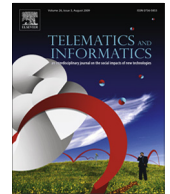




ELSEVIER

Contents lists available at [ScienceDirect](#)

# Telematics and Informatics

journal homepage: [www.elsevier.com/locate/tele](http://www.elsevier.com/locate/tele)

## Consumer preferences for improvements in mobile telecommunication services

Orhan Dagli <sup>a,\*</sup>, Glenn P. Jenkins <sup>a,b</sup><sup>a</sup> Department of Economics, Eastern Mediterranean University, Famagusta, TRNC via Mersin 10, Turkey<sup>b</sup> Department of Economics, Queen's University, Kingston, Ontario K7L 3N6, Canada

### ARTICLE INFO

#### Article history:

Received 27 May 2015

Received in revised form 15 July 2015

Accepted 16 July 2015

Available online 17 July 2015

#### JEL classification:

C5

D12

L96

#### Keywords:

Mobile telecommunication services

Choice experiment

Willingness to pay

Consumer preferences

4G

Roaming

### ABSTRACT

We employ a choice experiment in order to estimate consumers' willingness to pay for improvements in mobile services, focusing on 4G upgrades and roaming services. The attributes of an improved mobile service that we investigate in our experiment are: increased mobile internet speed (possible with 4G), unlimited mobile internet use, improved quality (possible with 4G) and unrestrained use in two neighbouring countries (unrestrained roaming). We collect the data for the choice experiment through a face-to-face survey held in all districts of North Cyprus. The results indicate that people value unrestrained roaming services the most. Increased speed and unlimited use attributes are next, and are similarly significant at the 1% level. The impact of improved quality is statistically insignificant at the 5% level, suggesting that consumers are content with the current level of quality they receive with 3G. We conclude that bilateral roaming regulation between governments is more valuable than 4G investments.

© 2015 Elsevier Ltd. All rights reserved.

## 1. Introduction

Advances in telecommunications have turned the world into a more connected, more 'globalised' place in the 20th century, and have been a major contributor to increased economic efficiency and productivity in every possible sector. Technological progress in telecommunications continues to change the way we live our lives in the 21st century.

Mobile communications (MC) has been the star of telecommunications in the past two decades. Initially MC was a means for speaking and texting over mobile phones using 1G and later GSM (2G) technologies. The introduction of 3G enabled mobile users to connect to the internet and to send and receive various multimedia messages. Then 4G arrived, making it possible to access mobile internet with speeds that even some fixed broadband technologies cannot achieve. The International Mobile Telecommunications Advanced specification sets the peak speed requirements for 4G service at 100 Mbps for high mobility communication and 1 Gbps for low mobility communication (ITU, 2008). Commercial 4G networks have not yet achieved the peak speeds of the specification, although they have spread rapidly around the world since the early 2010s. As of November 2014, there are 331 4G LTE networks offering varying data connection speeds, deployed in 112 countries. The top speeds available are offered by 21 commercial 4G LTE-A CA networks launched in 14 countries, subscribers of which enjoy downlink data speeds ranging from 225 to 300 Mbps (Ericsson, 2014).

\* Corresponding author.

E-mail addresses: [orhan.dagli@dagli.com](mailto:orhan.dagli@dagli.com) (O. Dagli), [jenkins@econ.queensu.ca](mailto:jenkins@econ.queensu.ca) (G.P. Jenkins).

Numerous prior studies have focused on the MC sector. However, rapidly changing technologies continue to open up new territories for academic and empirical research. Previous literature has touched on MC licensing and auctions (Klemperer, 2002; Fuentelsaz et al., 2008), mobile tariff discrimination (Haucap and Heimeshoff, 2011), mobile roaming (Fabrizi and Wertlen, 2008; Stühmeier, 2012), MC adoption (Rice and Katz, 2003; Pagani, 2004; Bouwman et al., 2007), and consumer preferences for MC services (Kim, 2005; Shin et al., 2011; Kwak and Yoo, 2012; Klein and Jakopin, 2014). This paper presents a brand-new study on the last of the subject areas in this list.

