Telecommunications Policy xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Telecommunications Policy

journal homepage: www.elsevier.com/locate/telpol

# Network-centric digital development in Korea: Origins, growth and prospects

James F. Larson

*Department of Technology and Society, Vice President for Academic Affairs, SUNY Korea, 119 Songdo Moonhwa-Ro, Yeonsu-gu, Incheon 21985, South Korea*

ARTICLE INFO

*Keywords:*
Digital networks
National development
ICT sector
Network society
ICT for development
Next generation networks,5G,PS-LTE
Broadband
IoT
Internet of things

ABSTRACT

South Korea is currently the world leader in digital network infrastructure and the leading example of ICT-driven development. However, the explanation of how and why Korea accomplished these things is not clearly apparent from a review of mainstream scholarship. A deeper understanding of Korea's "miracle on the Han" requires more historical, cultural, political and social context. This study addresses questions of how, when and why a nation whose infrastructures were utterly destroyed at the 1953 cessation of hostilities in the Korean War could emerge as the world's digital network leader. It examines policy issues bearing on digitization of networks, network architecture and network technologies, along with broader context in which these policies were considered, drafted and implemented. Chronologically, the study explains the origins of digital development in the revolutionary decade of the 1980s, Korea's rise to world broadband leader in the 1990s and its ambitious plans for next generation networks. The study concludes with a review of policy "lessons", including both successes and failures, that may be drawn from the Korean experience.

## 1. Introduction

The digital network revolution originated in the mid 20th century. However, the diffusion of this innovation to countries around the world was an uneven process, proceeding more quickly in advanced developed economies than in the poor, developing ones, leading to scholarly concern with the concept of "digital divide." (Norris, 2001) In a striking exception to this global pattern, South Korea moved decisively in the early 1980s to digitize its telephone network. At that time, Korea was still by all measures a developing nation. Korea's plan powerfully coincided with the introduction of digital switching by the world's leading telecommunications firms and in advanced economies. Such fortunate timing helped it to harness the power of digital networks for national socioeconomic development and to do so more successfully than any other country to date.

With the completion of a nationwide public switched telephone network in June of 1987 Korea possessed one of the most modern digitally-switched networks in the world, surpassing Japan and other advanced nations (Oh & Larson, 2011, p. 29). In the 1990s Korea began expanding its fixed broadband networks and became the first nation in the world to introduce CDMA-based mobile communications. By the turn of the millennium the ITU reported that Korea was "..the leading example of a country rising from a low level of ICT access to one of the highest in the world." (Kelly, Gray, & Minges, 2003, p. 1) The significance of Korea's world leadership in broadband internet infrastructure was underscored by the World bank, which noted that the Internet, like energy or transport, has become an essential part of a country's infrastructure. (World bank group, 2016, p. 12).

Despite these accomplishments, the story of how and why digital development took place in Korea is still only vaguely understood

*E-mail address:* jamesflarson@sunykorea.ac.kr.

http://dx.doi.org/10.1016/j.telpol.2017.03.007
Received 29 June 2016; Received in revised form 24 March 2017; Accepted 28 March 2017
0308-5961/ © 2017 Elsevier Ltd. All rights reserved.

by many international observers, recalling Isaacs observation in 1958 that "Vagueness about Asia has been until now the natural condition even of the educated American." (Isaacs, 1980, p. 37) . A major reason for such vagueness is lack of adequate historical,cultural, political, or economic context. While there are some exceptions, such as the 2008 study by Forge and Bohlin, (Forge, 2008) the majority of published studies lack adequate context.

To illustrate the problem, consider two glaring errors in the otherwise excellent 2003 study conducted by experts for the International Telecommunications Union (ITU). In the opening chapter the authors erroneously claim that the Korean alphabet, *Hangul*, weighed against the country's ICT development because it used a pictographic font that is not ideally suited to computerization (Kelly et al., 2003, p. 2). Exactly the opposite is true as Hangul consists of consonants and vowels, not pictographs, and is ideally suited to computerization and various types of keyboard input. Hangul not only allowed the rapid achievement of near-universal literacy in Korea during the latter half of the 20th century, but it was also a significant factor driving ICT literacy (Oh & Larson, 2011, p. 19). The ITU study also contains another major error most likely deriving from a lag in international reporting of data. It presents a bar graph depicting the size of the waiting list for telephone service by year from 1982 through 1992 (Kelly et al., 2003, p. 6). Unfortunately, the graph indicates that the backlog (waiting list) in provision of telephone service persisted through 1988, when in fact it had been eliminated almost two years earlier, with completion of the nationwide public switched telephone network in 1987 (Oh & Larson, 2011, p. 29).

The purpose of this study is to help better contextualize Korea's ICT-driven development. It focuses on the origins of South Korea's digital networks, their expansion in recent decades, and prospects for future growth and development. A main concern throughout is with policy issues bearing directly on digitization of networks, network architecture and network technologies, along with the historical, cultural and political context in which these policies were considered, drafted and implemented. It addresses the following questions.

- How could a nation whose infrastructures were utterly destroyed at the 1953 cessation of hostilities in the Korean War, preceded by half a century of Japanese occupation, emerge as the world's digital network leader? As late as 1980 Korea had only 7.2 telephone mainlines per 100 population! (ITU)
- Why did Korea choose to focus on telecommunications networks to foster its ICT sector?
- What were the key policy decisions and who made and implemented them?
- What is Korea's future role in the evolution of digital networks globally and what lessons might other countries take from the Korean experience?

The first section of this article identifies some key concepts from developmental state theory and communication policy research that frame the important lessons to be learned from the Korean experience. It also identifies some of the shortcomings of mainstream scholarship that this study aims to address. The second part of the study examines the origins of digital network development in the 1980s and the key policy decisions and technology developments that fueled the growth of networks from that revolutionary decade to the present. Finally, a third section examines Korea's goals for the future and its prospects for continued leadership in the evolution of digital networks. It concludes with a summary of the main policy implications for other developing nations based on both successes and failures in Korea.

## 2. Perspectives on digital development

As long ago as 1974, Ithiel Pool noting the exponential growth in the rate of technological change, argued that scholars needed to address not only questions about how people behave in existing communications systems, but also questions about what future networks themselves would be. (Pool I. d., 1974). Today, digital convergence and the move toward a single, all IP network infrastructure supporting ubiquitous networking and the Internet of things (IoT) are further along in Korea than in most other advanced economies, making it an ideal case study to explore questions about the role of such infrastructure in national development and the future shape of networks.

### *2.1. Networks as innovations*

According to Rogers who studied many technological innovations, "An innovation is an idea, practice or object that is perceived as new by an individual or other unit of adoption." (Rogers, 2003) As applied to the Korean case, we can consider network-centric digital development to be innovative in two main ways, one of them relating to the hardware component of the innovation and the other to the software side. First, the essence of the innovation in terms of hardware involved the manufacturing and assembling of digital switches and other components needed to digitize Korea's networks. The object is the digital network itself, initially the public switched telephone network (PSTN). Second, the software aspect of network centric innovation involved governance of the nation's emerging ICT sector and the practices associated with widespread adoption and use of networked digital devices. The unit of adoption is the nation, encompassing Korea's government, leading industry groups and broad political support for the innovation from the public.

### *2.2. A network-centric perspective*

Conceptually, this study sets forth a network-centric view of digital development in Korea. A network-centric view helps to better

Download English Version:

https://daneshyari.com/en/article/6950324

Download Persian Version:

https://daneshyari.com/article/6950324

Daneshyari.com