Book Review

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ICTs in Developing Countries: Research, Practices, and Policy Implications
by: N. Dey, K. Sorour and R. Filieri (Eds.)
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This monograph of 191 pages comprises 11 chapters from 19 contributors, mostly from academic institutions distributed as shown in the following table:

Bangladesh	1
Asia University of Women	1
Canada	3
Mount Royal University	1
Workers Compensation Board	1
Algoma University	1
Egypt	1
Arab Academy of Science, Technology and Maritime Transport	1
Korea	1
State University of New York	1
South Africa	2
NybSys (software services)	1
University of Stellenbosh	1
UK	7
Brunel University	1
Glyndwr University	1
Northumbria University	4
University of Leeds	1
USA	4
Columbia University	1
Florida State University	1
Indiana University	1
Northern Illinois University	1

The collection is dedicated to the application of ICT for development (ICT4D) in African and Asian countries, an increasing popular theme in the development literature (Adera et al., 2014; Tongia et al., 2005).

The contributions are collated in three sections. Section 1 is entitled 'Conceptualising digital divide and ICT for development' and comprises two chapters. The six chapters of Section 2 (Dynamics and kinetics of the adoption, use and appropriation of ICTs in developing societies) present cases from Swaziland, China, South Africa, Bangladesh and India. Section 3 is the final section and is entitled 'Policy and practitioner implications'. Its three chapters deal with some philosophical aspects of economic growth, digital ethics and e-government and the role of information technology in maritime ports, but neither policy nor practical implications are provided.

In the first chapter, entitled 'A critical review of the ICT for development research', Bidit Dey (Brunel University, UK) and Faizan Ali (Florida State University, USA) appraise the role of ICT in alleviating the global and regional imbalances known as the digital divide, which the authors define as the lack of access to ICT because of social inequalities, lack of skills and/or absence of incentives. They attempt to arbitrate between those who are optimistic about bridging that divide and those who do not share that optimism with examples on the diffusion, operations and sustainability of ICT-driven projects within excluded communities. It can be inferred from their presentation that ICT projects can be effective in one or more ways:

1 providing basic needs to the mass of the population

2 empowering the weaker segments of society

3 encouraging rural development.

The authors believe that these objectives can be achieved by providing timely market information, through private sector, donor-driven and commercial initiatives. ICT-based entrepreneurial ventures can also create jobs provided that a bottom-up approach is adopted (p.16).

Unfortunately, the authors did not provide any evidence that economic growth per se has reduced poverty. Neither did they explain how 'bottom of the pyramid' communities could establish the necessary infrastructure and nurture the necessary individual and societal skills to harness the complex and costly process of acquisition, absorption and utilisation of new technologies. This is surprising because in the various studies they cite, the technology was parachuted, under the stewardship of outsiders pushing for ready-made solutions onto the 'targeted communities' (sic, p.15, l. 11). Furthermore, given the rapid obsolesce of ICT, as illustrated by the Village Phone Program (VPP) in Bangladesh (p.10), it is not clear how would rural communities acquire the knowledge and the wherewithal to manage the transition to the next generation of technologies. None of the developmental theories they cite include cultural and contextual variables in the understanding of ICT diffusion, which seems to be a deficiency in that literature because is it well know that that human factors are as important as the technology in the success of projects (Drouin et al., 2010).

Another area that the authors have missed is the contribution of ICT (internet, mobile applications, satellite transmission) to formal education in isolated communities and to online resources (video and audio records, teaching materials, puzzle, etc.) that link new generations to the remaining speakers of endangered languages (Grounds, 2010;

Oppenneer, 2015). More importantly, they have overlooked the successful ICT development experiences in Korea and China (El Fakir, 2008; Von Zedtwitz and Jin, 2007; Jin and von Zedtwitz, 2008).

Chapter 2, 'Structurational explanation of technology adoption in ICT4D: a throwback to Giddens' by Sanjay Bhowmick (Northumbria University, UK), presents structuration as a conceptual construct that emphasises the contribution of social agents in ICT4D. The chapter reiterates what was stated in the first with respect to the importance of the end-user, albeit with a more obscure language ("structure exists as 'instantiated in (agentic) action'" – p.27 or "development initiatives through new-for-the-community technology need to interact with existing signification and legitimation structures adopting high interactive communication strategies to encourage adoption" – pp.33–34). Simply stated, the long-term success of ICT projects depends on their harmony with the existing social structure and societal preferences. This is one of the lessons that the author derived from the e-choupal initiative in India where farmers' knowledge complemented the ICT structure that ITC Ltd. provided. In other terms, planning of ICT projects should go beyond the strict technical aspects and consider a community's social structure and social practices. Surprisingly, the author does not guide the reader to any available document on the subject, such as Tongia et al. (2005, pp.60–61) as if the average reader has to be well acquainted with e-choupal.

