A Hedonic Analysis of Consumer Demand for Mobile Value-Added Services: A Structural Equation Modelling Approach

Ming-Hsiung Hsiao, Department of Information Management, Shu-Te University, Kaohsiung City, Taiwan
Liang-Chun Chen, Department of Information Management, Shu-Te University, Kaohsiung City, Taiwan

ABSTRACT

A large part of valued-added mobile services are free for consumers’ use. To enjoy these services, however, consumers have to pay for the mobile phone handsets, and for the mobile Internet as well. This study, therefore, aims to estimate the implicit price consumers are willing to pay for these free mobile services, and for the attributes of mobile devices as well. The study applies hedonic pricing models with structural equation modeling (SEM) approach to estimating the coefficients of the variables on mobile phone and service usage. Then it employs data on 296 mobile phone users collected in 2012 for model estimation. The estimation results show that there are seven attributes which determine the price consumers pay for the mobile phone handsets and another eight attributes on the usage of the value-added mobile services which determine the price for the access to the mobile network.

KEYWORDS

Hedonic Pricing, Mobile Phone, Mobile Service, Mobile Value-Added Service, Structural Equation Modeling (SEM)

INTRODUCTION

For the past decade, information and telecommunications technology (ICT) has caused significant impact on people’s daily lives. The Internet and mobile phone, in particular, have penetrated households and individuals, causing substantial changes in people’s life style. Figure 1 shows the key ICT penetration rates (per 100 inhabitants) for the world over the past decade. The penetration rate of mobile-cellular subscriptions has risen up to 99.7, that of mobile-broadband subscriptions to 49.4, and that of households with Internet access at home to 52.3 in 2016, while that of fixed-telephone subscriptions has dropped down to 13.7 in 2016.

The mobile Internet which integrates powerful mobile devices and mobile-broadband enables people to conduct various activities or use various services such as messaging, chatting, shopping, and banking, ubiquitously. Today services are more and more dependent of ICT which serves as a media to deliver or receive the services. These virtual services of intangible nature, which are often provided via the Internet, are referred to as ‘electronic services’ (Bouwman & Fielt, 2008). Electronic services are intangible, but need tangible media to deliver them, and can be copied and shared by users. In this regard, the electronic services are actually very distinctive from those traditional services. One special form of the electronic services is the mobile value-added services which are provided via the mobile Internet.
In telecommunications industry, ‘value-added’ services often refer to those non-core services beyond standard service offerings such as voice calls and fax transmissions. As cited by Wang (2015) for the definition of mobile value-added services (MVAS), MVAS refers to the services beyond standard communications services that add value to the basic service offering. For general mobile phone uses, SMS (short message service), MMS (multimedia message service) and data access are usually considered core services. However, for mobile services with Internet support, the Internet-based SMS, MMS and data access are often seen as value-added services.

Despite intensive research on mobile services, how to predict consumer demand for these services from the economic perspective has yet been widely explored in the literature for some reasons. First, it is not easy to measure the demand for services. Some studies; e.g., Lu, et al. (2011), Haverila (2011), and Head and Ziolkowski (2012), applied Likert scale to measure consumers’ perception of mobile services from the psychological perspective. These scales, however, are of limited use in describing consumers’ demand by econometric models. Second, consumer demand for mobile services highly depend on the demand for mobile devices and mobile Internet. The demand for mobile devices and mobile Internet are often seen as ‘derived’ demand, derived from consumer ‘direct’ demand for mobile services (Hsiao & Chen, 2015). The relationship between the derived demand and direct demand tends to complicate the prediction of the demand for mobile services.

Third, there are too many different kinds of mobile value-added services being provided for consumers to use. These services are mostly covered by a flat fee for mobile network subscriptions. In other words, consumers pay a fixed price for their mobile devices and a flat fee on a monthly basis for their access to the mobile Internet, then they can enjoy a wide variety of mobile value-added services, most of which are for free. No explicit prices for these services make the econometric modelling for consumer demand less meaningful. Even so, however, we believe that consumers must have valued these services implicitly since these services offer consumers with utility. Specifically, these mobile value-added services seem to be provided for free, but their prices must have been included implicitly in the price for the mobile devices and/or the monthly fee for mobile Internet already. Such a concept of implicit price is exactly what hedonic pricing tries to describe.

According to Lancaster’s (1971) theory of consumption, complex products can be “decomposed” into their various characteristics which consumers value. This implies that a product’s total price can be seen as being the sum of the various characteristics’ prices. The price for a certain characteristic is therefore regarded as a hedonic price so that a product’s total price may be decomposed into a

Figure 1. Key ICT penetration rates (per 100 inhabitants) for the world. Source: International Telecommunication Union (ITU) (http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx).
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