people who agreed completely with this statement was much lower.

However, consumers felt that social responsibility should not just reside with the ISPs. They also thought that some institution (preferably a governmental one) ought to oversee what happens with their Internet access. In particular, they sought out some degree of control over their unrestricted and satisfactory access to content and applications of their choice. This insight stems from both the focus group discussions and the survey results. The item "National regulators have a responsibility to make sure that everyone is treated equally when it comes to Internet access and speed" refers directly to NRAs' involvement in network neutrality issues. As we have seen from the focus groups, consumers generally lack the technical knowledge to express their wishes in technical or economic terms; however, as other items in the survey reflect, they have strong preconceptions about the nature of the Internet as a free, open and inherently democratic medium that everyone who wishes ought to have (unrestricted) access to.

Although results for the items mentioned above varied by test area, the information package (which performed well in educating respondents about traffic management) did not affect the respondents' attitudes. The figure 15 illustrates the differences between the two groups' responses to the statements.

In essence, consumers subscribe to the idea that some data can or, in some cases, even should be prioritised, either for extra payment or due to reasons of urgency. On the other hand, consumers

Privacy concerns may get in the way of prioritised services

Drawing on comments received in some of the focus group discussions, an item on what consumers think about the need for data traffic analysis to enable prioritised services by ISPs was included in the survey. While Czech consumers appeared less concerned about issues to do with data privacy, Swedish and Croatian consumers in particular were worried about this issue and want their online privacy untouched. Online privacy was not particularly emphasised in the focus group discussions; however, it was a latent theme underlying many of the discussions. Consumers do not like the idea of being spied on, and they also do not want to see their data being used for advertising and other purposes.

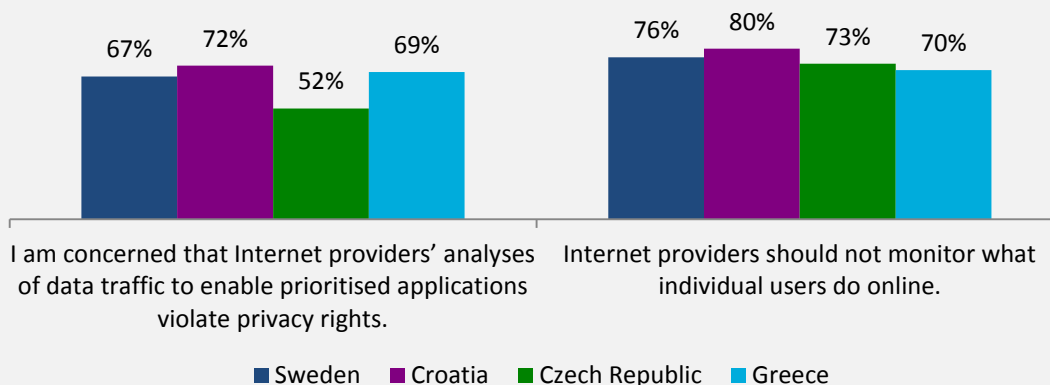


Figure 16 - Attitudes towards privacy-related aspects of traffic management – Top2Boxes

do not want prioritisation to take place at the expense of anybody else's access and in particular not their own quality of Internet access. As they consider potential effects of traffic management not only on themselves but also on others, consumers exhibit a pronounced sensitivity for fairness when it comes to network neutrality. In this context, consumers also consider to some extent greater societal effects.

Consumers' pronounced desire for fairness implies that ISPs need to understand in depth what consumers are willing to accept. Our research suggests that consumers are in principle open to (the effects of) traffic management, but they draw a line when someone's benefit is to the detriment of someone else. Fairness understood this way defines what consumers would probably perceive as reasonable traffic management. It will be important for ISPs to contain traffic management effects that impair the experience of a consumer to a minimum. In this context, ISPs may risk dissatisfying consumers if they use prioritisation on data links that run at their capacity. In situations of scarce (network) resources, it naturally follows that someone who receives more essentially takes these extra resources from someone else.

The resulting key questions are of course just how sensitive consumers really are to violations of what they consider fair, whether they would actually attribute the reason for a violation to their ISP's behaviour, and if they translate any dissatisfaction into action (for instance, switch to another provider). The study of these questions deserves further attention from research as the respective insights may help define consumer-driven, clear-cut boundaries between reasonable and unreasonable traffic management.

To contextualise consumers' concept of fairness in the network neutrality debate, it is certainly relevant to benchmark it against BEREC's set of criteria to assess "reasonableness" of traffic management measures. In total, BEREC identifies four criteria for this. We quote each of them below and benchmark them against our findings from this study.

(i) Non-discrimination between players: The practice is done on a non-discriminatory basis among all content and application providers.

This first criterion identified by BEREC reflects consumers' concept of fairness as regards traffic management quite well. In fact, one might argue that consumers even go beyond the idea that all content and application providers have to be treated equally by also considering the impact that their potential choice for a prioritised content/application service might have on the quality of experience for other users. As such, consumers appear to support the idea that all users are treated equally on the Internet, and even if some may be willing to pay extra for better quality access, they feel that measures to assure their own quality of experience should not impair the quality of experience for others.

(ii) End-user control: It is an important indicator of reasonableness when the practice is applied on the request of users at the edge, who can control

and deactivate it. The level of control is deemed higher when the user does not incur costs for removing a restriction.

Also, the role and control of the end-user is reflected clearly in our results. If consumers opt for prioritised services, they want to make the choice themselves about which particular content or applications are prioritised and are reluctant to accept any predefined selection that their ISP may offer. In fact, in the focus group discussions, many participants voiced doubts that ISPs could actually anticipate their specific needs and create bespoke products. This is also reflected in the low agreement with the item in the survey that asks if ISPs should make the choice of which content and applications are prioritised and which ones are not. Similarly, respondents showed relatively little agreement with the item referring to ISPs prioritising their own content such as IPTV over other (third-party) content.

(iii) Efficiency and proportionality: The measures should be limited to what is necessary to fulfil the objective, in order to minimise possible side effects. The intensity of the practice, such as frequency and reach, is also important when assessing its impact.

First and foremost, the focus group discussions highlighted that consumers would like to be as free and uncontrolled as possible when they are online. On the other hand, many participants also voiced their wish for a sort of anticipatory filtering of content that they deem offensive, fraudulent or dangerous. Some participants did subscribe to the idea of a "guardian angel" in the background and intended 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 that most of the participants would have faith in performing it is their own government. The actual fulfilment of the task is further impeded by consumers' clear

wish that their personal data remain untouched (as far as possible). While this suggests that they adhere to the principle put forward by BEREC quoted above, in fact neither ISPs nor the government or an NRA could possibly fulfil the task of filtering without analysing user data.

(iv) Application agnosticism: As long they are able to achieve a similar effect, BEREC expresses a general preference for ‘application-agnostic’ practices. This reflects the fact that the decoupling of the network and application layers is a characteristic feature of the open Internet, and has enabled innovation and growth.

In sum, the results of our study show that consumers by and large are unaware of the technical underpinnings of the Internet as well as the specific role that ISPs play within it. They care mostly about their own quality of experience and have a strong preference for open, unrestricted and reliable access to the content and applications they want. In addition, ideas about the wider effects of potential prioritisation of content and applications on the competition and innovation also register to some extent with consumers. Overall, we found stable and clear-cut attitudes towards network neutrality as described in detail above.

How consumers’ attitudes towards network neutrality are reflected in their purchase criteria was tested in a conjoint analysis (ACA). It should be noted that this study is not the first to test the relevance of network neutrality-related attributes in a conjoint analysis setting. Nam et al. (2011)¹⁹ and Huck and Wallace (2011)²⁰ have already conducted similar experiments. However, their

studies exhibit some shortcomings that this study overcomes. First, both papers tested network neutrality-related attributes in a comparatively limited set of product attributes. Our study tests ten IAS product attributes. Second, the phrasing of the network neutrality-related attributes in the papers by Nam et al. and Huck and Wallace may be criticised as both papers capture only part of the effects that emerged as being important to consumers from the focus group discussions conducted for the present study. Furthermore, the attributes of preceding studies appear to be phrased in a way that in light of the results of our focus group discussions was very difficult to understand for their respondents.

In fact, the extensive qualitative research we undertook critically guided the selection and phrasing of the attributes for the conjoint analysis as well as the other parts of the questionnaire. It was important to address consumers in terms of their own Internet usage experiences, rather than how data is transported.

The conjoint analysis tested ten product attributes for IAS, out of which five referred to typical product attributes, such as price and download speed. The remaining five product attributes revolved around applications that may or not be affected by deviations from network neutrality either in a positive way, i.e. prioritised, or negatively, i.e. slowed down or blocked. On the one hand, these applications reflected our finding that consumers care most about the effects of traffic management on their immediate quality of experience. On the other hand, the selected applications mirrored the ones most relevant to consumers in the test areas as identified from the focus group discussions. The following paragraphs specify the ten selected IAS product attributes.

We included four attributes related to network neutrality and the effect that traffic management might have on how applications work. For each

¹⁹ Nam, C.; Lee, H.; Kim, S. & Kim, T. (2011): Network Neutrality: An End-User’s Perspective. International Telecommunications Policy Review 18(1), 1–15.

²⁰ Huck, S. & Wallace, B. (2011): Consumer Information on Broadband Speed and Net Neutrality Experiment. London Economics.

attribute, there were four possible levels of access: normal access, prioritised access, slowed down access and blocked access. The attributes were:

- Access to P2P file sharing
- Access to VoIP
- Access to video streaming services
- Access to online gaming

In addition to this, we included an attribute on data caps. Although strictly speaking they are not a network neutrality issue as such, consumers may see this as a potentially strong infringement of their idea of freedom and unlimited access to all of the Internet's resources. After careful consideration, it was decided to also include zero-rating within this attribute. Specifically, we used the following data caps for this attribute:

- 10 GB (with additional zero-rating examples)
- 50 GB (with additional zero-rating examples)
- No data cap

As regards the five IAS product attributes related to general product characteristics, the focus groups' choice criteria were very similar across all test areas, and the criteria were generally in line with the expectations gained from the reviews of the previous studies. In addition to the attributes related to network neutrality, this meant that the

choice criteria to involve in the survey were:

- Quality/stability of the Internet connection, which was captured by ISP brand
- Download speed
- Bundle options
- Price
- Contract length

The remainder of this chapter discusses the results of the ACA in detail. We begin by highlighting the overarching findings as regards network neutrality-related attributes, and then we discuss the effect of the information package on how the Internet works and traffic management tested as part of our study. To this end, the test group (i.e. the respondents who had seen the information package before the conjoint exercise) and the control group (i.e. the respondents who had not seen the information package) are compared as regards the part-worth utilities found in the conjoint analysis. After these high-level results, the individual attributes and their levels are discussed in detail.

With regard to the product attributes that are relevant to consumers' purchase decisions, network neutrality-related attributes scored relatively high. Download speed, data caps and video streaming came out as the second most important purchase decision criteria behind price. Out of these three product attributes, data caps

What is zero-rating?

Zero-rating is a commercial practice which consists of allowing end-users to access particular content, services or applications without being charged or having it count towards their data usage. In Europe, it is currently observed mainly in the context of mobile Internet access with data caps.

and video streaming both relate to network neutrality: the data caps included zero-rated products and the video streaming offered different levels of normal (unmanaged), prioritised, slowed down and blocked access. It is our assumption that the previous studies would have found network neutrality to play a much more prominent role had it been presented to consumers in a way that they could easily relate to. We believe that our approach, which was driven by the qualitative insights, paid off.

It is a widely held view that increasing transparency about network neutrality and traffic management practices by giving consumers (fair and neutral) information affects consumer behaviour. Our study is the first that tests this idea with regard to network neutrality and consumers' purchase choice criteria. In the previous chapter, we described the experimental manipulation of the present study, i.e. the information package. It was found that the test and control groups of respondents differed markedly in their knowledge about how the Internet works in general and traffic management practices in particular. Thus, we can be sure that the manipulation as such did work. However, there was almost no measurable effect on purchase choice criteria. In fact, the results were very similar across all attributes tested in the conjoint analysis (see Figure 17). A noticeable but in practice negligible trend is that respondents in the control group placed a little more importance on price than respondents in the test group.

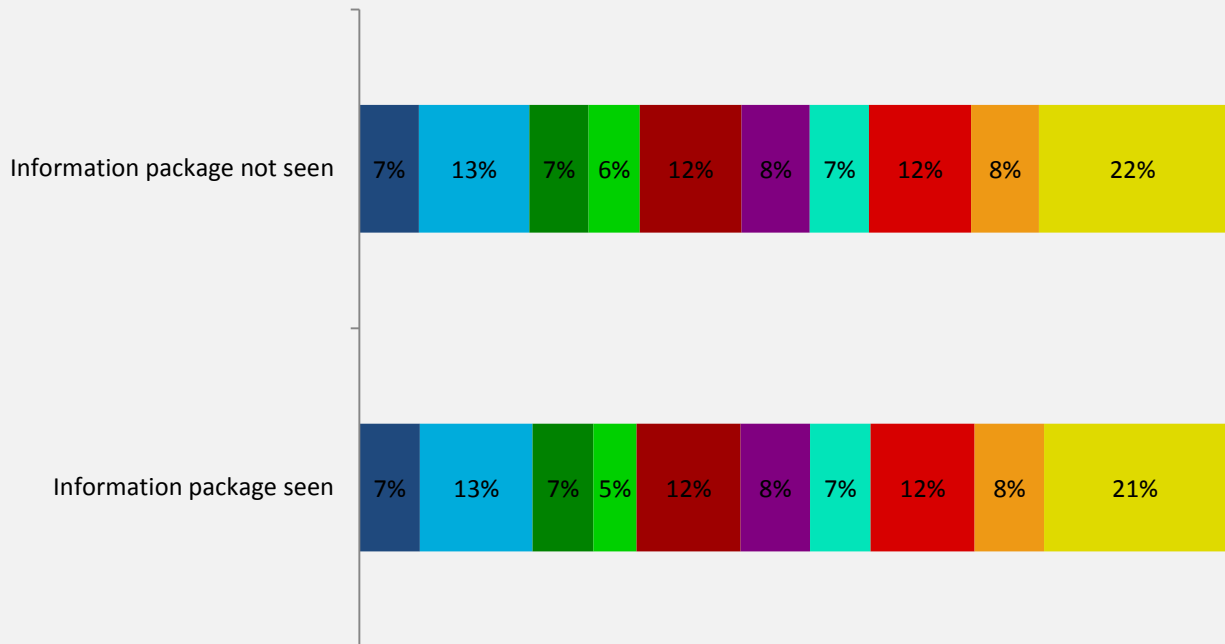
As regards network neutrality-related attributes, we observed practically no differences between the relative relevance of these attributes for the two groups of respondents. In Croatia, accessibility to online gaming applications was slightly more important to those in the control group than those in the test group. In the Czech Republic, the accessibility of VoIP and online gaming applications was a little more important in the test group than in the control group. However, the differences are

marginal. In Greece and Sweden, the information package had no effect on the perceived importance of network neutrality-related attributes.

