Demand Curves and Operator Strategies in the Finnish Mobile Broadband Market

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ABSTRACT

Finland, among the first to adopt mobile broadband services, faces rapid growth of mobile data traffic. Therefore, Finnish mobile operators continually invest in their radio access networks to handle this growth, which represents an attractive revenue source. This study presents a demand curve estimate for mobile broadband data traffic, which takes into account the impact of technology evolution on network coverage and capacity. Based on the demand curve and the market equilibrium, this study proposes two strategies for mobile operators: i) reducing the marginal cost of traffic, and ii) changing the pricing structure. Assuming that mobile operators are price-takers (perfect competition), the findings of this study indicate that a continuing reduction of marginal cost is imposed by market forces. However, this policy of cost reduction will inevitably reach its limits. Thus, this study proposes a change in pricing structure from flat-rate tariff to usage-based charging.

Keywords: Demand Curve, Finland, Forecast, Long Term Evolution (LTE), Marginal Cost, Mobile Broadband, Pricing Structure

1. INTRODUCTION

Mobile data transmission subscriptions1 have increased significantly over the past few years in Finland. According to Dataflow (2013), wireless broadband penetration2 reached 95.8% of the population at the expense of wired broadband subscriptions (29.7% of population) in June 2012. These figures rank Finland among the first OECD3 countries in terms of adopting wireless broadband services. Accordingly, Finland will soon face the challenge of increasing mobile broadband data traffic, which has reached 90% of the total mobile data traffic in the first half of 2010 (ECC, 2011). Figure 1 illustrates the mobile data traffic and the number of mobile broadband subscriptions in Finland from the second half of 2007 to the second half of 2012 (FICORA, 2009, 2010, 2011a, 2012a, 2012c). It is clear that mobile data traffic is growing rapidly.

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surpassing 43000 terabytes in the second half of 2012, while the number of mobile broadband subscriptions is constantly increasing.

The Finnish mobile operators should take into account this continuous growth of traffic, which forces them to invest in their radio access network, while the corresponding traffic revenues are not increasing proportionally (FI-CORA, 2011b, 2012b), resulting in a so-called “revenue gap” (Markendahl et al., 2009; Werding, 2010; Molleryd et al., 2010; Blennerud, 2010). The decisions that mobile operators make are greatly assisted by forecasting the demand of mobile data traffic, which is an open and intriguing issue. Extensive research has been previously conducted on the estimation of the demand function for communication services.

The demand for mobile telephone network (Ahn, 2000; Iimi, 2005) and its price elasticity (Jeong and Cho, 2007) have been estimated for other pioneering countries including South Korea and Japan. Also, for Korean market, the demand curve for the data service of Voice-over-IP (VoIP) has been examined by Kwak and Lee (2011), where the most influential variables in VoIP call demand are identified. Determinants of demand are also analyzed by Lee et al. (2011) and Lin (2013) where the factors that influence the diffusion of fixed and mobile broadband are investigated. Similarly, Harald (2001) studies the main variables of the diffusion for mobile telecommunications in Central and Eastern Europe countries, while a report published by UMTS Forum (2011) provides a comprehensive list of the factors that influence mobile data traffic demand.

However, there seems to be lack of studies on demand estimation for mobile broadband and mobile data traffic, except for a few works investigating the future increase in demanded mobile data traffic and proposing solutions for mobile operators. In particular, Markendahl...