According to Giddens's social theory, structure has a dual role as an enabler and a constraint. Individual agents reproduce the social structure by repeating acts that shape social life. Simultaneously, the social structure evolves when people modify the way they conform to the traditions, institutions, moral codes, and established routines, including if they ignore or replace them with new ways. For example, language is a means of communication with its own rules and conventions that evolve gradually as new conventions are elaborated and gain wide acceptance. To the reviewer, this means that Gidden's theory is more applicable to the adaptation and evolution of technologies than to its initial diffusion and adoption, where better theories are more helpful. The theory of technological capabilities, for example, stipulates that imported technology should match the skills and needs of the new environment and that a modicum of technological capabilities is needed to absorb imported technologies (Katz, 1987; Lall, 1987). Furthermore, collective and individual learning by doing is already an integral part of the concept of interactive learning spaces due to Arocena and Sutz (2000, 2002). Similarly, structuration does not explicitly take into account market factors (labour, capital, technology) nor does it provide guidance on the development of technological capacity. Finally, it is not clear to the reviewer why Giddens' theory deserves such attention, given that none of the remaining chapters refer to it explicitly.

The chapter 'Impacts of information and communication technology implementations on regulated financial services. The case of Swaziland' is authored by Hillol Bala (Indiana University, USA), Akshay Bhagwatwar (Northern Ilinois University, USA) and Moshtaq Ahmed (NybSys, South Africa). It narrates a post-implementation evaluation of a turnkey ICT system designed to administer payroll deductions for public employees and to limit the amount advanced to one third of the basic salary. In the implementation phase, however, only micro-lenders were compelled to participate, so lending was shifted to other financial institutions such as insurance companies and cooperatives. The authors are silent as to how to qualify the project, even though it does not look to this reviewer like a successful transfer of technology.

Raffaele Filieri (Northumbria University, UK) is the sole author of the chapter entitled 'How young Chinese consumers choose among different smartphone brands: The importance of social-cultural and marketing factors'. The chapter identifies three factors affecting the popularity of smartphones in China:

1 brand and marketing

2 friends and family

3 features.

The author interprets the influence of friends and family as an indicative of the collectivist nature of Chinese society, even though peer group pressure is no less effective in more individualistic countries. Similarly, brand popularity is related to the "Chinese respect for social norms and group orientation" (p.65) but there is no comparison with the factors that affect brand popularity outside China. Finally, the conclusions are based on a limited sample of 25 face-to-face interviews of Chinese students from affluent families.

The focus of 'Global tools enhance local exchange through community currency in an alternate economy' by Liezl Coetzee (University of Stellenbosch, South Africa) is on an alternative currency developed in Cape Town, South Africa through the Community Exchange System (CES)[1]. CES is the local version of the Local Exchange Trading System (LETS) movement that aims to strengthen the local economy through use of local currencies. CES members are allocated a starting credit upon participation but they pay a levee per transaction. The author relates the CES currency to the gift economy that Marcel Mauss (1925) described as centred on reciprocal obligations that strengthen the social fabric, but does not show what role reciprocity plays in this currency. Also, it is also not clear how the credit limit can be raised. Rather, the author focuses on the how the web facilitates maintenance of a ledger and does not dwell on the fact that the overall system is unbalanced because there is no way to enforce the debit limits of individuals. The author also avoided any discussion on the long-term viability of the currency, given this structural imbalance.

Mobile technologies (voice, high-speed internet and smart phones) have more than compensated the gaps in the physical infrastructure in many places. Bidit Dey (Brunel University) and Ben Binsardi (Glyndwr University) in the chapter entitled 'Appropriation of mobile telephony at the bottom of the pyramid' track how Bengali famers had adopted mobile technology in ways unforeseen by the system designers[2]. Five groups of farmers from different social categories (ranging from large landowners to small sharecroppers) were observed as they appropriated mobile phones in their daily interactions. For example, all family members may share the same terminal or use features that do not require technical literacy such keeping time or taking advantage of colours and pictures. New patterns of communication and behaviour are also observed, including using the missed call feature to alert close associates or relatives without incurring the expense of a call.

Faheem Hussain (State University of New York, Korea), Mashiat Mostafa (Asia University of Women, Bangladesh), and Zyma Islam (Columbia University, New York) consider the use of Twitter in 'Political microblogging: a case study of Twitter in the 'Shabag Movement''. Their study tracks participation in the movement that started in February 2013 in Shahbag, a major neighbourhood of Dhaka, Bangladesh.

Unfortunately, the authors assume that the reader is familiar with Bangladeshi politics and do not attempt to explain the background.