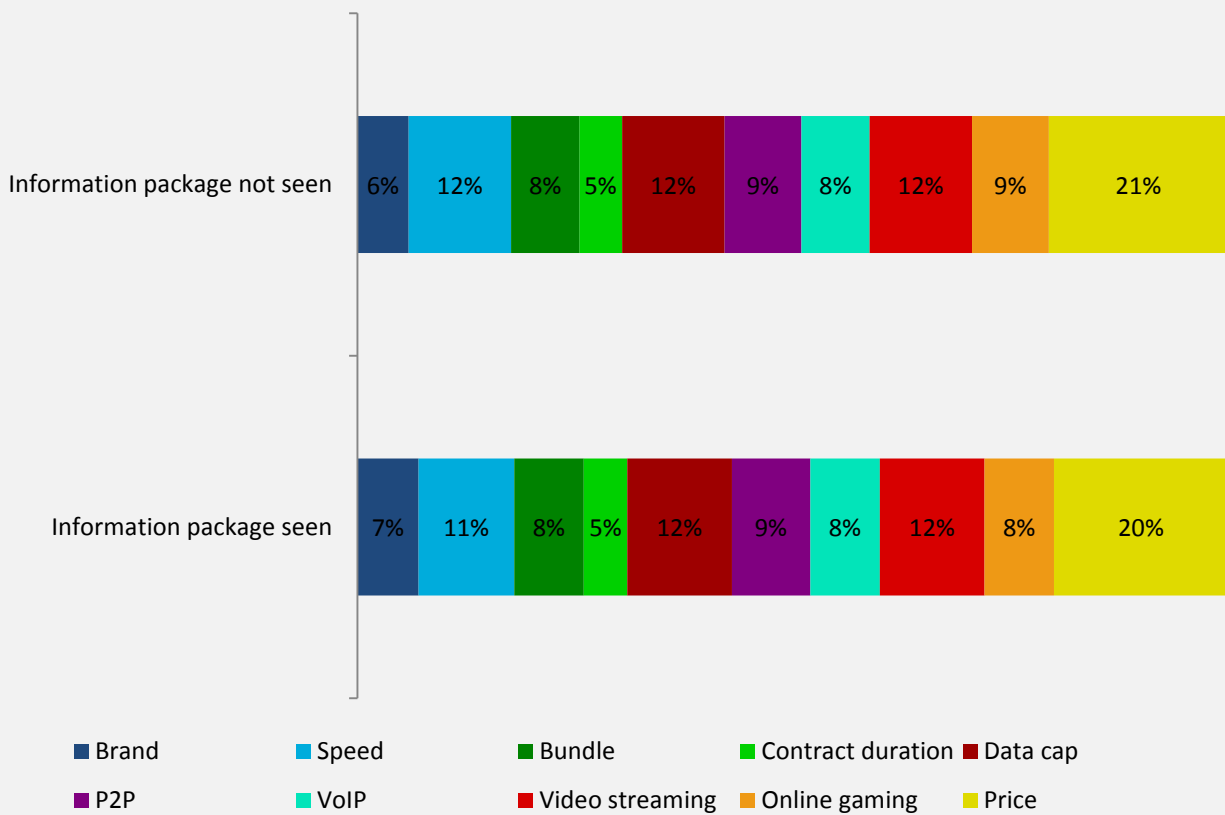
This finding is very interesting in the specific debate on network neutrality, but also bears importance for other related fields of policymaking. In our case, both the focus group discussions and the survey found that there are strong preconceptions about the nature of the Internet and thus attitudes towards network neutrality. It has been highlighted that the individual's quality of experience and unrestricted access to content and applications are seen as non-negotiable by consumers. Consequently, it is not surprising that transparency about how the Internet works and the rationale behind as well as the effects of traffic management alone had little if any effect on consumers' behaviour. If a noticeable change in consumer behaviour had been our objective for this study, we would have had to test different (persuasive) framings for the information package. In fact, this represents a major avenue for future research that is relevant to policymakers, NRAs, ISPs and content and application providers alike. Although for different reasons, all these stakeholders ought to be interested in understanding which persuasive messages are likely to resonate with consumers given their strong pre-existing attitudes towards the issue.

It is also interesting to note that the part-worth utilities did not vary significantly across the test areas. In fact, similar patterns regarding the importance of the respective attributes of fixed Internet offers emerged across all four countries. Price was the most important attribute in all the test areas, accounting for about 20% of respondents' decisions made in the conjoint experiment. Download speed and the network neutrality-related attributes of data caps and video streaming were the second most important ones, with each being roughly half as important as price.

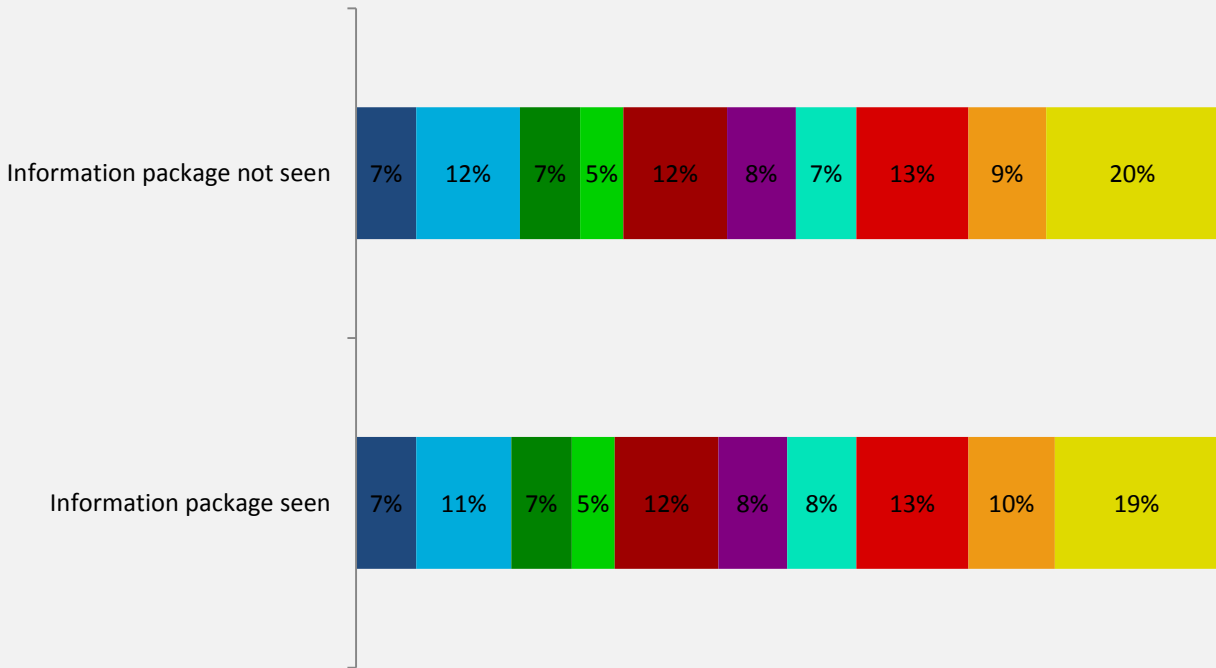
Sweden (N=1122)



Croatia (N=1020)



Czech Republic (N=1032)



Greece (N=1028)

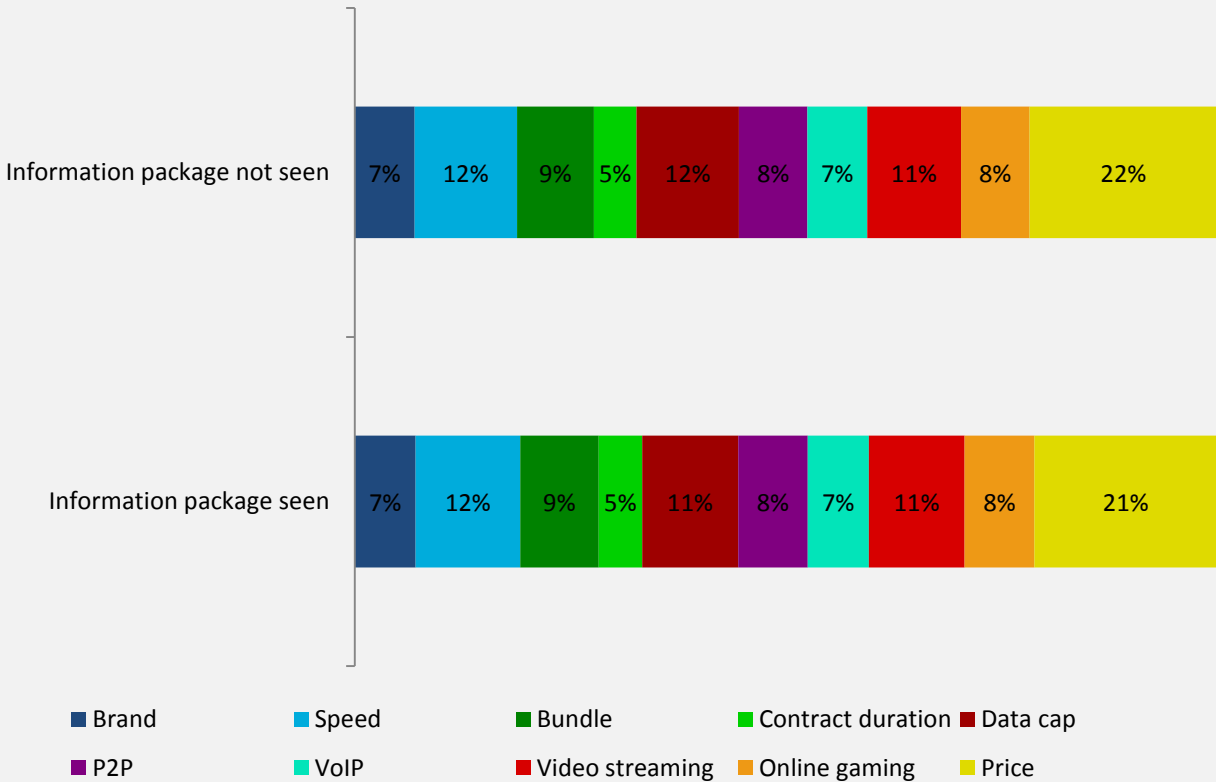


Figure 17 – Relative relevance of attributed by experimental group and test area

How to interpret part-worth utilities

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. Consequently, they are to be interpreted only relative to each other (e.g. level A is twice as attractive as level B).

Principles of interpretation are as follows:

- 1 The least attractive attribute level is the baseline for interpretation per attribute. It is set to zero, yet this does not reflect that this level is not attractive at all.
- 2 Absolute values may not be interpreted across attributes, test areas or subsamples (e.g. experimental groups or consumer segments). This is also the case for differences: absolute differences between two levels may not be compared across attributes, test areas or subsamples.
- 3 For basic interpretation, ranks of levels within an attribute may be considered. Differences in terms of ranks of levels within an attribute may be compared between test areas or subsamples.
- 4 Conclusions about the amount of attractiveness of a specific level may be drawn in a relative fashion considering the range of part-worth utilities within an attribute. Increases and decreases in attractiveness may be calculated and then compared in a relative manner (i.e. the difference between level A and level B vs the difference between level B and level C).

The figure 18 provides a fictitious reading example. In all test areas, the least attractive level is set to zero. In Country 3, the range from the least attractive level D to level A is twice as large as the range from level D to level B. Thus, level A is twice as attractive as level B. When comparing level B and level C, the range from the least attractive level D to level B is twice as large as the range from level D to level C. In conclusion, level B is twice as attractive as level C when compared to the least attractive level. Although absolute values differ, the same relation can be described with respect to Country 2 results.

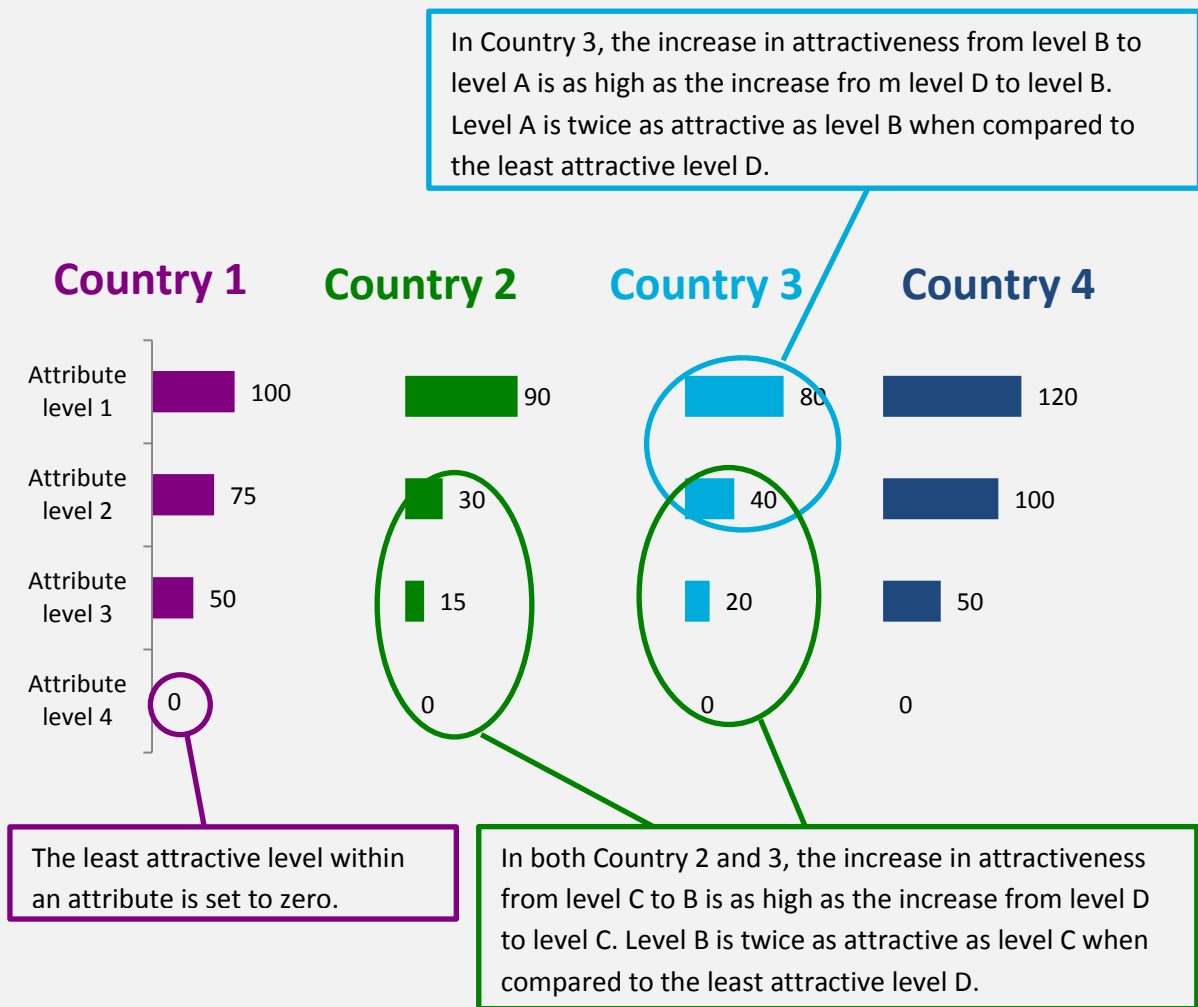


Figure 18 - Reading example part-worth utilities

Download speed was slightly more important in Sweden than in Croatia, with the Czech Republic and Greece falling in between. This concurs with the finding from the Swedish focus groups that highlighted the importance of high download speeds for these consumers. Bundling, P2P, VoIP, brand and contract duration form a group of attributes that play less of a role in consumers' decisions than the other attributes analysed.

While the above comparisons of the different attributes reflect their relative importance

compared to each other in the respondents' decision-making process, they do not give any insight into the specific level of each attribute that they prefer. Conclusions regarding these levels have to be made on the basis of part-worth utilities. As was the case with the conjoint analysis, the part-worth utilities for the preferred attribute levels were by and large the same, irrespective of whether consumers had seen the information package or not.

The data cap attribute represents one of the two network neutrality-related attributes most relevant for consumers' purchase decisions. To the best knowledge of the authors of this study, we are the first to test this attribute in the context of the at-home usage situation. Within that, our study also appears to be the first one to test the effect of zero-rating. Although more prevalent for mobile IAS contracts, our results provide interesting and novel insights for policymakers and market actors alike.

