Do productive uses of ICT connect to income benefits?
A case study on Teleuse@BOP4 survey in Indonesia

CPRSOUTH8/2013 **POLICY BRIEF**

Indonesia has been experiencing a massive development of telecommunications sector. During the last five years, the sector has enjoyed an enormous annual growth rate of 24%-30%, which means nearly five times than those of other sectors within the economy. The growth rate has been achieved thanks to, among many other factors, a massive growth of the mobile telephony reaching 220 million subscribers by the end of 2010. On the other hand, the development of telecommunications sector should also be able to transform a society achieving a better socio-economics and well-beings condition. However, the question whether the sector has been really supporting these variables especially concerns with the poverty alleviation and welfare at the household level is still undisclosed. To unlock this question, this paper aims at investigating whether the mobile phone access and the uses of the device for productive features/content/services have brought many benefits to the households in terms of an additional income. The analysis is based on the BOP survey conducted by LIRNEAsia and the Institute for Economic and Social Research, University of Indonesia (LPEM FEUI) in 2011.

SUMMARY OF FINDINGS/ RECOMMENDATIONS

1. **The access impact is significant.** The access to mobile phone has a higher likelihood for increasing the household earning by a 27 USD compared with those of the unconnected ones. This finding suggests the importance for ensuring the access for poor people emphasizing the need to build a better infrastructure for out-of-reach areas and also to provide mobile handsets at a more affordable price.
2. **The productive usages contribute even greater impacts.** Moving merely beyond access, the study also found the productive uses of the device (when the users access to at least one of the following functionalities; information services, banking, government information, health and the payment system) contribute a 39 USD household income more than those who never accessed these services. Therefore providing access should also be followed by educating the users on how to benefit from ICT and particularly mobile phone connection.
3. **Linking between telephony and financial activities**. The investigation on the access to the financial intermarries denoted by the ownership of bank accounts yields a visible and greater impact to the household income. The future policies to eradicate poverty should, therefore, be directed towards enabling the BOP users for the access to the ICT devices with a greater link to the payment system and to substitute the functionality of baking services, especially in the area where the banking system has not developed yet.

THE RESEARCH

I BACKGROUND

The importance of mobile telephony especially for developing nations is particularly related to the type of technology in comparison to its long rival, fixed-line telephony. It is often proposed that wireless technology plays an increasingly prominent role in the expansion of rural telecommunication networks in the developing countries (Reynolds and Samuels, 2004; Galperin, 2004), in which mobile technologies not only offer a substantial cost advantage over fixed-line infrastructure for rural networks, but they are also better suited to service the demands of rural low-income populations (Proenza, 2006). In addition, recent surveys in developing countries show that mobile phone not only bridges the voice gap but also has begun to close the data gap for the poor, particularly in rural areas where the broadband access is still nearly non-existent (ITU, 2011).

The importance of mobile technology development is also supported two-ways relationship between telecommunications sector in general and economic development. A higher economic activity leads to a

higher telecom infrastructure through increasing demand of new services and the derived demand from other sectors. In opposite, a higher telecom infrastructure leads to market efficiency thanks to faster information dissemination as well as supports other social aspects.

Nevertheless, whereas the impact of higher telecom infrastructure to economic activities and market efficiencies has been the focus of many investigations (Brynjolfsson & Hitt, 1997; Chacko & Mitchell, 1998; Bresnahan, Brynjolfsson & Hitt, 2000; Dimelis & Papaioannou, 2011), the empirical analysis of telecommunication affecting the household welfare is still somewhat missing in the literature. Some conceptual papers and case studies can be found on how telecommunication sector affects poverty alleviation, education and health (Chakraborty & Nandi, 2011; Dimelis & Papaioannou, 2011) and also to ensure better socio-economic platforms (Wijers, 2010; Kijsanayotin, Kasitipradith, & Pannarunothai, 2010; Crow et al., 2012; Kiiza & Perderson, 2012). Therefore, this study aims at scrutinizing the impact of the access to mobile telephony and the productive use of the device to the household income utilising the treatment effect model in a more empirical manner and quantitative method based.

II. SOCIO-ECONOMIC PROBLEMS

The transition of socio-economic development progresses in Indonesia are far slow compared with a massive development of ICT and telecommunications sector, especially if the penetration rate is used as an indicator. Recent study by Nugraha and Lewis (2013) monitored the update of Indonesia development outlook. The study concludes that Indonesia has experienced significant economic growth in recent years (on average, 5% in 2008) akin many people are still living in poverty. A recent study by Dartanto and Nurkholis (2013) maps the determinants of poverty in Indonesia. Based on the data by observing the National Socio-Economic Survey (Susenas) balanced-panel data sets of 2005 and 2007, the study found that 28% of poor households are classified as chronically poor (remaining poor in two periods) while 7% of non-poor households are vulnerable to be being transient poor.

This study relates the achievement of telecommunications development with socio-economic variables using the treatment effect method. The basic idea behind the method is to estimate the counterfactual outcome of the income for people who have connected to the mobile would have achieved had they not connected yet. That said, the methodology will control all possible factors affecting the income level (in this study gender, ages education, geographical location, type of occupation, number of households member skills, and prior ICT assets ownership) in such a way that the income level in two samples are comparable only by looking at the difference on the mobile phone connectivity. As stated previously, the study found the importance of access, the greater importance of productive usages and the need to link mobile telephony usages with some more financial related functionality for poor people.

III. POLICY RECOMMENDATION

It usually goes unnoticed that despite the growing of cellular penetration rate in Indonesia, the service usages are in fact becoming less related to business and economic activities than that of fixed telephony dated back in 1980s. Chu et al (1985) found that based on the survey in Indonesia in 1982, 48% of the usage was intended for “business purposes”. Contradictory, the T@BOP survey conducted in 2011 shows that the usage of mobile for business purposes is only 15%. To accentuate more, Indrawati, Murugesan, and Raman (2010) reveal that although many respondents aware of the 3G technology to enable them more variety of services that might relate to their work, only 47% of respondents use 3G mobile multimedia services with only a limited use where the survey covered wider population beyond BOP sample.

Some current initiatives have been introduced for promoting the usability of cellular to be more business activities-related. However, as the poverty problem has various dimensions, apart from linking BOP with financial services thanks to mobile, many more policies can also be implemented in Indonesia. Cahyono (2008) identified the potential pervasive use of cellular telephony for telecenter to support the agriculture sector in Indonesia. Fulazzaky and Akil (2009) explore the use of ICT and possibly cellular to share the information for water management information given the fact that the provinces in Indonesia will be facing water scarcity problems in the next decades due to increasing water demands resulting from population growth. Not only that, as the country endowed with a higher risk of natural disaster, Chib, Lwin, Ang, Lin, and Santoso (2008) project the potential use of cellular to rural midwives in tsunami-affected Indonesia, allowing them to contact medical experts and communicate with patients. Similarl, Sutjiredjeki et al (2007) explore the potential usability of cellular as a tool of telemedicine system linking urban and rural in Indonesia.

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