Technology Leapfrogging in Thailand

Louis Sanzogni
Griffith University, Australia

Heather Arthur-Gray
Griffith University, Australia

TECHNOLOGY LEAPFROGGING

The phrase "leapfrogging development" reflects the belief, especially in the 1980's, among policymakers and theoreticians that information technologies, especially telecommunications, can help developing countries accelerate their pace of development or telescope the stages of growth (Singh, 1999).[1]

The telecommunications literature uses the word "leapfrogging" in three ways:

- First, it is meant to imply that telecommunications can help developing countries skip over the stages of development and become members of a post-industrial society.
- Second, leapfrogging is used in "an engine of growth" sense to mean that telecommunications can help developing countries accelerate their pace of development[2].
- Finally, leapfrogging is used in a technical sense to signify skipping over the technological frontier or product cycle[3].

Often the word leapfrogging is used interchangeably referring to both technical and economic "leaps"[4] (Singh, 1999), usually though the two are interdependent. The term "Technology Leapfrogging" is also being used to describe the phenomenon that is being seriously and widely considered in the developing world with countries such as Egypt, Malaysia, Thailand, Canada and Bangladesh having gone or going through the experience at the moment (Davison, Vogel, Harris & Jones, 2000).

PROMISE OF ICT-DRIVEN GROWTH

The possibility of developing countries leapfrogging has come about through the progressively lower cost of technologies and the user friendliness that is allowing the development and implementation of systems that would otherwise be unavailable to them (Weiss, 1994). Further, "economic and social progress has forged in South East Asia (SEA) a perception of growth previously unparalleled in human history" (Lander, 2000). There is an inevitability in SEA that ICT-driven economic expansion will simply occur because of the size of the population, "which is young, well-educated and with rising incomes" (Lander, 2000). It can be further suggested that the expanding market and the use of high-tech devices are interpreted as cultural systems that are used in the construction of modernity and that the economic and social focus of the South East Asian nations is on market corporatism, market socialism and high tech developmentalism" (Boyd, 2002). Asian Tiger countries have been pursuing a number of projects that use Technology Leapfrogging to surge forward in this development and economic race, to rescind the ever-growing gap between the developed and developing countries (Gray & Sanzogni, 2004).

Availability of funds in the South Asian region has attracted $4.196 billion (2.5% of total FDI) (Saidi & Yared, 2002). However, it is unclear how many countries fully appreciate the need for a coordinated effort across all sectors in terms of the implementation of an ICT-based commerce strategy. Such an implementation represents a considerable challenge requiring integration of technology, law, policy, business processes and skilled people (Keretho & Limstit, 2002). But that's not all. A major problem facing developing nations is the lack of a sound telecommunication infrastructure which forms part of the basic building block for a modern ICT-based socio-economic infrastructure (Davison et al., 2000).

The close relationship of communication networks and development is one of the reasons that investment in communications has become a priority for so many governments. Only 5% of the population in developing countries has access to the Internet. With the measure of telecommunication access expressed as teledensity, we note that 50/100 people have telephones in the developed world against 1.4/100 in developing world (Tipton, 2002). In Asia the lag in provision of a basic telephone service was starkly illustrated by a report estimating only 10% of the 500 million telephones in the world were in Asia in 1991 (Asia Money, 1991;

Larson, 1995). ICT has good potential to create (via communication) social and economic networks leading to advances in development. However, lack of ICT implementation not only runs the risk of an economic divide, but also a political divide with people being potentially cut off from participation in future economic activities beyond regional boundaries.

Further clouding the issue, there is no clear evidence, according to economists, to support the belief that ICT can create growth. There is also indication (Tipton, 2002) that difficulties in measuring success in ICT solutions increase when moving from the private to the public sector as there is lack of a framework of analysis (ultimately the P&L). Other difficulties cited are of a cultural nature, such as the resistance to systems leading to greater transparency and accountability, as in developing countries there are cultures of subservience, gifts in exchange of favours, etc.