Looking at the different types of data caps, offers without a data cap were clearly preferred to those that included one. This is not surprising, given that this is the most common type of offer found in the market today. Naturally, consumers are unlikely to want the additional concern of a data cap limiting their at-home data consumption. Offers including a 50 GB data cap only reached about 60% to 75% of the attractiveness of offers that did not include one. Unsurprisingly, a data cap of 50 GB per month was preferred to one of 10 GB per month.

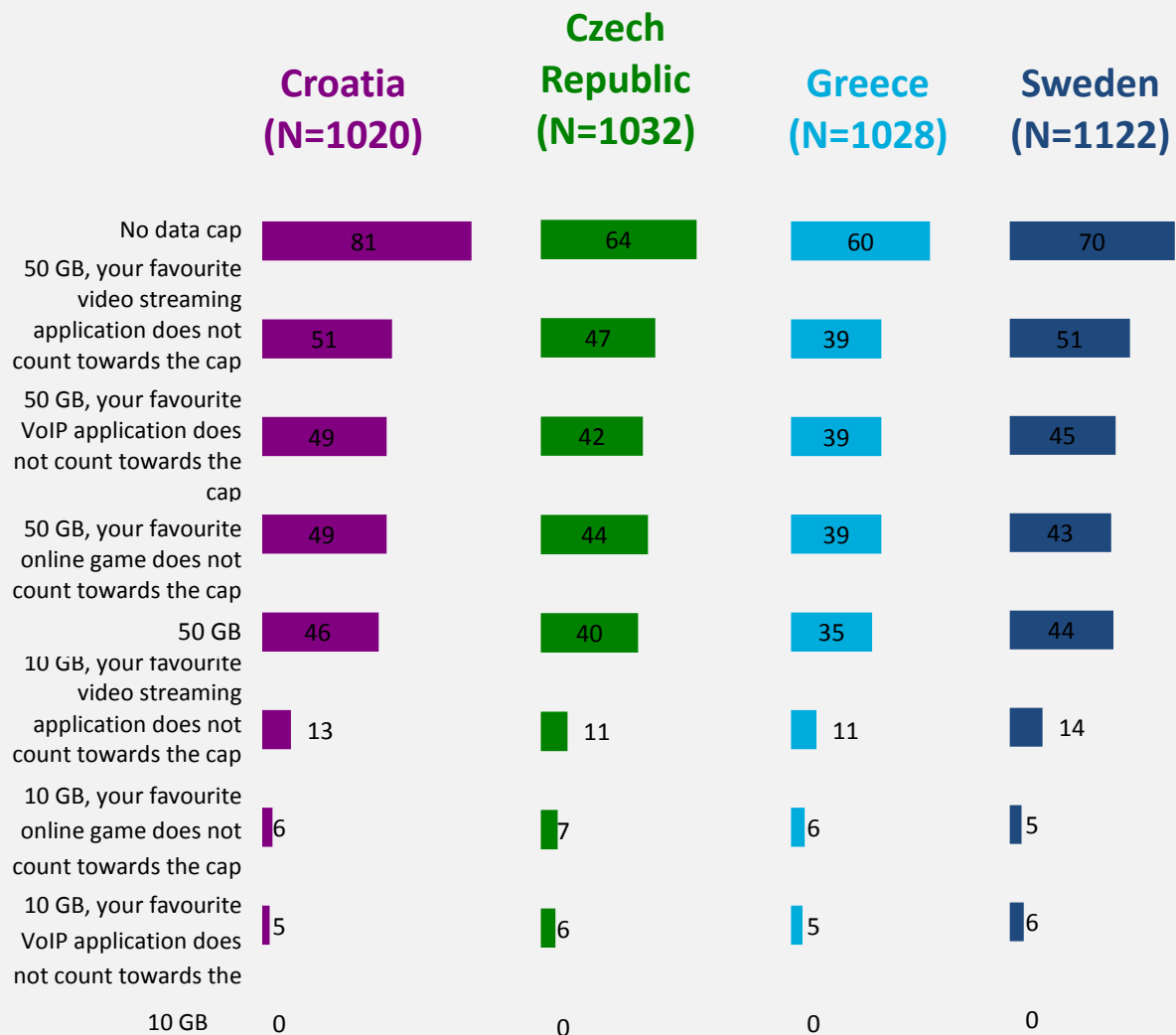


Figure 19 - Part-worth utilities for the data cap attribute by test area

As regards zero-rating of specific applications, our results indicate that consumers exhibit some consciousness of their own data consumption. It is therefore interesting to note that zero-rating of specific applications has almost no effect when it is offered combined with a data cap of 50 GB, i.e. one that the majority of consumers are unlikely to reach in a normal month of online activity. However, zero-rating and within that in particular zero-rating of one's favourite video application had a significant (positive) effect on the part-worth utility when it was linked to a data cap of 10 GB. One would suspect that this effect may be linked to consumers' experiences from their mobile IAS contracts. A split by respondents with and without mobile access to the Internet supports this at least partly. In three out of four test areas, the part-worth utility for offers with a data cap of 10 GB and their favourite video streaming application zero-rated increased noticeably when the respondent also has a contract for mobile Internet access as compared to when the respondent does not have such a contract. Again, this finding calls for more in-depth research into this matter. For instance, it will be interesting to know what 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 part-worth utilities for the remaining network neutrality-related attributes also showed some surprising results. Building on the results of the focus group discussions, these attributes related to the levels of access to different applications (video streaming, VoIP, P2P, online gaming) – prioritised, normal (i.e. best-effort Internet as the consumers know it), slowed down and blocked access.

The attributes related to the levels of access to different Internet applications (video streaming, VoIP, P2P, online gaming) were featured in the questionnaire in such a way so as not to 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 slightly higher than the one of prioritised access, but significantly higher 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. If this had been the case, one would have expected the part-worth utilities of the test and control groups of respondents to differ. However, our analysis did not reveal any significant differences. Consequently, there is no indication that there was an issue with respondents' comprehension of the attributes themselves.

Having ruled out a fundamental methodological problem, several other explanations seem possible. Given that this is the first study to research 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.²¹ In

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 too obvious. Note that in our survey by mentioning the specific level we did prompt respondents.

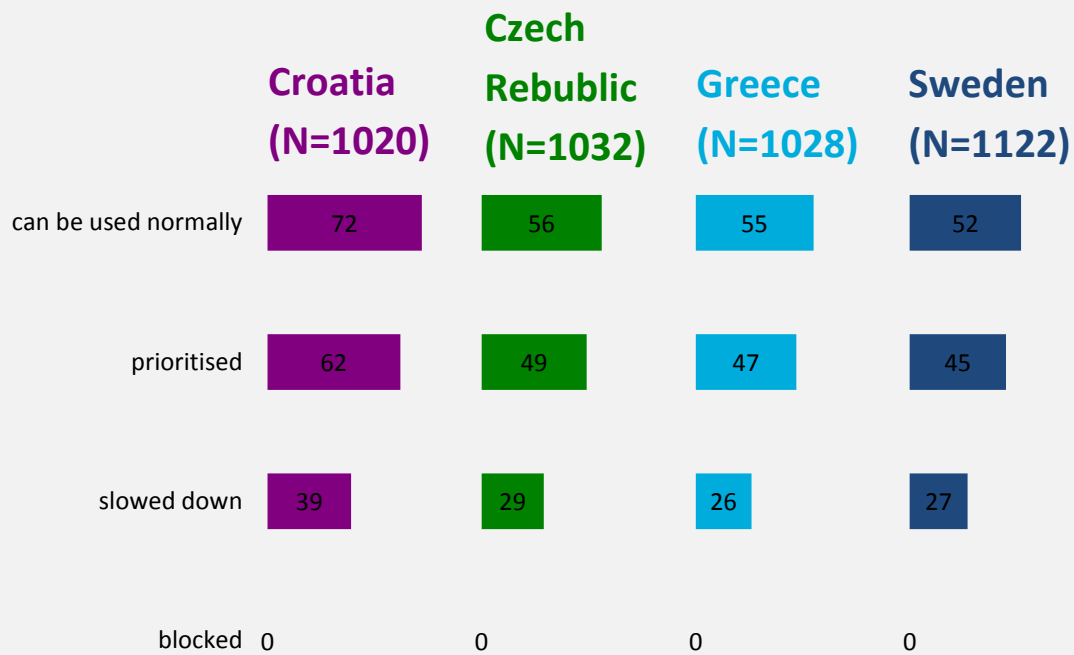


Figure 20 - Part-worth utilities for the P2P/filesharing attribute by test area

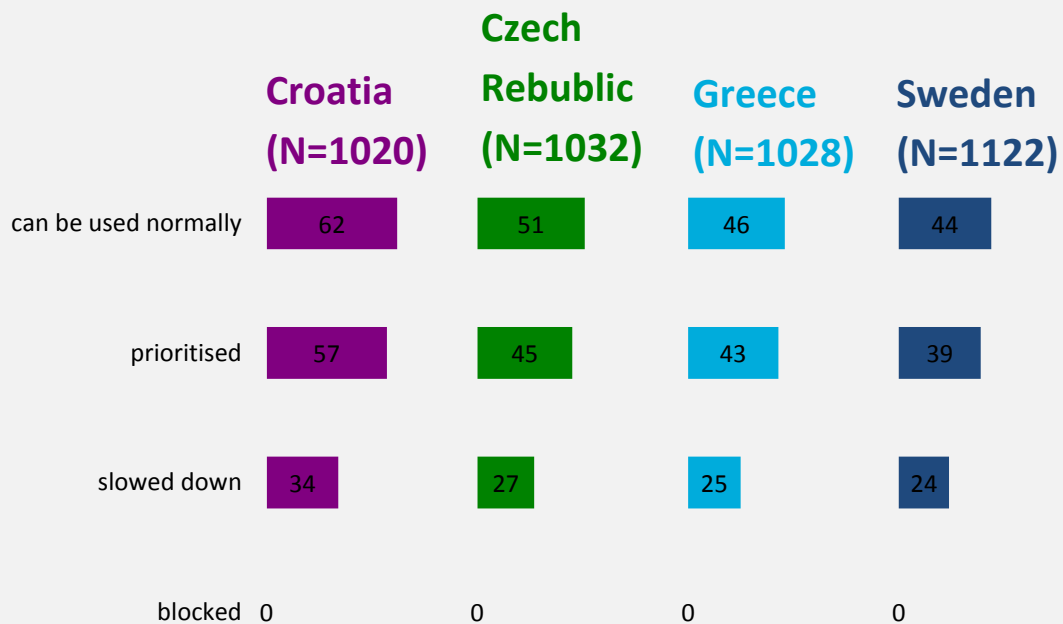


Figure 21 - Part-worth utilities for the VoIP services attribute by test area

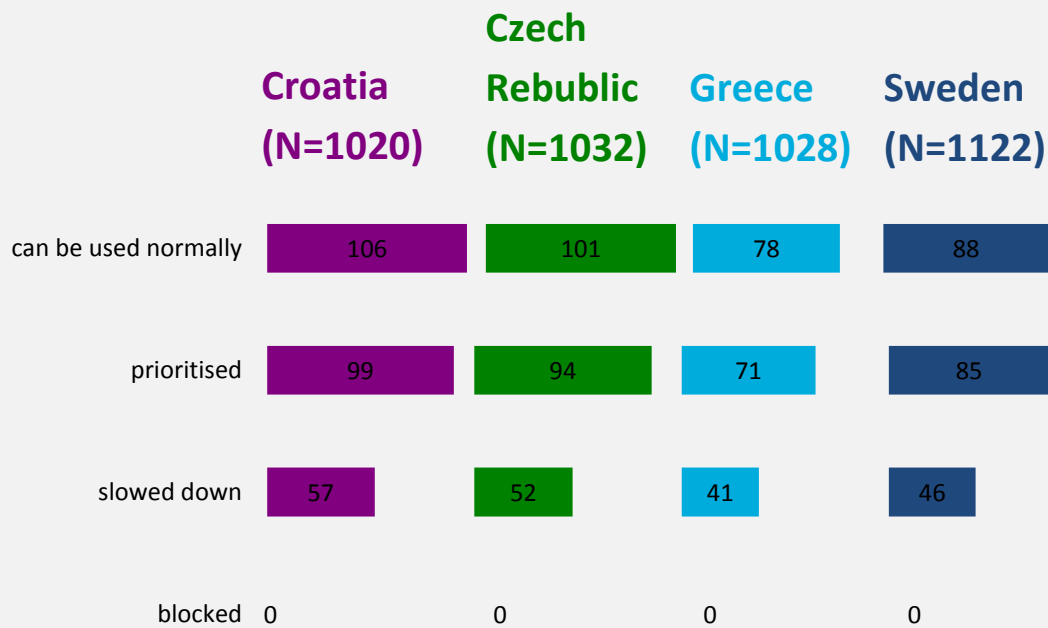


Figure 22 - Part-worth utilities for the video streaming attribute by test area

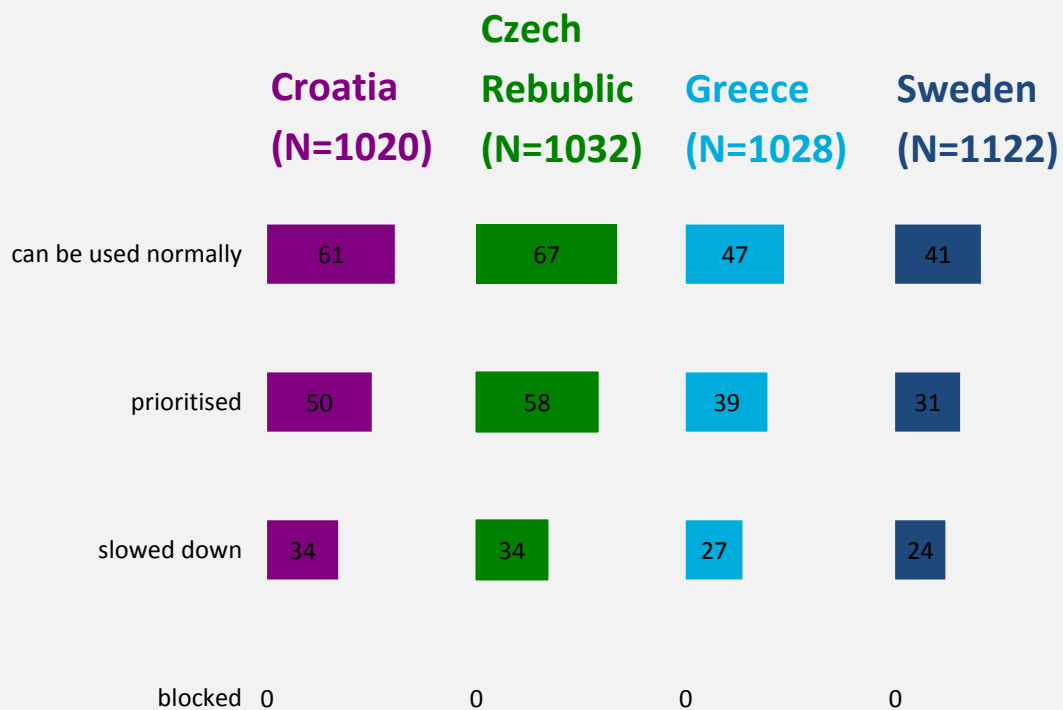


Figure 23 - Part-worth utilities for the online gaming attribute by test area

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. While 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 over 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 relevant security applications are prioritised on the Internet. Some groups were also 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 prioritised access to a specific application may bring them. Such offers are very rare at the moment. As the Internet is primarily an experience good,²² the actual benefit can only be experienced after the purchase. Consequently, consumers may have quite simply opted for the most familiar option as they were doubtful about the actual benefit of prioritised access. This explanation is supported by the fact that most respondents were quite satisfied with their current IAS.

