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Economic analysis of the introduction of the MVNO system and its major implications for optimal policy decisions in Korea

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Abstract

This study analyzes the anticipated economic effects arising from the introduction of the mobile virtual network operator (MVNO) system in the mobile communications service market. For the analysis, actual data (or estimated data)—such as price elasticity, the number of subscribers, traffic volume, rate, and access charge—were combined with an assumption about a competition scenario in the future market. Based on this analysis, consumer surplus, and change in the service provider's profits were estimated according to the type of policy that may be adopted for the MVNO system by the regulator. The results of the analysis indicate that consumer surplus appears to increase largely because of the reduction of the mobile service rate by the promotion of "service-based competition," which occurs upon adoption of an MVNO policy in the mobile communication service market. Moreover, the introduction of an MVNO system into the mobile communication market seems to be socially beneficial regardless of policy type if access charges are set reasonably by a cost-plus or retail-minus method. In particular, in order to make sense of the introduction of a special MVNO, whether by the cost-plus method or the retail-minus method, the correct discount rate must be used in setting an access charge between the special MVNO and the significant market power (SMP) mobile network operator (MNO).

Keywords: Access charge; Carrier selection; Indirect access; Interconnection; Local loop unbundling; MVNO; Roaming; Service-based competition; WiBro

1. Introduction

On 25 July 2003, the Ministry of Information and Communications (MIC), a Korean telecommunication regulatory agency, adopted the service-based competition (SBC) policy in order to promote effective competition in the communications service market. Fixed network operators (hereafter referred to as FNOs) such as Korea Telecom, Hanaro Telecom, Dacom, and Onse Telecom have shown considerable interest in the mobile virtual network operator (MVNO) policy, which is still being reviewed by the regulator even at time of writing (February 2007). The purpose of the review is to increase competition among service providers, to enhance consumer benefit, and to expand the wireless Internet market through the provision of the mobile communication service using the MNO frequency.

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Reviewing the case of the UK, which has an advanced communication regulation policy, Oftel (1999a, b) announced directives concerning MVNOs in October 1999. Thereafter, FNOs—including One.Tel, BT, Kingston Communications, and Energis—entered the mobile communications service market to complement their fixed-line service, provide a convergence service for the enterprise customer, and supplement the broadband fixed network service. In particular, One.Tel began to provide the mobile communication service with a discounted monthly basic charge and a discounted call charge[1] that were 60% and 20% lower than the respective Vodafone charges from November 2001, using the BT Cellnet (now, mmO2) network. However, BT purchased the network capacity from BT Cellnet in October 2002 and entered the mobile communication market using the brand name of "Mobile Sense," with a discounted monthly basic charge and call charge that were 20% lower than those of Vodafone (BT, 2003).

The successful entry of FNOs into the UK mobile communication market was the result of several factors, including the policy support of the regulatory agency Oftel (now Ofcom), FNOs' service supplementation, successful MVNO implementation of noncommunication operators such as Virgin Mobile,[2] and positive profit forecasting by the market research firm Ovum (2000). Ovum (2005) announced the relatively optimistic forecast that 10.9% of all mobile communication service subscribers in the UK looked set to subscribe to MVNOs in 2006, whereas 23.7% were predicted to subscribe to MVNOs in Denmark.[3]

It is considered that estimating the economic effects of the MVNO policy beforehand and deducing reasonable and rational policy implications from the analysis are important for future decision-making aimed at maximizing the positive effect of the adoption of an MVNO system, while the entry of FNOs into the mobile communication market through MVNOs is being realized in the domestic as well as the overseas market. Accordingly, this study analyzes the economic effects of MVNO adoption from the viewpoint of both the consumer and the service provider on the assumption that the MVNO system will be fully adopted by Korea in the end of 2007.

Until now, related studies have focused on analysis of the economic effects caused by the expansion of the mobile communication market by MNOs. To analyze the economic effects on the mobile communication market, Hausman (1997) estimated the level of consumer benefit using mobile communication market data from the US for the period 1989–1993, while the ACA (2001) in Australia measured and announced a change in consumer benefit in the mobile communication service from 1995 to 2000. In Korea, Lee, Kwon, and Lee (2002a), Lee, Moon, Kim, Park, and Yoon (2002b), and Kim, Lee, and Kim (2003) estimated the price elasticity of the mobile communication market demand using amount of revenue and survey and call volume data, and calculated the consumer surplus using the consumer surplus estimation method of Alexander, Kern, and Neil (2000).[4] However, the analytical results of previous studies did not reflect reality, because the latest call traffic volume and call amount data of individual service providers could not be utilized due to the limitations of the relevant data. Furthermore, no study has estimated either price elasticity or consumer surplus using call volume data.[5]

In particular, there have been virtually no studies of technical interconnection systems or any cost-effectiveness analyses that reflect access charges with regard to the introduction of the new MVNO policy. This study presents a desirable and rational direction for MVNO policy, derived from the estimation and comparison of consumer convenience and service provider profitability in consideration of various market development scenarios following MVNO policy adoption, while estimating consumer surplus based on the latest call volume data of individual service providers. This study is also an attempt to enhance the reality of the analysis as well as the validity of the policy implications by estimating changes in revenue, cost, and profit by service provider in consideration of the technical interconnection relations between operators.

[1]The rate is based on mobile-to-mobile (MM) calls. The MM call charge within the same network is the same as that of Vodafone.

[2]The noncommunication service provider Virgin Mobile was established in the UK by 50:50 investment from One2One (now T-Mobile). Since its service launch in November 1999, it has held 8.4% of the mobile communication market in the UK based on the number of subscribers (as of December 2004). This company entered the market with a discounted MM call charge 30% lower than that of Vodafone (Virgin Mobile, 2005).

[3]Denmark imposes the same open network obligation as FNOs on the significant market power (SMP) of MNOs.

[4]Consumer surplus = revenue amount/(2 × price elasticity).

[5]Kim et al. (2003) estimated the price elasticity using the call volume data, and estimated the consumer surplus using the method suggested by Alexander et al. (2000) by using the revenue amount data.