NATIONAL FRAMEWORKS FOR "TECHNOLOGY LEAPFROGGING" DRIVEN DEVELOPMENT

Ultimately however, governments recognise the need to enhance physical and knowledge infrastructures to improve competitiveness. ICT solutions are seen as a strong central to enabler of these initiatives and successes in some countries in the region give an optimistic outlook to leapfrogging implementations. Chalmers Johnson's study of Japan and later Weiss', Evans', and Wade's studies of South Korea, Taiwan and Singapore, all identified models of governments intervention for the fast-paced introduction of ICT (Tipton, 2002). These studies contributed to the identification of "pilot agencies" whose successful drive of ICT implementation stood out as good examples to follow. The respective agencies are Japan's Ministry of International Trade and Industry (MITI), South Korea's Economic Planning Board (EPB), Taiwan's Council for Economic Planning and Development (CEPAD), and Singapore's Economic Planning Board (EPB). Tipton (2002) attributes the ICT implementation successes of these nations to:

institutionalised position and organisational structure. They are elite institutions, attracting high-quality staff, possessing a high degree of cohesiveness and strong sense of commitment to national goals. They are not large bodies, but have adequate staff and independent funding that provides sufficient resources to achieve their mission. They possess powerful capabilities for assembling and analysing data, giving them insight into both current conditions and possible future directions of development. They are 'insulated' from direct contact with industry groups, but they are not 'insular' or isolated from the concerns of their constituents. This can be achieved organisationally by a combination of 'horizontal' departments responsible for overall policy and 'vertical' departments concerned with particular industries, but it depends to a large degree on the acknowledged expertise of the officials and their resulting prestige in dealing with industry groups. They are also insulated from short-term political concerns. They do not depend on politicians for their positions, and they must be able to resist pressure from politicians whose interest may clash with long-term approaches to economic policy.

Pilot agencies traditionally have performed two tasks:

- The provision of advice on policy development.
- Administrative responsibilities for the deployment of funds into specific industries for the introduction of new technologies whose benefits are judged to have the greatest probability of a beneficial spill-over effect into the economy as a whole.

It is important to note that while these agencies played and play a significant role in terms of policy development and technology implementation at the national level some, as in the case of Singapore's EPB, also helped in paving the way for foreign investment and the positioning of local offices of foreign firms with special emphasis on high tech.

We now turn our attention to two particular economies, namely South Korea and Thailand and draw comparisons in terms of leapfrogging success. Both these countries have emerging economies and plans to become leaders in the region by investing heavily in ICT. However we note that one economy is still essentially in reactive mode responding to issues and circumstances as they arise, while the other has adopted strategically-based proactive initiatives in order to promote and retain business investment. Mashelkar (2003) in his address to the Royal Socitey (10th Zuckerman Lecture) clearly elucidates the difficulties and promises that the introduction of a dynamic economic environment (such as in Singapore) can bring to developing nations.

South Korea

South Korea's successful initiatives leading to the transformation of its communications industries and environment are a great example of technology leapfrogging, which included infrastructure development, tech-

Related Content

Sustainable Industrial Site Redevelopment Planning Support: A Case-Based Reasoning Approach
Tong Wang, Qi Hanand Bauke de Vries (2017). *International Journal of E-Planning Research (pp. 39-53).*
www.irma-international.org/article/sustainable-industrial-site-redevelopment-planning-support/176684

Social Media for Civic Engagement: An Exploration of Urban Governments
Thomas A. Bryerand Kimberly L. Nelson (2013). *Citizen E-Participation in Urban Governance: Crowdsourcing and Collaborative Creativity (pp. 226-246).*
www.irma-international.org/chapter/social-media-civic-engagement/77678

Semantic Spatial Representation, an Experimental Proposal in the Framework of eParticipation
Angioletta Vogheraand Rossella Crivello (2015). *International Journal of E-Planning Research (pp. 18-35).*
www.irma-international.org/article/semantic-spatial-representation-an-experimental-proposal-in-the-framework-of-eparticipation/139310

The Extent of New Technologies in Urban Environments: Virtual Reality, Lighting, and Accessibility
Sandra Arranz-Paraísoand Daniel Arranz-Paraíso (2023). *Intersecting Health, Livability, and Human Behavior in Urban Environments (pp. 251-272).*
www.irma-international.org/chapter/the-extent-of-new-technologies-in-urban-environments/322927

An Outlook Over Smart Irrigation System for Sustainable Rural Development
R. Muthuminaland R. Mohana Priya (2023). *Smart Village Infrastructure and Sustainable Rural Communities (pp. 134-160).*
www.irma-international.org/chapter/an-outlook-over-smart-irrigation-system-for-sustainable-rural-development/324965