Finally, it may be argued that respondents already accounted for the 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 group discussions and also the fact that part-worth utilities did not differ between the test and control groups of respondents, this explanation seems unlikely.

In sum, to answer the key underlying question of "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 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 their 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 about whether network neutrality should be understood as a must-be quality for consumers.

²² An experience good describes a good whose actual quality a consumer can only learn about by using or consuming it.

The remaining attributes referring to general characteristics of IAS products have been extensively tested in other studies²³ using conjoint analysis. Our results by and large reflect the findings of these studies. As regards the most important attribute for consumers' purchase choices, i.e. price, we found that consumers naturally prefer lower price²⁴ levels over higher price levels in general. Equally unsurprising, higher rates of download speed were preferred over lower rates of download speed across all test areas. On the whole, speeds up to 100 MBit/s were found to be about twice as attractive as speeds up to 10 MBit/s.

Bundled services were preferred over stand-alone Internet offers in general. Bundles including Internet, telephone and TV were most attractive across all four countries, but there were differences between countries regarding the relative attractiveness of bundles that are not triple play. In Croatia, the Czech Republic and

Sweden, bundles including Internet and TV were preferred to those including Internet and telephone, while in Greece these two combinations of services were seen as equally attractive.

The analysis of the part-worth utilities for brand revealed that Hrvatski Telekom was the most attractive ISP in Croatia, with Czechs preferring O2 Czech Republic. OTE was the most attractive ISP in Greece, about four times as attractive as Forthnet, which is ranked second. In Sweden, highest ranked Telia was more than twice as attractive as local Internet providers.²⁵ The analysis also demonstrates consumers' clear preference for their current ISP. This supports the results gained in the section on why respondents are unlikely to switch, where the most important reason was that they were satisfied with their current ISP.

For minimum contract duration, one month was most attractive in Croatia and Sweden, while twelve months was preferred in the Czech Republic and in Greece. Across all the test areas, the minimum contract duration of 24 months was the least attractive.

Consumer segments

To gain a more in-depth understanding of the factors that drive consumer preferences for IAS products, we identified mutually exclusive consumer segments. To achieve this objective, post hoc market segmentation was conducted with the conjoint results used as input data. Segmentation was conducted across all the test areas in order to derive stable segments that are valid for all the countries and can be applied on

²³ Van Camp, F. (2012): FTTH Moves the Market. FTTH Conference 2012, Munich. Deere, G.; Brice, L. & Barton, S. (2008): Winning and Losing in the Multi-play Market using Conjoint and Construct. Research sponsored by BT Wholesale. Ipsos MediaCT. Ida, T. & Sato, M. (2006): Conjoint Analysis of Consumer Preferences for Broadband Services in Japan. The Kyoto Economic Review, 5(2), 115–127. Klie, A. (2012): Broadband: What do Consumers Want? Examining Willingness-to-pay. A work project, presented as part of the requirements for the award of a master's degree in Economics from the NOVA – School of Business and Economics. Rosston, G., Savage S. J., & Waldman, D. M. (2010): Household Demand for Broadband Internet in 2010. The B.E. Journal of Economic Analysis & Policy, 10(1), Article 79. Takano, N. (2013): A Conjoint Analysis of a Next Generation Network (NGN) in Japan. Res Socionetwork Strat: in press. The Full Results Report features additional references.

²⁴ Prices are quoted throughout this report in local currency in order to reflect survey results in the test areas as closely as possible. Exchange rates for November 2014 should be applied when converting prices to another currency. XE reports the following average exchange rates for euros in November 2014: HRK/EUR = 0.1302, CZK/EUR = 0.0361, SEK/EUR = 0.1081.

²⁵ For the purpose of this study as well as the survey we have conducted, "Local Internet Providers" refers to Internet providers within the test areas that serve only a limited regional or local area within the test area (country).

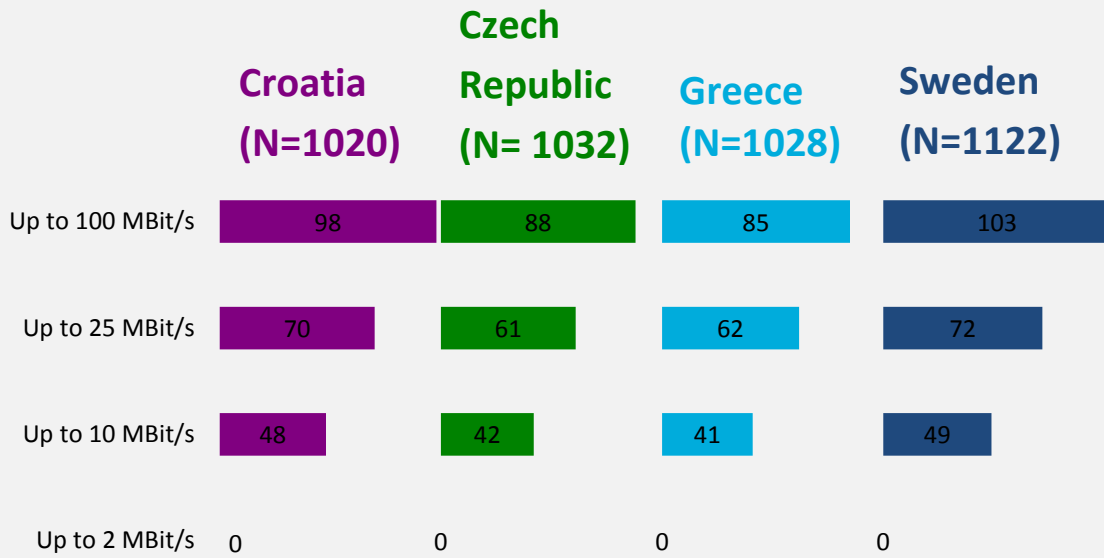


Figure 24 - Part-worth utilities for the download speed attribute by test area

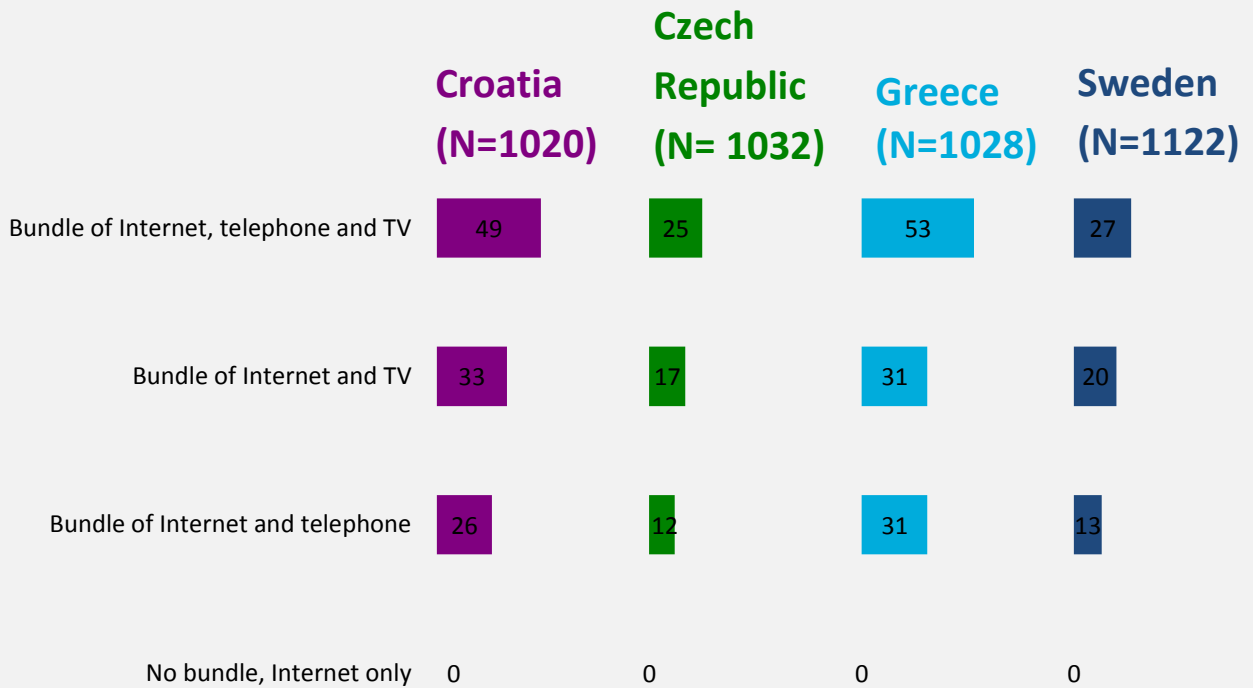


Figure 25 - Part-worth utilities for the bundle services attribute by test area

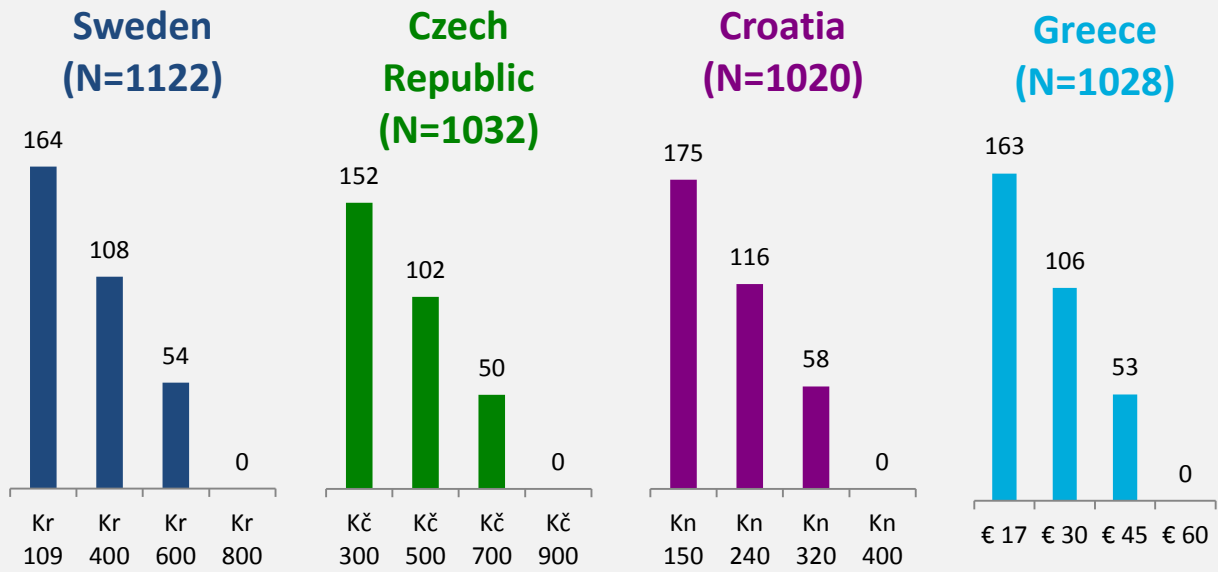


Figure 26 - Part-worth utilities for the price attribute by test area

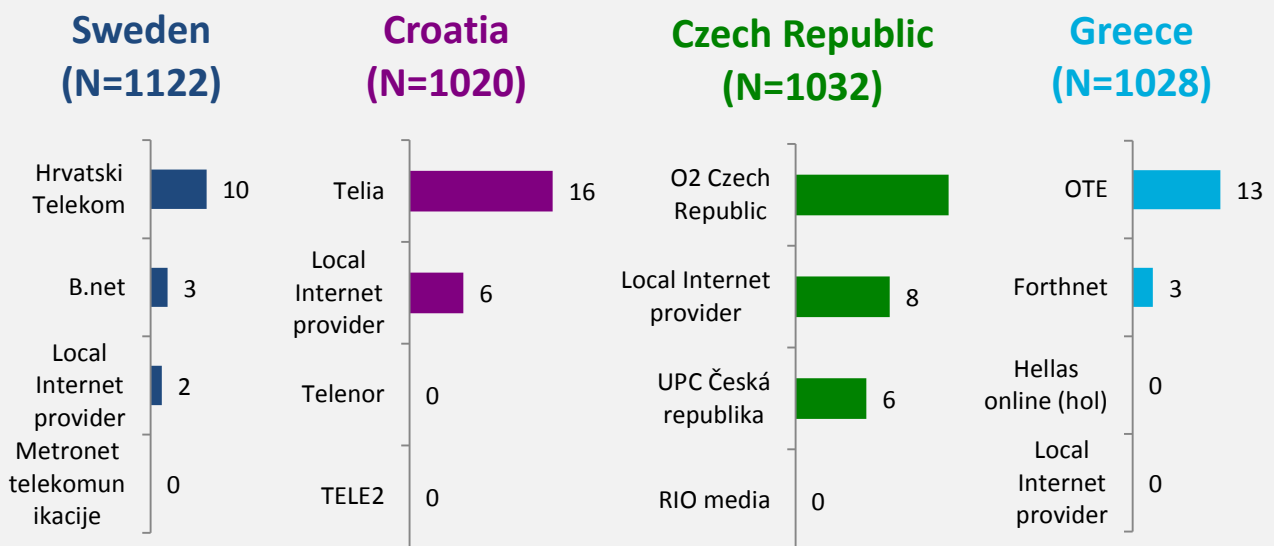
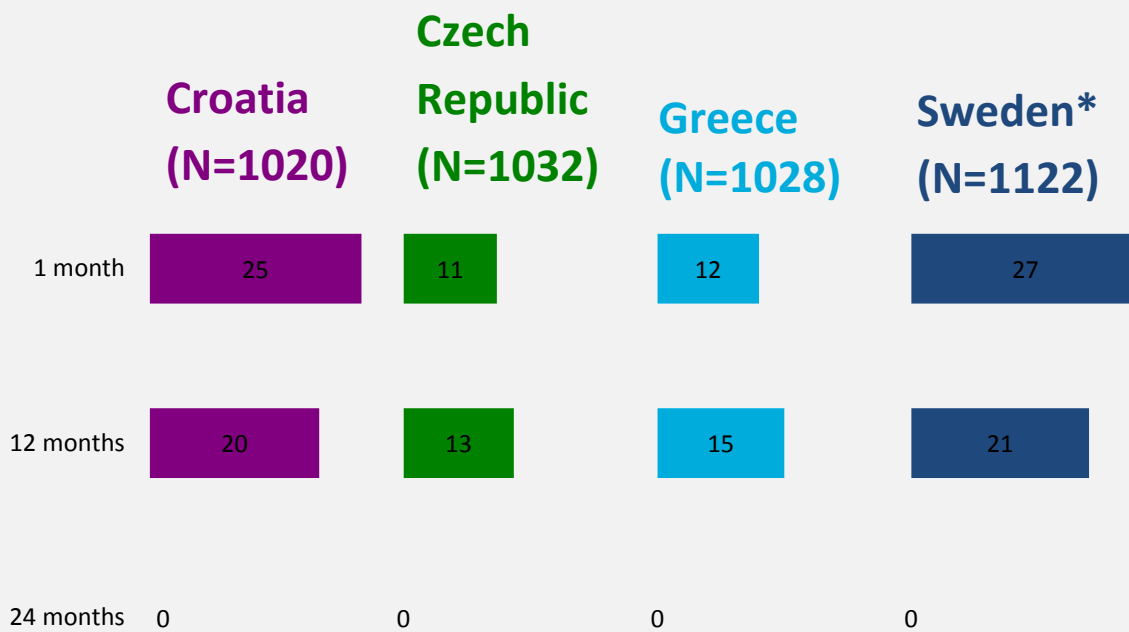


Figure 27 - Part-worth utilities for the brand attribute by test area



*It should be noted that new legislation was introduced in Sweden shortly after the survey was conducted to make a one-month cancellation period compulsory for all IAS contracts.

