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Digital divides and mobile Internet in Indonesia: Impact of smartphones

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ABSTRACT

Mobile leapfrogging refers to the process by which new Internet users access the Internet using mobile phones and not PCs. This study examines how and whether mobile phones narrow the digital divide among Indonesian people at four levels (device ownership, Internet adoption, use, and information acquisition). A self-administered questionnaire survey was conducted in three large cities in Indonesia ($N = 605$). The results indicated that, at different levels, younger and more educated people utilize mobile Internet, especially via smartphones. In contrast, feature phones are owned by less educated and older people regardless of income level, but Internet usage on such phones is more prevalent among younger and more educated people. Moreover, the adoption of the PC-based Internet promotes the ownership of smartphones. These results indicate that mobile leapfrogging is the case only with the ownership of feature phones. Furthermore, in comparison with feature phones, smartphones and personal computers are more associated with information handling capacity in daily life. These findings suggest that ICT literacy education is important, and one should not be optimistic about the mobile Internet's prospects for narrowing the digital divide in developing countries.

1. Introduction

1.1. Digital divides and mobile leapfrogging

Mobile communication technologies have major impact on day-to-day life in the world. Recently several significant studies examined the effect of mobile technologies on digital divides in the developed countries (Brown et al., 2011; Lee et al., 2015; Mascheroni and Olafsson 2015; Park, 2015; Pearce and Rice, 2013). However, only few studies have investigated the digital divides in the developing counties where wired Internet is limited. It is expected that mobile Internet can play more important role in developing countries. Telecommunication policy makers in the developing countries are interested in the possibility of the "mobile leapfrogging", the process by which new Internet users access the Internet using mobile phones skipping the wired Internet connection. Abud (2012) has argued that mobile phones can be used as a tool for leapfrogging the digital divide in Indonesia. The geographical digital divide was reduced with the introduction of mobile telecommunications (Loo and Ngan, 2012).

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1.2. Mobile Internet penetration in Indonesia

GSM is the current standard mobile technology in Indonesia (MCIT, 2012). In 2006, 3G service was launched commercially by the three major providers in Indonesia, and 4G service was launched in late 2013. In Indonesia, the fierce competition among telecommunication companies has led to lower charges for consumers. Low-end feature phone handsets with an Android operation system can be purchased for USD 12.50, while smartphone prices range from USD 46 to USD 1028[2]. Indonesians tend to use mobile phones more frequently than other people. The penetration rate of mobile phone is as high as 98%, as of 2006 (ITU, 2014). Table 1 shows that the ownership rate of personal computers is lower in Indonesia compared with other Southeast Asian countries, where the rate of household Internet devices is balanced between PCs and mobile phones. The number of mobile phones with Internet connections is more than twice the number of desktop computers or laptops, with nearly 282 million mobile phone subscriptions in 2012. A questionnaire survey conducted in 2011 showed that for 82% of the Indonesian respondents, mobile phones had become the primary device for accessing the Internet. Furthermore, 36% of Indonesians preferred to access mobile web for five hours a day, while another 27% preferred watching television (Christanto, 2011). Many Indonesian people enjoy Facebook and Twitter, even on feature phones (Lim, 2011), as shown in Table 2. According to Nielsen (2011), exchanging private messages on social networking sites (SNS) is the most popular activity on the mobile Internet in Indonesia, whereas business-oriented activities, such as email or news, are less popular than in the other South Asian countries. These results suggest that Indonesian users access the mobile Internet more for entertainment than for information gathering.

The Broadband Commission for Digital Development, which was set up by ITU and UNESCO in 2010, aims to boost the importance of broadband to meet the Millennium Development Goals (MDGs), such as poverty reduction and access to basic services (The Broadband Commission Working Group on Education, 2013). The national connectivity reinforcement is one of the three pillars of the Master Plan for Acceleration and Expansion of Indonesian's Economic Development 2011–2025. The Indonesian government is enhancing efforts to provide broadband access throughout the country. The Indonesian National Broadband Plan (INB) set a 2019 target for fixed broadband penetration rate 30% and 6% in urban and rural areas respectively, and mobile broadband penetration rate to reach 100% and 52% in urban and rural areas, respectively (Rohman, 2014). To achieve this national broadband plan, the mobile Internet is regarded as playing a leading role in Indonesia (Setiawan, 2013).

These situations indicate an appropriate study on mobile Internet use is needed to assess the leapfrogging theory in Indonesia. Since some argues that mobile phones is a tool for leapfrogging the digital divide in Indonesia (Abud, 2012), this study begins with examining previous studies on the mobile leapfrogging and digital divides.

2. Literature review

2.1. The mobile leapfrogging

Leapfrogging theory states that "bypassing stages in capacity building or investment through which countries were previously required to pass" is a process through which developing countries may now develop (James, 2012; Napoli and Obar, 2013; Steinmueller, 2001). Steinmueller (2001) stated that developing countries are capable of leapfrogging, especially in the production of technology and the use of ICT. In Latin America, while affordable handsets and the calling party-pays system allow a significant number of low-income people to become mobile subscribers, the current tariff structure has an inhibiting effect on service consumption by the poor (Barrantes and Galperin, 2008). Leapfrogging across digital divides with mobile phones is reported even in developed countries. In the US, teens from lower income families and minority teens were proven to be significantly more likely to use their phones to go online, paying more for the Internet access. This paradox can be explained by the fact that they are less likely to have a wired computer at home (Brown et al., 2011).

Mobile leapfrogging suggests that, at the individual level, the mobile Internet can be used by the information poor, namely older, less educated, and less affluent people. Given that mobile phones are more familiar to common people and less expensive than PCs, it is expected that the digital gap will be reduced with mobile Internet use. For example, Srinuan et al. (2012) found that price and income levels do not affect the propensity to access the Internet via mobile phones in Thailand. Similarly, Bohlin and Rohman (2011) examined factors affecting mobile broadband and found that income influences mobile broadband access less significantly than geographical area. They concluded that affordability is not an issue regarding further broadband development in Indonesia.

2.2. Multiple digital divides

A digital divide is defined as the differences between individuals, households, companies, or regions regarding their access to and usage of ICT (Chen and Wellman, 2004; Vehovar et al., 2006). The digital divide is a politically important concept because it is regarded as a new form of social inequality (Zillien and Hargittai, 2009). Although the digital divide in

[2] Data were sourced from various popular mobile phone online shops and online phone magazines in Indonesia (erafone.com; mobile88.co.id; arenaponsel.com; tabloidpulsa.co.id; informasiponsel.com, http://www.expat.or.id/info/handphones.html).