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Investigating factors influencing the market success or failure of IT services in Korea

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ABSTRACT

Many information technology services have been introduced in Korea since the great success of ADSL and CDMA operations, but only a few of these services have succeeded in achieving market diffusion as well as revenue. The success or failure of IT services has significant impact on the national economy and customer welfare. Despite the importance of this sector, there are few studies on the causes underlying the market performances of IT services. This study investigated the critical factors leading to the market results of IPTV, VoIP, W-LAN, WiBro, T-DMB, and S-DMB services in Korea. Using expert surveys and AHP methods, the success or failure factors were identified and their relative weights were evaluated. The results obtained were as follows: (i) The success of such services was mainly due to meeting customer needs, low facility investment costs, service competitiveness, support of ecosystem, and active marketing activities. (ii) The absence of a business model was related to the partial success of services. (iii) Government policy affected service success or failure.

1. Introduction

Following the great success of broadband and digital mobile services through Asymmetric Digital Subscriber Line (ADSL) and Code Division Multiple Access (CDMA) operations in the late 1990s, many new Information Technology (IT) services have emerged, with some of them succeeding in terms of market performance. This rapid diffusion has brought a great deal of change and innovation in people's lives and in the structure of the industry, allowing Korea to rise as the major IT- leading nation (Lee, 2003; Korea National Information Society Agency (NIA), 2014).

The dynamic bonds between technological development, government policy, and the providers' businesses generally play adequate roles in the introduction and diffusion of new services in the IT sector (Paik, Kim, & Park, 2010). IT services require huge investments in research and development (R&D), network deployment, and marketing activities. They may be affected by linkages among stakeholders, promotional policies, or changes in regulation. The strong network effects of the industry have major impacts on customer behavior regarding adoption and usage, with the evolution or termination of a service seeing an increase or a decrease in subscriber benefits, respectively (Mohr, Sengupta, & Slater, 2009). Therefore, the success or failure of IT services has significant impacts on the national economy, customer welfare, and service providers (Ahn, Kim, & Lee, 2005).

However, not all telecommunication and broadcasting services in the Korean IT sector have experienced market success. Some, such as Internet Protocol Television (IPTV) and Voice over Internet Protocol (VoIP), were successful in terms of subscriber diffusion and revenue, but others, such as Wireless Broadband (WiBro) and Satellite-Digital Multimedia Broadcasting (S-DMB), were not. Territorial-DMB (T-DMB) and Wireless Local Area Network (W-LAN) both secured a sizeable number of users, but their revenues were poor.

New products or services were reported to have a success rate of less than 50% (Cooper & Kleinschmidt, 2011). Therefore, it is important to identify the factors affecting market performance from cases of failure, as well as success, in theoretical and practical considerations of new product development (NPD). Many studies on NPD

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have focused on firm-level or specific products (Ernst, 2002). Only a few have examined NPD from an industrial perspective, including customer, ecosystem, competition, policies, and firm activities.

Related studies have generally been carried out within two categories: (i) the diffusion factors of a particular service like Broadband or IPTV (e.g.,Lee, Park, Lee, & Brown, 2015: Yamakawa, Cadillo, & Tornero, 2012), (ii) the determinants of a failed service like WiBro (e.g., Paik et al., 2010; Park, Kim, & Nam, 2015).

However, there are few studies on the causes affecting the success or failure of major IT services from a market performance perspective (Ahn et al., 2005). To examine this, we first selected the major services that have emerged since the mid–2000 s in Korea. We then examined the success and failure factors from an industrial viewpoint, utilizing expert surveys and the Analytic Hierarchy Process (AHP) method.

2. Major IT service deployments in Korea

In the late 1990s, new fixed and mobile IT services emerged in Korea. Code Division Multiple Access (CDMA), a digital mobile telecommunication system, and Asymmetric Digital Subscriber Line (ADSL), a high-speed broadband system, were introduced in 1996 and in 1998, respectively. These services were the first to be commercially successful. Their success was due to the strong demand for broadband and mobile communication services, major investments in networks and marketing by operators, technology development strategies, and promotion policies (Choudrie & Lee, 2004; Chung & Lee, 1999; Han, 2007). Since then, the broadband and mobile communications markets have continued their rapid growth and many new services have developed, based on technological advances, government policies, and business strategies implemented in the 2000s (Korea Ministry of Science, ICT and Future Planning (MSIP), 2014).