Figure 29 - Part-worth utilities for the minimum contract duration attribute by test area

others should the research be replicated for additional countries. Respondents in each segment share largely similar preferences. Using this approach, we identified four consumer segments.

Consumers in segment 1 can best be described as active multimedia users. Network neutrality-related attributes, that is to say unrestricted access to Internet applications, are of high importance to them, in particular access to online gaming and video streaming. While still important factors, download speed, bundled services and data cap levels play less of a role in the purchase choice. Price also plays a less important role, yet distinguishes them from consumers in segment 2, to whom price is even less important. Active multimedia users tend to be middle-aged heavy Internet users. They use the Internet at home relatively frequently and for long periods of time,

and they use applications (in particular video streaming, music streaming, VoIP and P2P) more often than consumers in the other segments. They mostly use the Internet for private rather than work purposes. Since unrestricted access to Internet applications is important, these consumers are more likely to switch providers in the case of violations of network neutrality.

Consumers in segment 2 can be labelled as dynamic private and business users. Similarly to active multimedia users, they place comparably high importance on being able to access specific Internet applications, especially P2P and video streaming. Download speed, bundled services and data cap levels are also important to them; they see more value in these attributes than active multimedia users. Out of all the segments identified, price is least important to these

consumers. They are predominantly young males and are heavy Internet users. They use applications such as music and video streaming, P2P, IPTV and VoIP more often than the average respondent, and they use the Internet for both private and business purposes. Dynamic private and business users are more likely to have positive associations with the Internet in general. As the importance of network neutrality-related attributes is high, there is a high likelihood of switching due to violations of network neutrality among these consumers.

Consumers in segment 3 can be described as conservative brand users. Within this segment, download speed, bundled services and data cap levels are of high importance. This is also the case for brand and price; these consumers value brand more than consumers in all other segments, and they value price more than active multimedia and

dynamic private and business users. Network neutrality-related attributes are of comparably lower importance. Conservative brand users are older and use the Internet at home less frequently and for shorter periods. They use specific applications less often, and they mainly use the Internet for private purposes. They are also less likely to switch providers in the case of violations of network neutrality. Consumers in this segment feel that the social aspects of the Internet, for example communicating with friends online, are of less importance than its other uses.

Consumers in segment 4 are pragmatic average users. Of all the segments identified, price is most important to these consumers, while they value network neutrality-related attributes, download speed, bundling and data cap levels the least. The consumers in this segment are older than those in

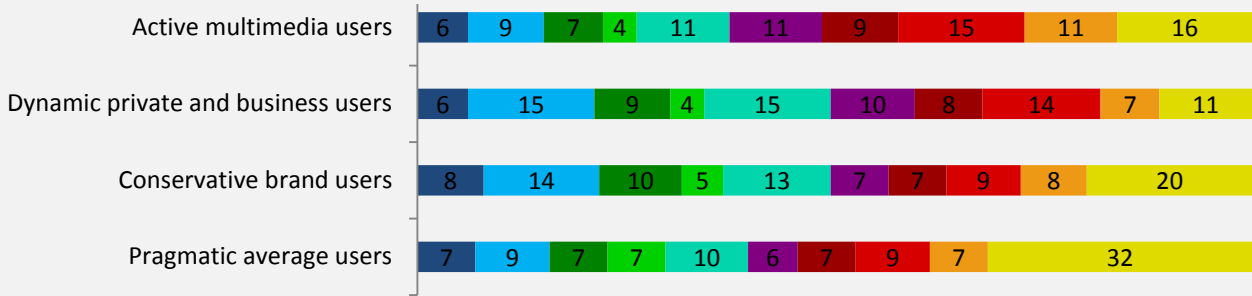
Main drivers for purchase choice criteria

Despite clear-cut differences in the perception of products with and without deviations from network neutrality across test areas in the focus groups, part-worth utilities show little differences across test areas. This is even more surprising given the sometimes fundamental differences in the electronic communication market environment in the test areas. So, if it is not the market environment that drives differences in consumer perceptions, attitudes and purchase decision criteria, what is it then?

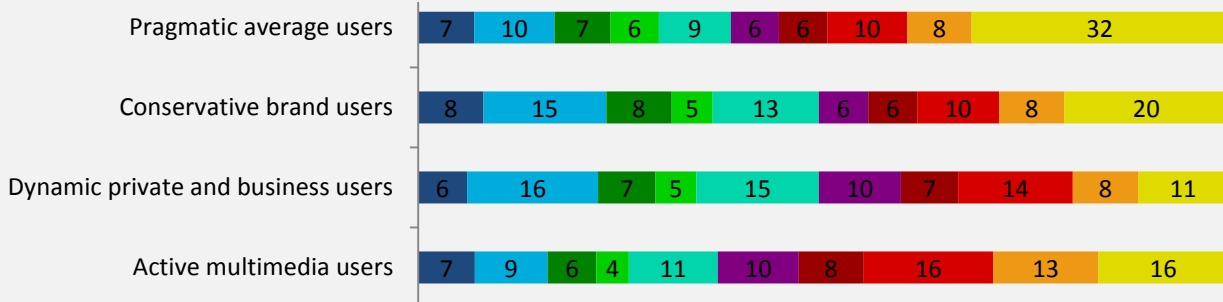
The four consumer segments that were identified from the preference patterns in the conjoint analysis may provide an answer. As these four segments were built from the choice data, it is not surprising that they show significant differences in their choices. However, they also shed light on what may actually drive these differences, namely both socio-demographic variables and attitudes towards the Internet – or, in essence, the role of the Internet in one's life.

These underlying variables appear to be consistently attached to the respective segments across test areas. This clearly highlights that such underlying variables actually drive choices, not the market environment. However, the market environment is very likely to shape the size of the respective segments in each test area.

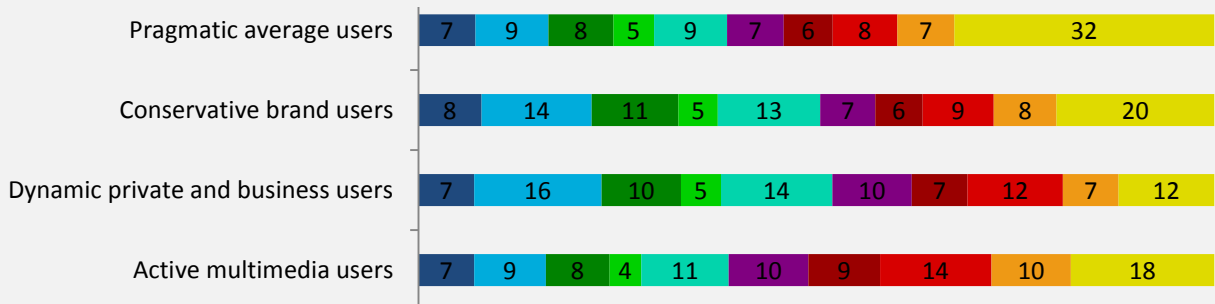
Croatia (N=1020)



Czech Republic (N=1032)



Greece (N=1028)



Sweden (N=1122)

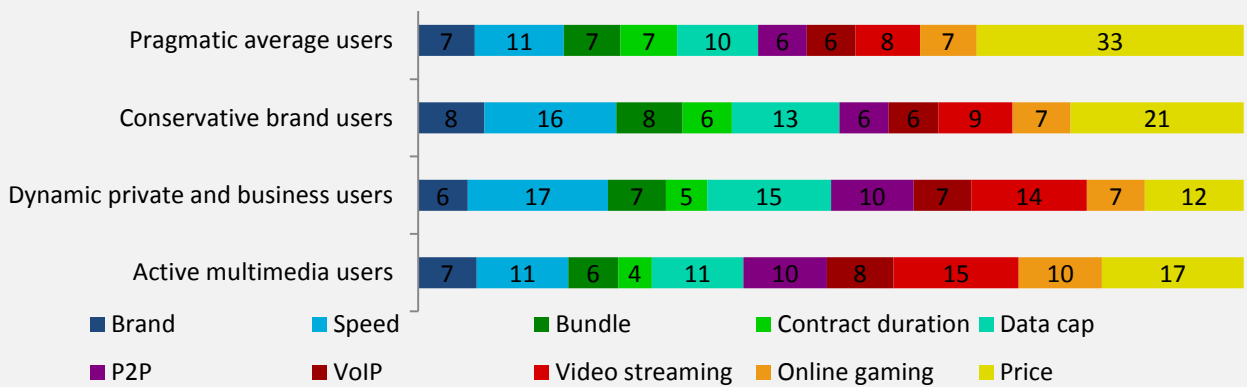


Figure 30 - Relative importance of attributes by segment and test area (in %)

the other segments, and there are slightly more women than men. They also use the Internet less frequently and for less time. They show overall lower usage of Internet-enabled applications, and they use the Internet mostly for private purposes as opposed to work. They are the most sceptical about the value of network neutrality, and so they are less likely to switch providers due to violations of this principle than active multimedia and dynamic private and business users.

Active multimedia users are the largest segment in all test areas, followed by pragmatic average users. There is a greater difference between the two in Croatia and the Czech Republic, while in Greece and Sweden this difference is smaller. The share of respondents for dynamic private and business users and conservative brand users are lower and similar in the four test areas.

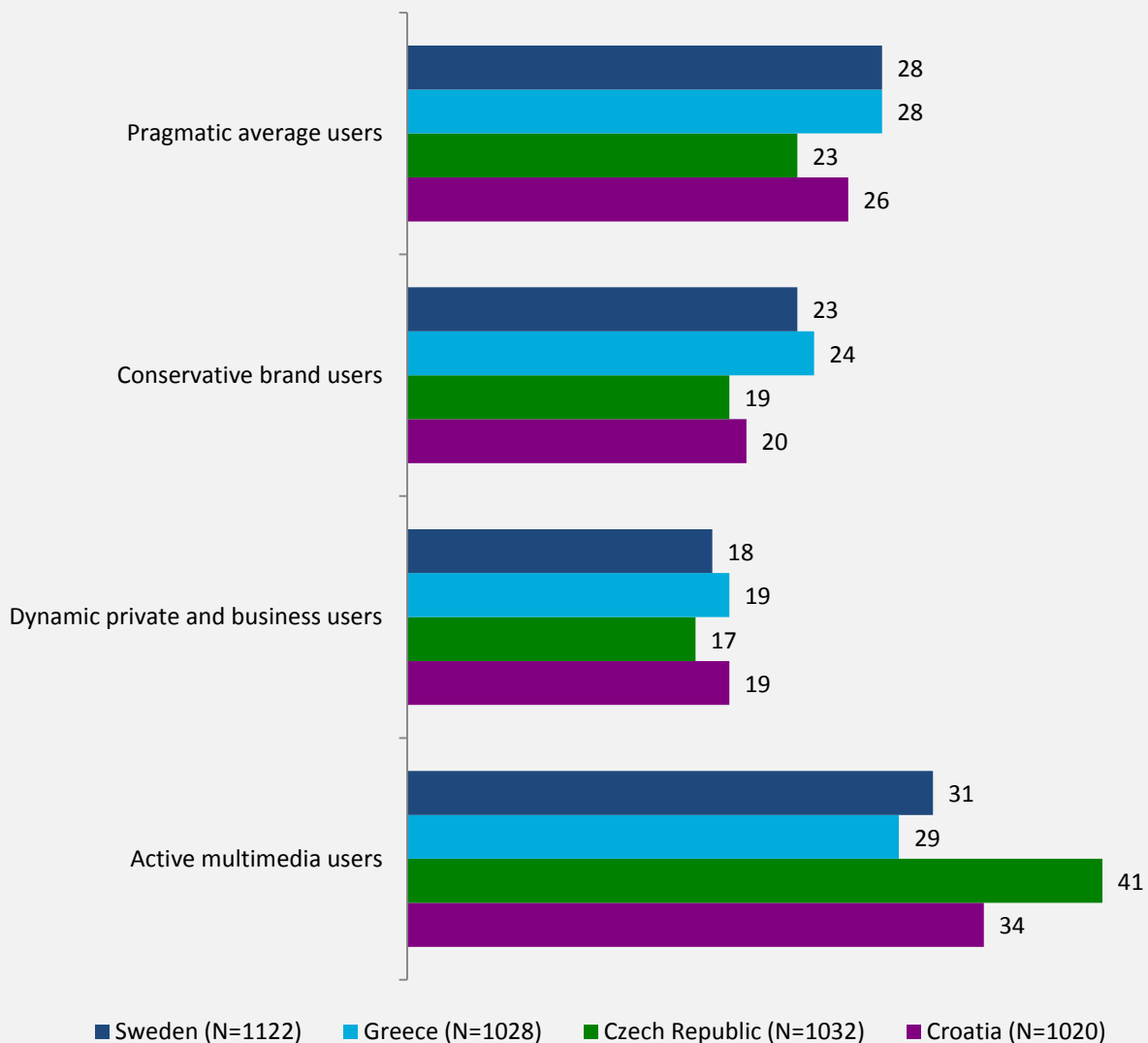


Figure 31 - Distribution of segments by test area (in %)



Consumers care not only about their own quality of experience, but also about that of others. Some may thus hesitate to purchase a quality-differentiated service or even switch if their ISP introduces them.

04 | Action

How do consumers' awareness, interests and desires translate into action? This is a key question for NRAs and ISPs alike. This final chapter of our study presents answers to this question as we investigate consumers' propensity to switch their ISPs due to their approach to network neutrality. Within that this chapter provides an indication for consumers' willingness-to-pay for network neutrality. Overall, it appears that there is a significant trade-off ahead for ISPs if they decide to introduce quality-differentiated services.

In the previous chapter the question of switching was brought up in the context of violations of network neutrality. This chapter explores switching in more depth, focusing on how likely consumers are to switch in general and what drivers exist that may increase their propensity to switch.

Early on in the survey, respondents were asked if they had ever switched ISPs for home Internet access. To give more detailed responses, they could choose from three options: no, yes because I had to (for example, due to moving house), and yes because I wanted to (for example, due to finding a better offer). The responses to this question demonstrate generally strong customer loyalty to their ISP.

In Croatia, the Czech Republic and Sweden, around half of respondents had never switched in the past, while in Greece this percentage was substantially lower at 30%. In Croatia, only 8% of respondents indicated that they have been forced to switch ISPs at some point, while in Sweden this figure was 22%. This is backed up by a finding from the focus group discussions, where numerous Swedish participants stated that they feel that their Internet access is closely linked to their house and would have to be changed if they moved. Some also stated that it is not easy to switch without moving house. The highest proportion of

respondents who had switched was found in Greece (62%). A potential explanation for this is that the severity of the economic crisis forced Greeks to find ways to save money wherever possible, while the other three test areas weren't affected so badly by the financial crisis.

The question as to whether consumers actually have the choice to switch played a role in all of the focus group discussions in some way, so a question related to this was included in the survey. Almost half (46%) of the Swedish respondents stated that they feel that they do not have a true choice when it comes to choosing an ISP for home Internet access. This was the highest percentage out of all of the test areas, and reflects the opinions expressed in the Swedish focus groups. The lowest percentage of agreement was found in Greece, which could be a result of the fact that many Greek respondents have switched ISP before. However, despite the fact that many of them had switched their provider recently, more than half agreed with the statement that they are generally unlikely to switch. Nevertheless, this figure is still higher in the other test areas. For instance, 72% agreed with the statement in Sweden.

