



## Determinants of IPTV diffusion



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### ABSTRACT

Continuous innovations in the telecommunications industry marked by media and technological convergence enable consumers to access television and video content through various fixed and mobile broadband networks and devices. As evidence of this trend, the diffusion of new interactive, converged video services like Internet Protocol Television (IPTV) shows a rapid growth in many countries. In spite of a growing body of scholarship on IPTV diffusion, there is currently no empirical work that examines IPTV diffusion at the macro-level. This study fills this void in the literature by examining the macro-level factors influencing IPTV diffusion through regression analysis. Data analysis suggests inter-modal competition between different broadband technologies is more effective than intra-modal competition (local loop unbundling policy) in promoting IPTV diffusion. Results also indicate that pay TV market size contributes to IPTV diffusion. It appears that, in many countries, IPTV is more likely to be deployed as the market size of pay TV services increases. In addition, data analysis demonstrates urban population is a statistically significant indicator for explaining IPTV diffusion.

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## 1. Introduction

Continuous innovations in the telecommunications industry marked by media and technological convergence enable consumers to access television and video content through various fixed and mobile broadband networks and devices. As evidence of this trend, new interactive, converged video services like Internet Protocol Television (IPTV) have shown a rapid growth in many countries. In general, IPTV is understood as “multimedia services such as television/video/audio/text/graphics/data delivered over IP-based networks managed to provide the required level of quality of service and experience, security, interactivity and reliability” (ITU, 2006). Typically IPTV is a subscription service that provides consumers with live programming, video on demand (VOD) and digital video recording capability to compete with existing cable and/or satellite pay-TV services.

Forecasts predict that the number of global IPTV subscribers will grow from 53 million at the end of 2011 to 105.1 million in 2015, with service revenues for the global IPTV market climbing to US\$45.3 billion in 2015 (Multimedia Research Group,

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2011). IPTV services are offered through fixed broadband connections like digital subscriber line (DSL) or fiber-to-the-home (FTTH) and provide consumers an alternative to subscribing to cable or satellite service. Also, diffusion of IPTV is one of the key components of multiple play service that provides consumers with voice, video, and data services over the same broadband network (Larsson, 2007). IPTV services require a reliable broadband network with a robust Quality-of-Service (QoS) mechanism for ensuring sufficient picture and sound quality (Kozmernik and Vermaele, 2005).

IPTV is different from Internet TV. IPTV may be end-to-end systems or semi-closed and proprietary TV systems, such as cable services, but delivered via IP-based secure channels representing a sharp increase in control over content distribution. In contrast, Internet TV is an open evolving framework in which a very large number of small and medium-sized video producers and distributors contribute niche content alongside offerings from more traditional retail and distribution channels (Shin, 2007). Recently, Internet TV has become synonymous with online video distribution (OVD) or over-the-top (OTT) video and has evolved to include larger edge providers like YouTube that offer a great array of user-generated content and new entrants like Netflix and Hulu that provide subscription-based on demand programming. In most cases unlike IPTV providers, OVD and OTT video providers do not provide the first and last mile broadband connections to physically transmit video to consumers (Frieden, 2014). As a result, such services typically require consumers to subscribe to a high-speed Internet access provider.

As competition and market forces increase within broadband and video subscription-based markets, fixed-line telecommunication providers possess strong incentive to upgrade their own networks to offer greater speeds and throughput to enter the video market through IPTV services (OECD, 2007).

In spite of a growing body of scholarship on IPTV, previous empirical studies (Ha and Yook, 2009; Shin, 2007; Shin and Hwang, 2011) in this area mainly employ micro-level approaches (e.g. survey methods) to study adoption. Therefore, the effects of platform competition, pay TV market size, and Local Loop Unbundling (LLU) policy are not understood through research employing macro-level approaches like secondary data analysis. In fact, currently there is no empirical work examining IPTV diffusion between countries at the macro-level.

Utilizing secondary data, this study makes a significant, original contribution to the literature by examining factors influencing IPTV diffusion. Employing fixed effects regression models, this study examines determinants of early IPTV diffusion in 31 countries. Existing new media technology diffusion research has identified diverse factors that may influence IPTV diffusion, including broadband platform competition, pay TV platform competition and pay TV market size, LLU policy, income, urban population, and DSL coverage. We adopt a longitudinal panel data analysis using 31 countries' data from 2004 to 2011. The results of this empirical study suggest policy implications for countries seeking to promote greater video competition through IPTV diffusion.

## 2. Surveying the literature

### 2.1. Status of the IPTV Diffusion

In many countries IPTV markets are still at an early stage with the notable exception of a few nations such as France and Estonia where IPTV services have entered into mass markets (OECD, 2007, 2013a). In these nations, broadband service providers using DSL and fiber networks were among the first to deploy IPTV to their customers (OECD, 2013a). Also, some satellite and cable networks have expanded their offerings to include IPTV to allow customers to access television services on devices like tablets, telephones and laptops (OECD, 2013a). According to OECD (2013b) data, in terms of the IPTV penetration rates, as of December 2011, France, Estonia, Slovenia and Belgium were leading countries (OECD, 2013a).

### 2.2. Platform competition

IPTV employs fixed broadband technologies like DSL and FTTH to offer subscription television services. Therefore, in initial IPTV markets, broadband Internet providers utilized fixed broadband networks for deployment of IPTV service. Previous empirical studies indicated that the greater the competition among different broadband technologies, the faster the growth of broadband related industries (Garcia-Murillo, 2005; Grosso, 2006; Lee et al., 2011a). Platform competition in the broadband industry refers to inter-modal competition among different fixed broadband technologies such as DSL, cable modem, and FTTH (Lee et al., 2011a). Platform competition among different fixed broadband technologies may lead to lower prices and growth of broadband markets (ITU, 2003). IPTV is a broadband technology-based new media service. Thus, inter-modal competition in broadband industry may positively affect IPTV diffusion.

Theoretically, different subscription-based TV platforms for video programming also involve platform competition. Currently there are diverse pay TV platforms that carry video programming. For instance, IPTV, cable, satellite and other competing platforms offer their subscribers pay TV services that may include hundreds of channels, video-on-demand and digital video recorders (DVR) features. Thus, since subscription-based video programming is provided over different technologies, it is necessary to examine the degree of potential substitution between different pay TV platforms to understand the extent to which a given market is competitive (OECD, 2013c). Likewise, it is also important to examine whether inter-modal competition between different pay TV platforms affects the diffusion of IPTV.

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