The Korean government began implementing policies for the introduction and promotion of new services such as WiBro, S-DMB, and T-DMB through the so-called “IT 839 strategy” from 2004. Fixed-line operators launched W-LAN in 2002, VoIP in 2005, and IPTV in 2008, respectively (Korea Information Society Development Institute (KISDI), 2014). CDMA service evolved into Wideband Code Division Multiple Access (WCDMA, 3rd generation service) in 2003 and WCDMA into Long Term Evolution (LTE, 4th generation service) in 2011. ADSL service evolved into Very high data rate Digital Subscriber Line (VDSL) in 2003, Fiber To The Home (FTTH) and Hybrid Fiber Coax (HFC) based on the Broadband convergence Network (BcN) from 2004, and Giga Internet since 2011 (Korea Internet and Security Agency (KISA), 2013). Table 1 shows the core service, provider, subscriber scale, and current status of major IT services rolled out in Korea since the mid-2000s.

W-LAN, or Wi-Fi, is a fast wireless Internet service provided mainly in indoor areas or hot-spot zones by major telecommunications companies and public or private institutes. It provides the benefits of fast transmission speeds, a very low price burden, and the creation of content usage environments, but has limited coverage and intermittent connectivity (Kim & Park, 2008). W-LAN is available at an extremely low price for smartphones, desktop PCs, and laptops in homes, offices, streets, cafes, and subways in Korea. As of 2014, 79.0% of total households in Korea have such equipment at home and 83.7% of people had used the service over the past year (KISA, 2014; MSIP, 2014).

S-DMB and T-DMB were developed to provide broadcasting and multimedia services over satellite and Very High Frequency (VHF) bands, respectively. In Korea, T-DMB was available for free on smartphones and navigation devices, but this was not the case for S-DMB. TU-Media, a subsidiary of SK Telecom, provided S-DMB services, while T-DMB was operated by multiple dedicated broadcasters such as KBS, MBC, and others (Jee & Kim, 2005). S-DMB subscribers exceeded 2 million people at one point (around 4% of the total population), but low revenues due to a decrease in subscribers eventually resulted in the termination of the service in 2012. More than 10 million people (30.8% of population) were using T-DMB as of 2014, but the attractiveness of this service has decreased slightly under the influence of competing services such as Video on Demand (VoD) over 4G LTE (KISDI, 2014; MSIP, 2014).

VoIP, or Internet telephony, is an inexpensive voice and short message communication service using Internet transmission networks. The quality of the service was slightly worse than that of fixed phones, but has greatly improved over the years. Many service providers including major telecommunications companies and cable operators have entered the market (Kim et al., 2009). The service has expanded rapidly, securing 12.6 million households, around 70% of total households, by 2013 (MSIP, 2014; NIA, 2014).

WiBro is a wireless broadband service that was devised to increase data transmission speeds compared with existing mobile telecommunications and to add mobility to W-LAN in Korea. Two dedicated operators, KT and SK Telecom, launched commercial services in 2006, but deficiencies in these firms’ activities, including inadequate investments in marketing and networks, caused low diffusion levels of this service (Kim, Park, & Paik, 2014; Paik et al., 2010).

IPTV is a multimedia platform providing broadcasting and VoD services over Internet networks; it is operated by major broadband service providers such as SK Broadband, KT, and LG U+. Thanks to the high penetration rate of broadband, rich content, and the promotion of bundling services, IPTV has rapidly diffused each year, having more than 10 million households as subscribers or around 55% of total households by 2014 (KISA, 2014; MSIP, 2014).

3. Research background

Many studies have attempted to identify critical success factors underlying market performance in the field of new product development (Ernst, 2002). These studies have mainly examined the impact of organizational structure, innovation culture, personnel roles, and the environmental characteristics of NPD (Evanschitzky, Eisend, Calantone, & Jiang, 2012).

However, there are few studies on the success or failure factors influencing market performance that focus on IT services. Some studies have focused on individual services such as broadband, Internet, WiBro, and IPTV, as shown in Table 2.

Relevant factors were identified through either a socio-technical approach or a stockholder model, using the case study, Delphi, or expert survey methods. Choudrie and Lee (2004) examined the institutional drivers (government leadership, competition between providers, low prices) and socio-cultural factors (cultural, geographic, and demographic aspects) for rapid broadband diffusion in Korea. Picot and Wernick (2007) identified the role of market regulation and public policies in promoting Internet deployment across the United States, Europe, and Korea. Paik et al. (2010) derived the factors influencing the low market diffusion of WiBro in Korea, from firm activity and regulation perspectives. Yamakawa et al. (2012) focused on market demand, public policies, and firm investment to identify the success factors for broadband expansion in Peru. Adhiarna et al. (2013) extracted Radio-Frequency Identification (RFID) adoption factors in Indonesia, focusing on the market, firm activities, and public policies. Lee et al. (2015) identified IPTV market diffusion determinants in 31 countries, including competition and market size aspects. Park et al. (2015) analyzed the failure factors of Korea’s WiBro service in terms of business activities and government policies. These studies found that the critical factors influencing success and failure could be classified into such various