Respondents who indicated that they are unlikely to switch ISPs were then asked about the reasons for this; they were able to select three options

	Sweden (N=1122)	Croatia (N=1020)	Czech Republic (N=1032)	Greece (N=1028)
Yes, because I wanted to (e.g. due to a better offer)	31%	49%	35%	62%
Yes, because I had to/was forced to (e.g. due to moving)	22%	8%	15%	11%
No	49%	44%	51%	30%
No answer/don't know	1%	1%	1%	1%

Figure 32 - Percentage of respondents with experience of switching

Note: multiple answers possible

I am generally unlikely to switch my Internet provider.

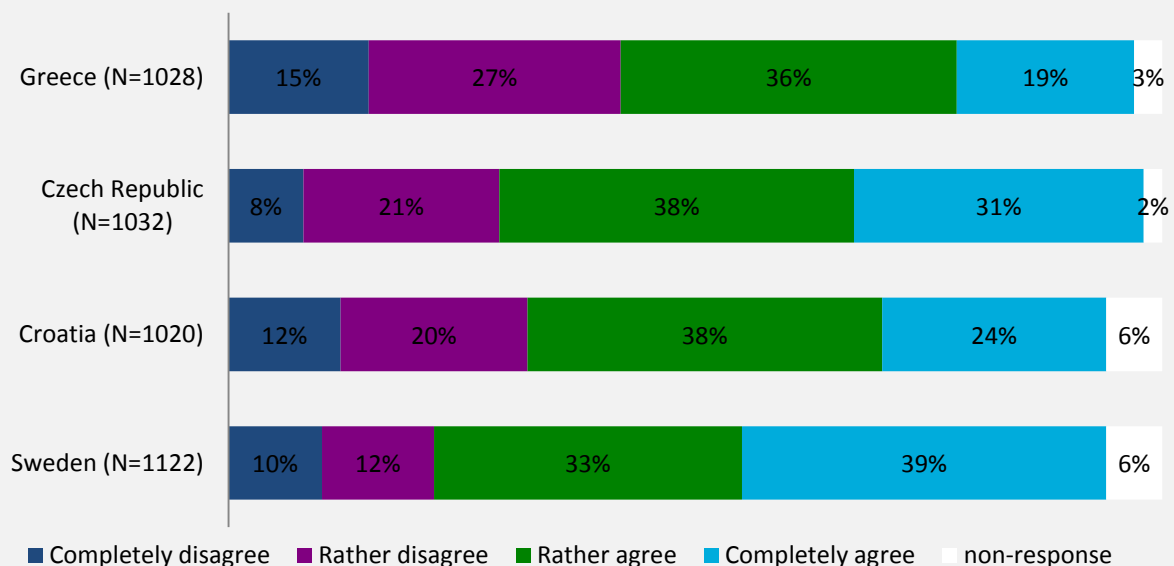


Figure 33 - Inclination to switch ISP per test area

I feel that I do not have a true choice when it comes to deciding for an Internet provider.

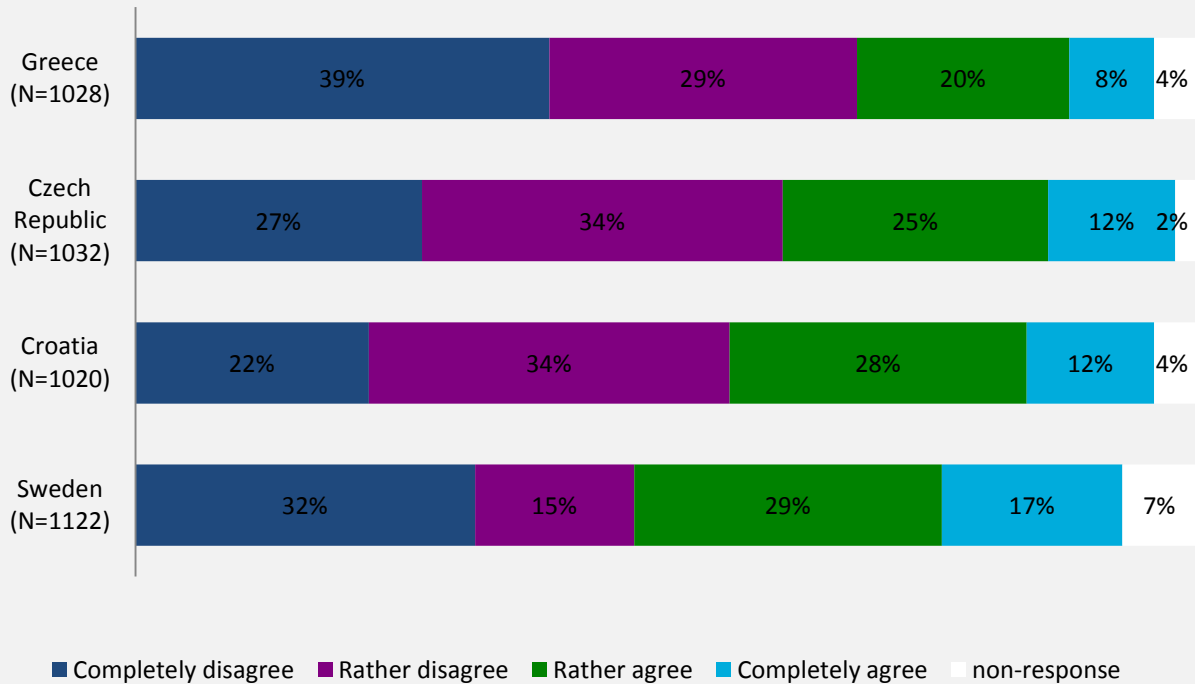


Figure 34 - Inclination to switch ISP per test area

from the chart 35. The most common response in all four test areas was that they are satisfied with their current ISP and thus see no reason to switch, which confirms the results from the question on satisfaction described earlier in this report. Another significant reason across all the test areas was that respondents don't feel that there is a better deal available with any other ISPs.

From this point, the reasons differ across test areas. Hurdles perceived by the Croatian respondents include the lack of alternative providers and long contract durations, as well as the risk of loss of service or paying double and the effort needed to undertake the switching process. Czech respondents also showed concern about the risks associated with switching, but reported that the other reasons cited by Croatians have less of an impact on them; in fact, only 8% of Czechs felt

that switching is too much effort, the lowest percentage out of all the test areas. The Greek respondents reported comparatively high levels of concern about paying double, which reflects the sustained financial crisis in the country. They were also worried about a temporary loss of service. However, they do not see a lack of choice as an issue. Meanwhile, in Sweden the switching process was seen as being very tedious and difficult, and consumers find it difficult to compare ISP offers. It is also interesting to note that a relatively large percentage were worried about losing their email address or personal web page as a result of switching.

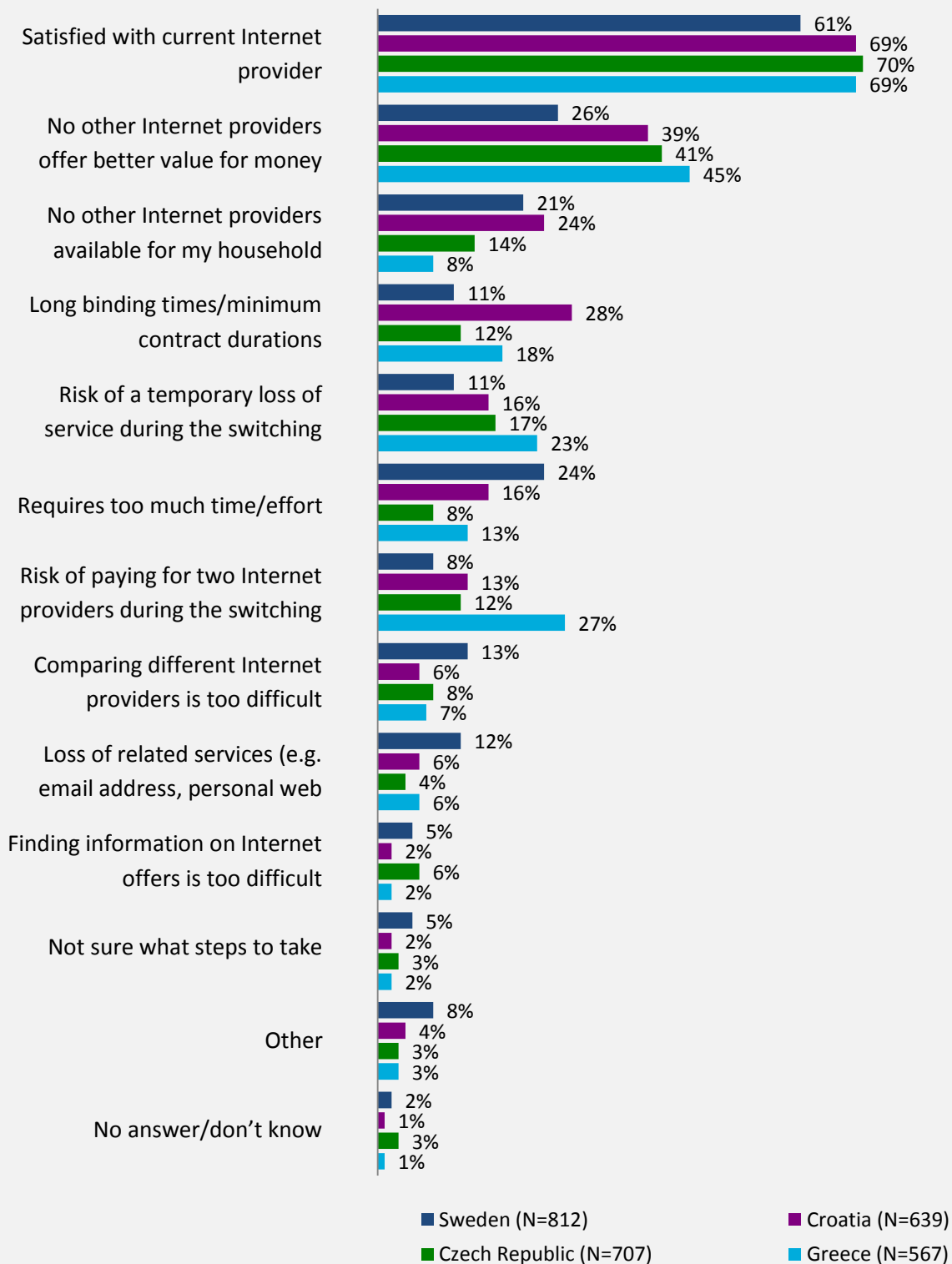


Figure 35 - Reasons for not switching ISPs in test areas

A study conducted on behalf of the Executive Agency for Health and Consumers (EAHC)²⁶ approached the issue from the perspective of those who have already switched. The main reason for switching providers among these consumers was commonly found to be price, i.e. they found a better offer. This was true for 47% of Czech respondents, 46% of Greeks and 36% of Swedes.²⁷ Another important driver was dissatisfaction with the previous provider, which also emerged as one of the strongest drivers for switching in our focus group discussions. A parallel can be drawn here with the finding from our survey that most consumers do not switch because they are satisfied with their current provider. In fact, a key finding from the EAHC report is that “the two main reasons why survey respondents did not even consider switching are satisfaction with their current provider [48% of respondents] and a belief that that provider offers them the best value for money [25% of respondents]”. When looking at these results on a national level, it is interesting to note that satisfaction as a reason for not switching was higher in Sweden (58%), the Czech Republic (58%) and Greece (57%) than the European average of 48%.

In the section of our survey that asked consumers about their attitudes towards network neutrality (see Figure 36), the fourth statement (“Transparency is all that it needs: people will switch providers if they do not agree with prioritising or blocking Internet traffic, as long as they are informed that it takes place”) addressed the question as to whether consumers will switch if they disagree with the traffic management

practices of their ISP. There was a high level of agreement with this statement, particularly among the Greek²⁸ respondents, of whom 83% agreed with it, which is statistically significantly more than in the other test areas. There is also a high percentage of agreement among consumers in the other three test areas.²⁹

However, the high level of agreement with this statement should not be equated with consumers actually switching ISPs. The agreement shows that the majority of respondents expect people to switch providers if two conditions are met, namely if they disagree with the traffic management practices of their ISP, and if they are informed that these practices take place. Knowing that satisfaction is a key contributor to customer loyalty and knowing that satisfaction in all test areas is higher than average in the EU, one would doubt that awareness about and disagreement with certain traffic management practices alone would give sufficient reason for consumers to actually switch providers. Only consumers who show high levels of purchase involvement might reasonably be assumed to translate awareness and disagreement into switching. For this to happen on a large scale though, consumers would have to be dissatisfied with their quality of experience, and they would have to attribute the reason for impaired quality to their ISP. We discussed earlier in this report (see Awareness chapter) that consumers tend not to blame their ISP when experiencing major disruptions. Thus, it appears unlikely that the average consumer who notices a change in the quality of IAS immediately relates

²⁶ Executive Agency for Health and Consumers (EAHC) (2012): Consumer Market Study on the Functioning of the Market for Internet Access and Provision from a Consumer Perspective. Final Report. Part 1: Synthesis Report. (Note: The EAHC was renamed Consumers, Health, Agriculture and Food Executive Agency (CHAFAEA) in 2014.)

²⁷ There is no data available for Croatia.

²⁸ The particularly high levels of agreement in Greece are likely to partly be because more Greek respondents have previous experience of switching so will have overcome their original concerns, providing that the process went smoothly.

²⁹ The figures for Sweden should be interpreted carefully as 25% of respondents did not answer, while 14% did not answer in the Czech Republic.