We employ a choice experiment (CE) in order to estimate consumer preferences for a selection of 'current and crucial' improvements in MC services. The attributes we evaluate are: increased mobile internet speed, unlimited mobile internet use, improved quality of communications service, and unrestrained use abroad. These service upgrades are missing in most mobile markets around the world, and each one is of interest for a reason.

Although 4G is deployed in many countries, there are still many regions that are not covered, and many more that are covered but lagging behind in terms of 4G technology. Consumers of mobile services in these regions have yet to fully benefit from the features of 4G, namely increased mobile internet speed and improved quality. Therefore, understanding the value of introducing these features continues to be of interest. Unlimited mobile internet use is interesting because most mobile broadband services on offer have data caps, whereas fixed broadband services generally provide unlimited use. Mobile broadband could become a competitor of fixed broadband if offered with unlimited use, so we aim to quantify the value that consumers associate with this attribute. Finally, unrestrained use abroad is of interest because people are travelling more than ever, and operators are charging excessively for roaming mobile services. The reason for high roaming prices is the lack of competition at the level of inter-operator tariff negotiation (Salsas and Koboldt, 2004; Sutherland, 2012). The EU has taken steps to regulate its roaming market (Shortall, 2010; Infante and Vallejo, 2012), and recently independent countries have started to make bilateral agreements for coordinated action on roaming services (Singapore and Malaysia in 2011 (The Independent, 2011), Australia and New Zealand in 2013 (MBIE, 2013)). We might expect to see more countries follow suit in the near future, if the value for the consumers is depicted more clearly.

Our aim in this study is to evaluate consumers' willingness to pay (WTP) for the abovementioned attributes, as a measure of their value. We conduct 320 face-to-face interviews with people from all regions of North Cyprus, asking respondents to choose between their existing mobile service and two other hypothetical alternatives with varying attribute levels. We estimate consumers' marginal WTP (MWTP) for each attribute by analysing how they trade off between price and other attributes when making their choices.

North Cyprus is a developing economy in the Eastern Mediterranean with a population slightly below 300,000. Mobile use is spread widely throughout the country and the currently available mobile technology is 3G. The results of this study are useful for the government of North Cyprus in designing a possible auction or tender for 4G licensing, and for mobile network operators in analysing the costs and benefits of future 4G investment. Similarly, these results should be of interest for all developing countries, and especially for Turkey, the 20th largest mobile market in the world in terms of number of subscribers in 2013 (ITU, 2015). Like North Cyprus, Turkey has not yet introduced 4G, and the same operators dominate both the Turkish market and the market in North Cyprus (Turkcell and Vodafone).

To the best of our knowledge, this is the first study in literature estimating the value of various levels of 4G data rates, including the top rate possible as of today. Our model allows us to estimate non-linear effects of data rates on consumer utility. We specifically test for a modest improvement to 30 Mbps, and for a more advanced upgrade to 300 Mbps. We aim to quantify the MWTP for each speed level separately, so we can evaluate whether there is sufficient demand for the most advanced technology, or whether the consumers are indifferent between the two levels. This study is also unique because it is the first attempt in MC literature to estimate the value of free roaming (use as in homeland) for the consumers. We expect that the results will draw attention to bilateral roaming regulation, which very few states (EU, Singapore-Malaysia, Australia-New Zealand) have introduced until today.

The paper is organised as follows. Section 2 reviews the previous research in this area and Section 3 explains the methodology used in the study. Section 4 defines the model to be estimated and the estimation results are presented in Section 5. Finally, Section 6 discusses the results and concludes.

## 2. Background

Estimating consumer preferences for the attributes of telecommunications services has been a topic of interest among researchers since the advent of broadband internet in the 1990s. Earlier studies focused on fixed broadband services, while the focus has shifted towards mobile services since the 2010s as mobile technologies have caught up and overtaken fixed technologies. A number of notable stated preference studies that estimate consumers' valuations for telecom services and their attributes have been completed to date.

### 2.1. Consumer studies for fixed broadband services

Madden and Simpson (1997) were among the first to carry out research in this area. They used data obtained from a national survey of households in Australia in order to determine the willingness of households to subscribe to a broadband network. The fact that broadband services were not currently available at that time was a complication for their study. Out of

Download English Version:

<https://daneshyari.com/en/article/465318>

Download Persian Version:

<https://daneshyari.com/article/465318>

[Daneshyari.com](https://daneshyari.com)