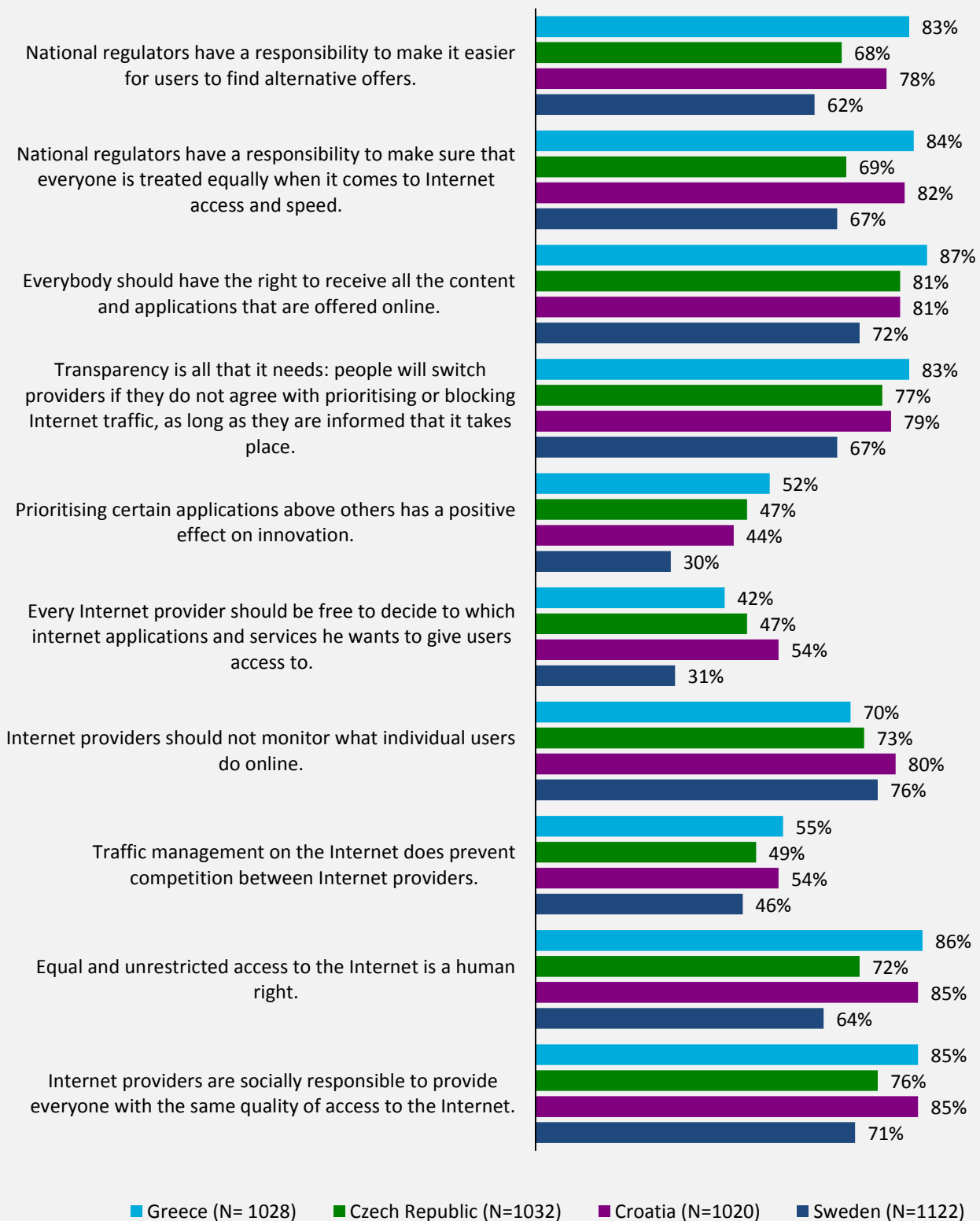


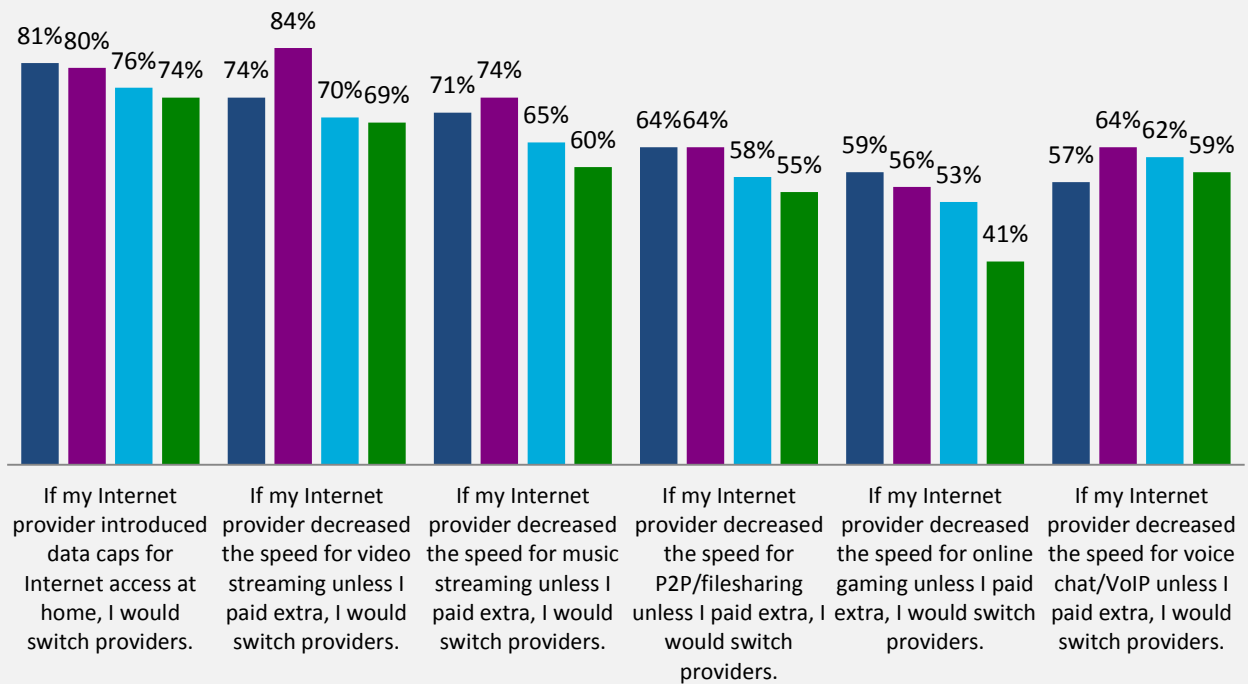
Figure 36 - Attitudes towards network neutrality in general across test areas (Top2Boxes)

that effect to the practices of an ISP, let alone to any traffic management practices. In order to explore the effects of new IAS products building on deviations from network neutrality, further research into the factors that drive consumer satisfaction with their at-home Internet access is needed.

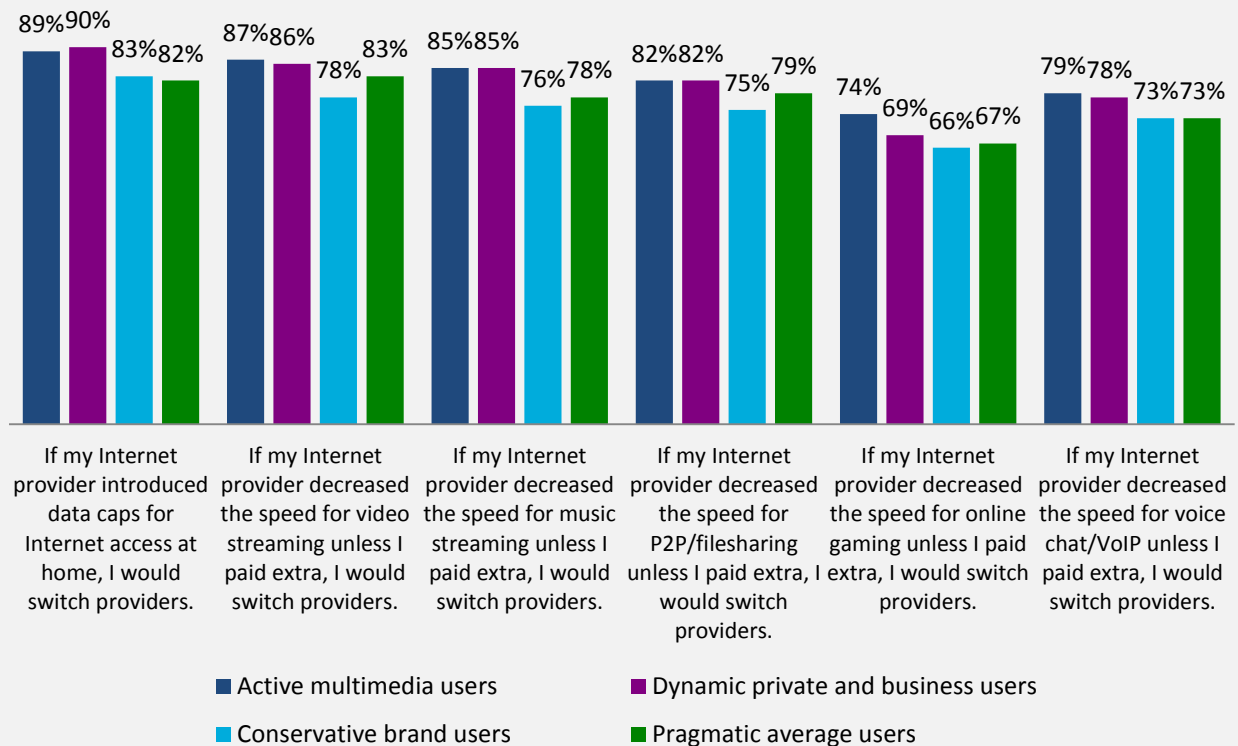
The seventh item in this set of questions (“National regulators have a responsibility to make it easier for users to find alternative offers”) addressed the role of NRAs. Once again, the highest proportion of agreement was found among the Greek respondents, where 83% agreed, which is statistically significantly more than in the other three test areas. In the Czech Republic (68%) and Sweden (62%), significantly fewer respondents agreed with the statement.³⁰

³⁰ Across two test areas, there is a high percentage of non-response for this item: 15% in the Czech Republic and 23% in Sweden.

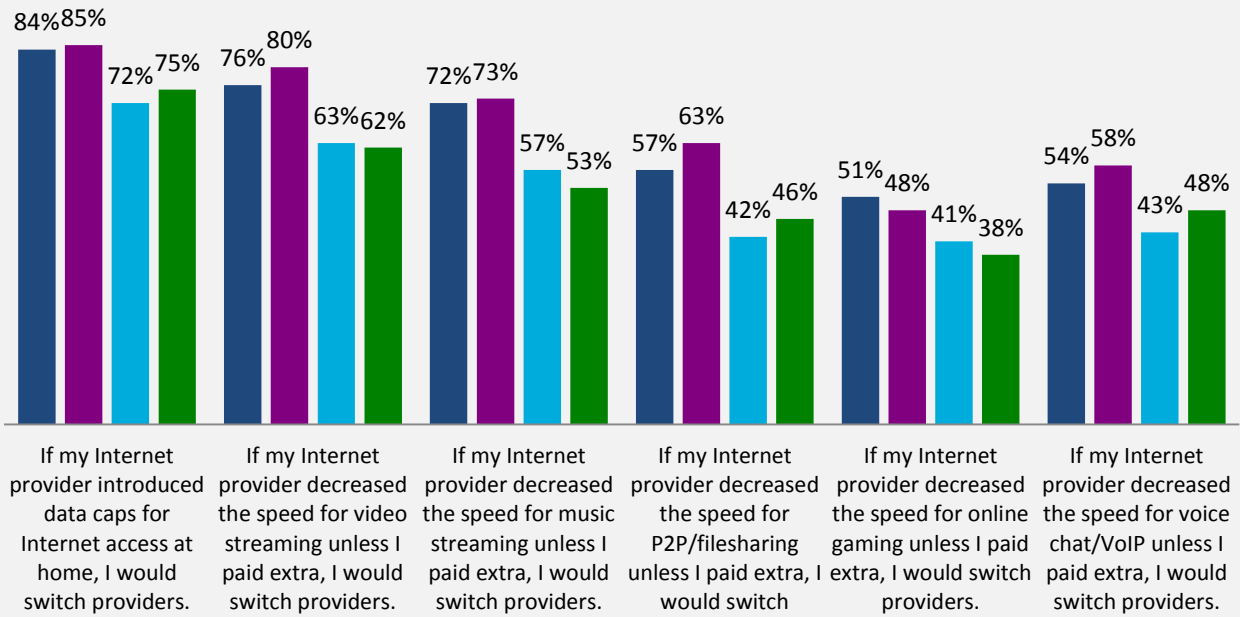
Czech Republic (N=1032)



Greece (N=1028)



Sweden (N=1122)



Croatia (N=1020)

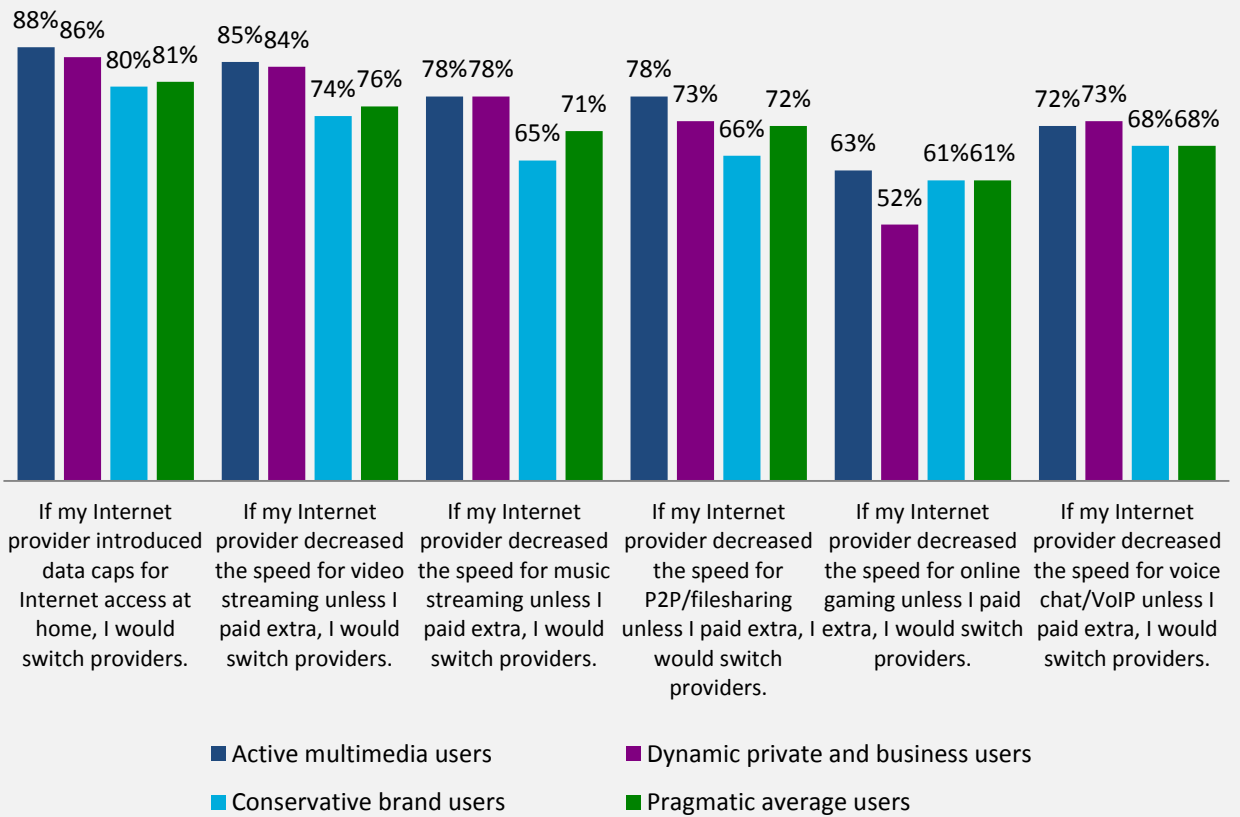


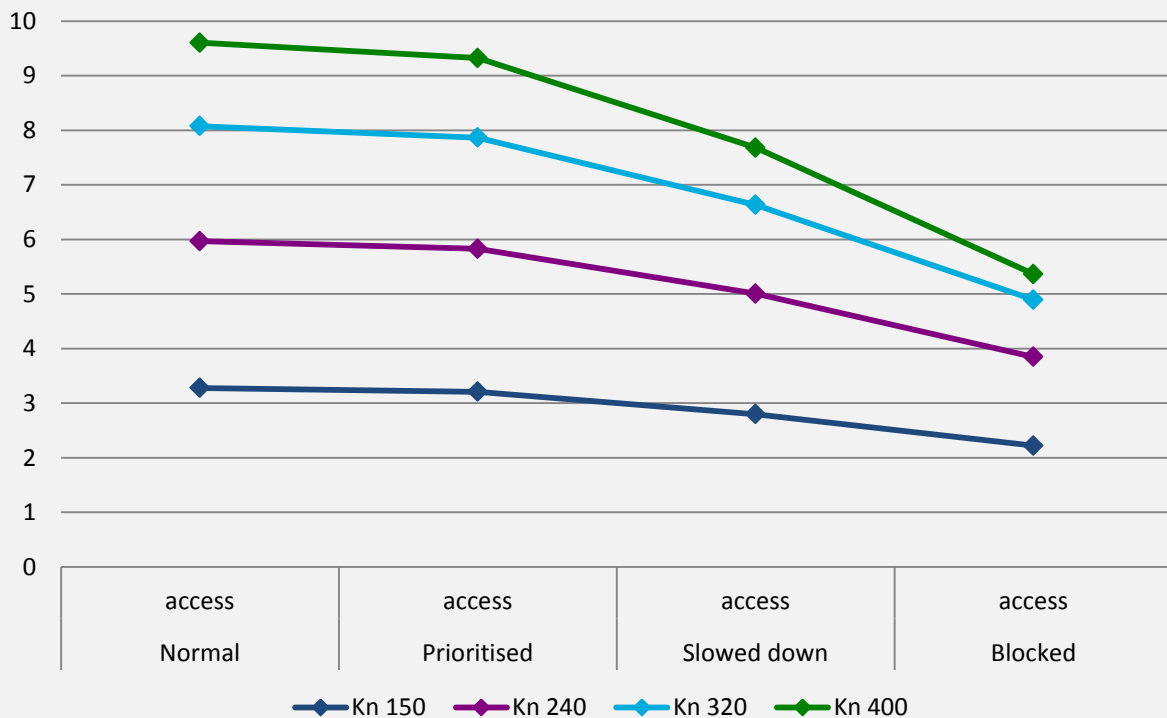
Figure 37 - Switching likelihood due to certain traffic management practices by segment– Top2Boxes

In order to further analyse the value of network neutrality offers to consumers, the relationship between price and the network neutrality-related attributes was investigated. This was done by systematically varying the price as well as the levels of access to certain types of applications. By simulating offers with different price points and different levels of access to P2P, VoIP services, video streaming and online gaming, utility scores for these offers were calculated. It was ensured that the other attributes did not have an impact on this by maintaining them at what had been found to be the most attractive level in the respective test areas across all the offers.

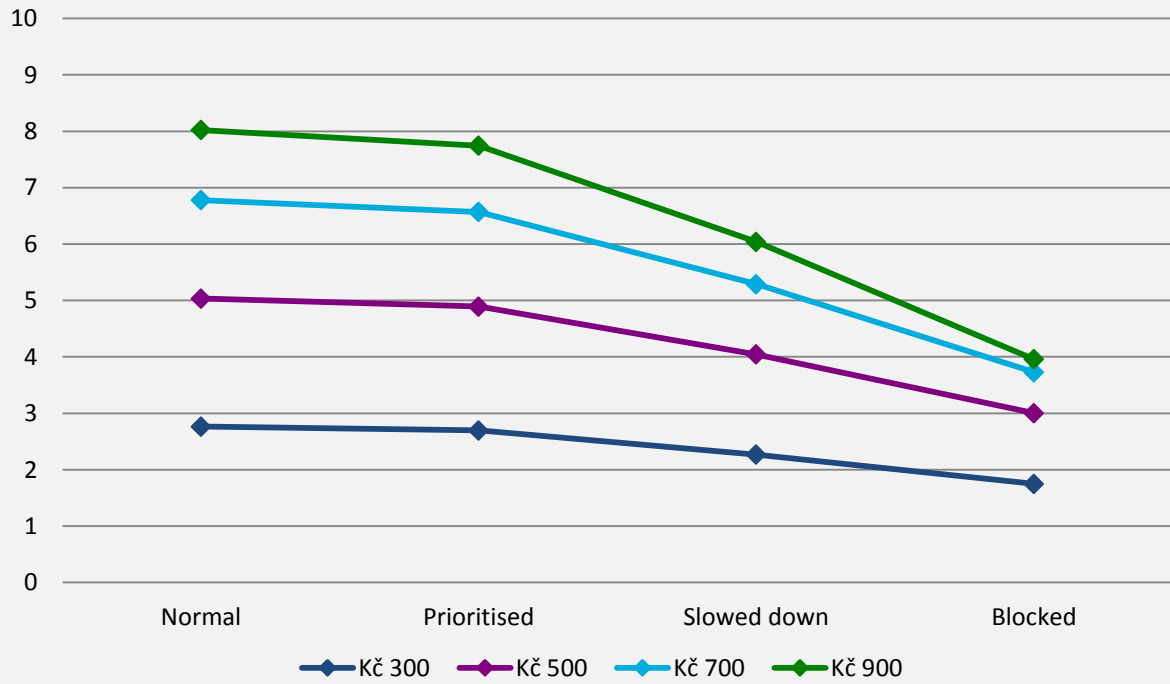
Figure 38 shows the raw utility scores (averaged across brands) for the example of video streaming in the four test areas. These scores are shown for each price point tested in relation to normal, prioritised, slowed down and blocked access. The absolute values should not be compared between test areas but can be compared between different price points and levels of access within the same country. For example, in Croatia slowed down access to video streaming at a price of kn 400 is seen as just as attractive as blocked access at a price of kn 320.

In Croatia, utility scores for video streaming are slightly lower for prioritised access than for normal access, at the same price point. Scores for slowed down access are even lower, and blocked access scores lowest. This is also true for P2P, VoIP and online gaming applications. When looking at video streaming, the option of blocked access at kn 150 is below the utility level of the option of normal access at kn 240.

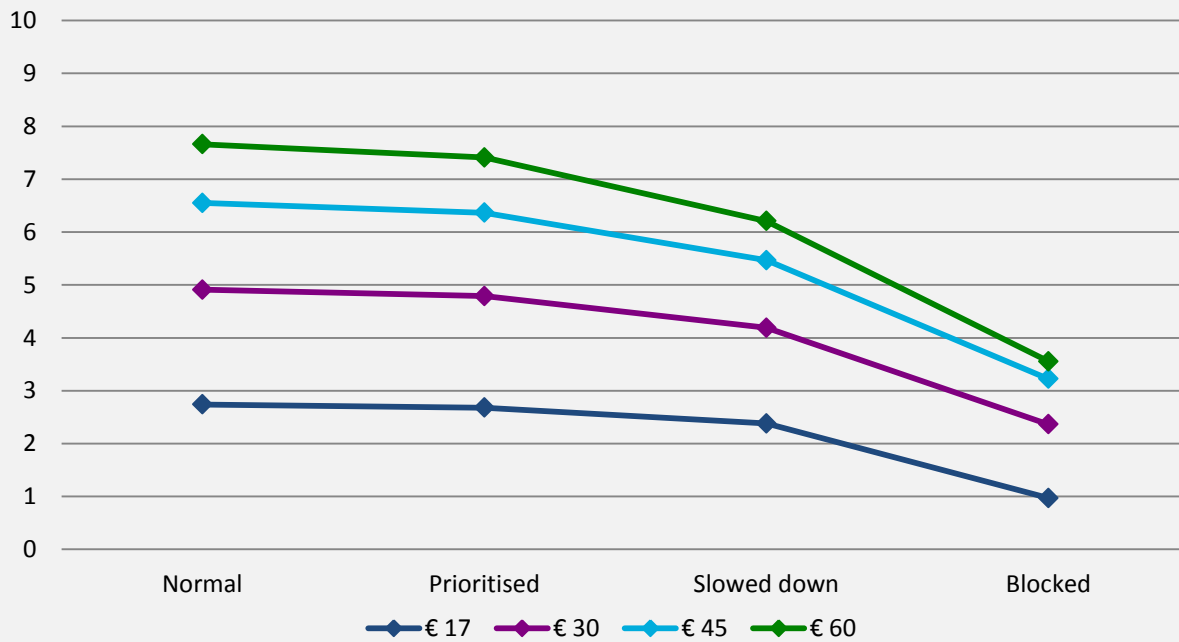
Croatia (N=1020)



Czech Republic (N=1032)



Greece (N=1028)



Sweden (N=1122)

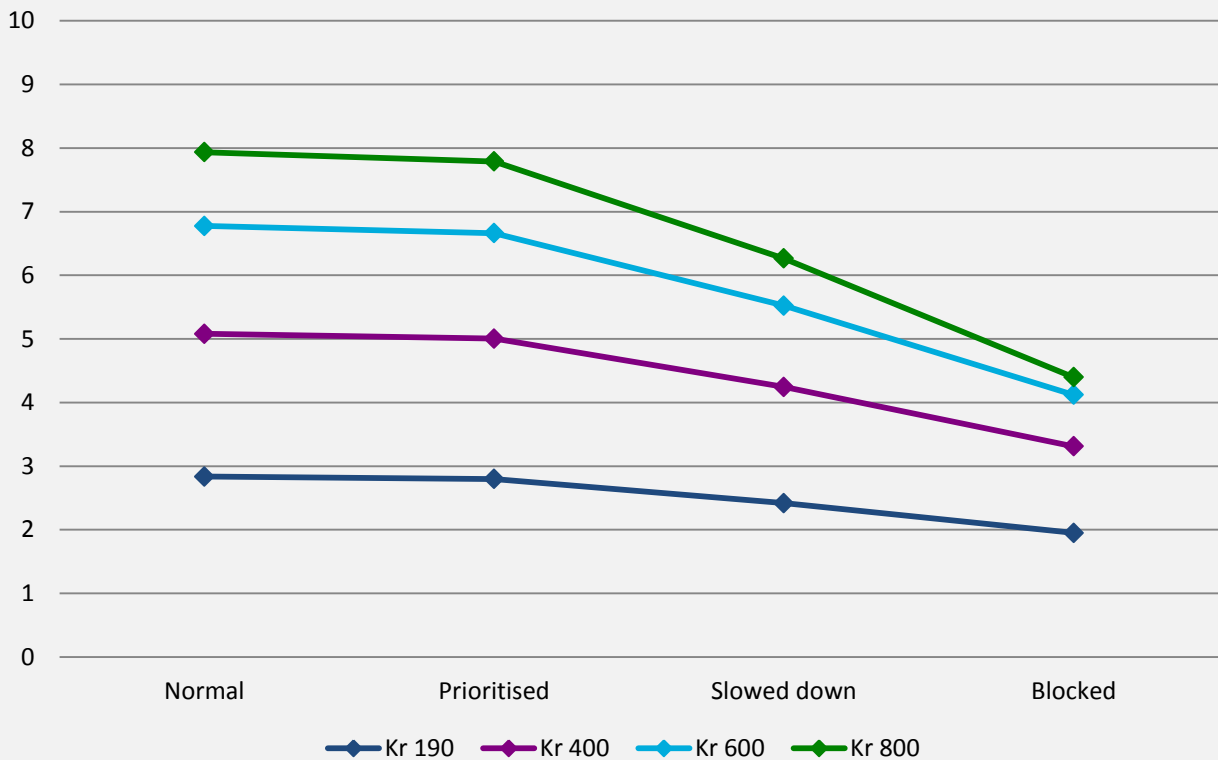


Figure 38 - Association of price and levels of access to video streaming

This pattern can be seen at all price levels, i.e. normal access at a particular price is seen as more attractive than blocked access at the price point below.

These findings are mirrored in the other test areas, with only minor differences. In the Czech Republic, the pattern described for access options to video streaming, where the utility scores for blocked access options are lower than the scores for the normal access option at the next price point up, is also found for access to online gaming applications. Meanwhile, in Sweden, the decrease in utility from prioritised to slowed down access to online gaming is less distinct.

In sum, the results presented in this chapter indicate two points. First, depending on the

segment they belong to, consumers differ in their inclination to switch due to non-neutral IAS offers as well as in their attitudes towards traffic management. Thus, it is likely that there is actually a part of the market that would respond positively to offers that include deviations from network neutrality. However, there is also a significant part that would be strongly inclined to switch if ISPs were to introduce such deviations. Part of this group may even switch providers if they themselves do not experience adverse effects of traffic management, but because they do not appreciate the practice as such. Thus, ISPs will have to carefully investigate their (potential) consumers' attitudes and inclination to switch in developing such IAS products.

Second, the results provide an indication of the monetary value that consumers are likely to attach to the specific levels of the network neutrality-related attributes in the conjoint experiment. More specifically, a consumer would be willing to spend less on an IAS product that offers only slowed down access to video streaming as compared to a product that offers best-effort or prioritised access. For instance, Internet access with slowed down video streaming at kn 150 gives consumers roughly the same utility as best-effort video streaming at kn 240. Taken together, these insights mean that there is a trade-off for ISPs that intend to offer such services. If they were to introduce offers with deviations from network neutrality, they might gain additional revenue from consumers who purchase prioritised services, but they are also likely to lose consumers who strictly oppose such measures, or otherwise they would have to give them a strong incentive to stay through a discount on their monthly price.

It is difficult to foresee if offering quality-differentiated services would really pay off for ISPs overall. This is particularly true as capex and opex might increase considerably, particularly opex, due to an increased need for changes to data-forwarding policies in an ISP's network that could be expected to be frequent, near real time and possibly down to the level of individual consumers. An increased number of quality-differentiated services and therefore an increased need for managed network elements (such as routers and switches) that are exposed to frequent data-forwarding policies might not only be costly, but could even lead to unstable networks. At some level of traffic management, management complexity and the complexity of anticipating the effects of even small changes to the network as such might be beyond ISPs' control. Therefore, traffic management presents both an opportunity and a risk, or even a threat, to ISPs.

Interestingly, many participants in the focus groups, even if they were inclined to purchase products with the prioritisation of certain services, had severe doubts as to whether ISPs would actually be able to provide them with a personalised product that matched their own individual preferences. In our survey, we introduced only a limited number of non-neutral attribute levels for specific applications. Contrary to the indications from the focus groups, respondents were able and willing to choose from these offers. This indicates that ISPs can make standardised offers for quality-differentiated services which are likely to resonate at least with certain consumer segments.

Forecasting market developments is extremely difficult for the question at hand here, especially given the important role that regulation may play within this. However, our data enables us to look at the current offers in the markets of the four test areas. To achieve this objective, the attractiveness of existing Internet offers on the local markets³¹ was benchmarked against the respective optimal offer as derived from the conjoint analysis. Concretely, the part-worth utilities of each level within the ten attributes were used to calculate both the optimal IAS product as well as the relative attractiveness scores for the existing IAS products. Just as for the conjoint analysis itself, one should keep in mind that the part-worth utilities do not represent absolute values, but rather relative ones. As the most attractive level for each attribute differs only marginally across consumer segments, the optimal offer for the overall market was used. This optimal IAS product is, of course, fictitious and may not be economically viable for ISPs to offer.

³¹ The data for these offers was provided by the NRAs of the test areas.

³² The Full Results Report contains a fully detailed list of the existing market offers with their individual percentage score.

The figure 39 displays the results of this analysis. The optimal IAS product is represented by the value of 100. Relative to this figure, the attractiveness of existing IAS products is represented in three groups: the ones reaching (1) between 66% and 100%; (2) between 33% and 65%; and (3) between 0% and 32%.³²

The highest percentage of offers that reach at least 66% of the utility of the most attractive offer is found in the Czech Republic. This is more than twice as high as the percentage in Sweden, nearly three times as high as in Greece, and nearly six times as high as in Croatia. Greece has the highest percentage of offers with a utility of between 33% and 66% of the most attractive offer, and interestingly no offers that fall below 33%, the only test area where this is the case. The market situation in Croatia provides a contrast to this with 40% of the offers having a utility of less than 33% of the most attractive offer.

While these results shed light on how well existing market offers match the (fictitious) optimal IAS product, they do not imply that products with low scores are necessarily products unfit for the specific test area's market. Consequently, one should not draw conclusions from the results presented here as to the quality of the IAS products present in the test areas as well as whether test area markets function efficiently.

Furthermore, these results only shed light on the current market situation, which only rarely includes quality-differentiated services. In the future, however, this may change. ISPs may have the intention to introduce data caps (with or without zero-rating) as well as other options deviating from network neutrality to offer quality-differentiated services. The results of the present study provide indications on how consumers may react to such offers.

Relative utility score compared to most attractive offer	Croatia (N=1020)	Czech Republic (N=1032)	Greece (N=1028)	Sweden (N=1122)
66% and more	4%	28%	10%	13%
More than 33%, less than 66%	55%	57%	89%	76%
0–33%	39%	13%	0%	9%

Figure 39 - How the current offers available in the different markets compare to the most attractive offer