Bangladeshi politics is divided between the Awami League and the Bangladesh National Party (BNP) and its Islamists allies from Jamaat-e-Islami. There is also a personal feud between Sheikh Hasina (Awami) and Khalida Zia (BNP). In 2009, the Awami League government established the International Crimes Tribunal to prosecute crimes against humanity during the 1971 war that lead to the secession from Pakistan. In this war, Jamaat-e-Islami opposed separation and some of its members formed a militia that helped Pakistani troops. In the 2013, the Tribunal sentenced one Jamaat leader, Abdul Quader Mollah, to life imprisonment but non-Islamists wanted him hanged. Bloggers and online activists called for protests at Shahbag. Tens of thousands of people joined and requested for the interdiction of Jamaat-e-Islami. The BNP, Jammat-e-Islami, and Hefazat Islam – a network of madrassas, as well as human rights organisations complained of extrajudicial killings, torture and unfair arrests. Jamaat-e-Islami was banned in August 2013 and retrospective legal amendments allowed the resentencing of Mollah and his execution in December, 2013. Meanwhile, Islamist militants responded by assassinating some atheist bloggers who participated in the Shahbag movement. There were new punitive measures that the government introduced, applied in particular to bloggers on religious issues.

An analysis of the communications through the hashtag #Shahbag shows that a limited number of individuals generated most of the content that was disseminated through the network. However, the results are presented in tabular form and not with visualisation graphs, which makes them difficult to understand.

Meera Sarma in 'Development and use of open source software in India' describes the adoption of open source software (OSS) in government agencies and software companies. Although the author links OSS to the concept of 'ethical hacking' that originated at the Massachusetts Institute of Technology (MIT), she does not mention the associated Free Software Foundation (FSF) (http://www.fsf.org) and its GNU project to develop a Unix-like operating system with a Linux kernel[3]. The author stresses that OSS presents a unique opportunity to bridge the technological gap at acceptable costs, but does not report whether OSS is used in the Aathar national identity scheme launched in 2009 to assign to each citizen a unique 12-digit identification number associated with fingerprints of the ten digits and iris biometrics (Unique Identification Authority of India, 2009).

Economic growth as measured through the evolution of the GDP per capita, represents the increasing ability of a society to produce goods and services at an industrial scale and to satisfy consumer demands. Anupam Das (Mount Royal University, Canada), Syeed Khan (Workers Compensation Board, Canada) and Murshed Chowdhury (Algoma University, Canada) considers the relation between the penetration of mobile phones and Internet and development of 11 Asian countries. They divide the countries into two groups depending on ICT usage. The group of countries with high ICT usage comprises Korea, Malaysia and Singapore, where high bandwidth communications and wireless broadband are available in major urban areas. The second group of countries (Bangladesh, China, India, Indonesia, Pakistan, the Philippines, Sri Lanka and Thailand) have the challenge of providing broadband connectivity in rural areas. In the second group, non-governmental organisations play a significant role. In Bangladesh, for example, Grameen Telecom financed women in Bangladeshi villages to buy mobile phones to help them with their businesses through the microcredit activities of the

Grameen Bank. This contrasts with massive government-led investment in Korea to build the information super highway. According to the authors, this comparison highlights the importance of government leadership in the establishment of ICT infrastructures and in driving private-public partnerships. Finally, the authors developed an econometric model that attributes 1.7% of GDP growth to mobile phone subscriptions, while the effect of Internet on growth is between 1.8% and 2.1%, depending on whether population growth is considered.

In the chapter entitled 'Digital divide, digital ethics, and e-government', Subhajit Basu (University of Leeds, UK) stresses the importance of the regulations in responding to the special needs of socially delegitimised groups. The author expresses concerns about a new colonisation through the information society.

Karim Sorour (Northumbria University, UK) and Loay Abdul-Mageed (Arab Academy for Science, Technology, and Maritime Transport, Egypt) are the authors of the final chapter: 'Enabling better port governance in developing countries: the role of information technology'. They build the case for improved seaport governance through an IT system called port community system (PCS). The purpose is to integrate the various stakeholders involved in national and international cargo transit to enhance seaport governance through transparency and improved service delivery.

It should be noted that IT applications in the management of the global supply chain started more than 40 years ago. For example, the Department of Customs and Excise of the UK developed the London Airport Cargo EDP Scheme (LACES) at Heathrow airport in 1971 to speed the processing of documents used in the international trade. This was the basis of the UN Trade Data Interchange (UN-TDI), which became the General Purpose Trade Data Interchange (GTDI) in 1981. The International Air Transport Association (IATA) also developed CARGO-IMP (CARGO Interchange Message Procedures) to improve the processing and tracking of freight. In September 1999, the OASIS consortium[4] and the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) took advantage of new technologies, such extensible markup language (XML) and the World Wide Web, to increase the richness of business-to-business exchanges though electronic business extensible markup language (ebXML). Given that long history, the authors did not explain the lag in the adoption of ITC solutions for the management of seaports. They also did not present the architectures and standards to be used in the proposed PCSs. Finally, because many of issues raised affect the governance of European ports, this chapter seems out of place in a collection devoted to ICT in developing countries.

There is no common measure for economic development uniformly used across the various chapters[5]. Some of the main results are already well-established outside the development area; for example, that context is a key success factor in ICT implementations is already known in the project management literature (Drouin et al., 2010).

In many chapters, the contributors seems to assume that the reader is familiar with many concepts and historical backgrounds and do not explain the jargon they use, e.g., 'bottom of the pyramid' on pp.25–26. What makes this absence more egregious is the lack of a glossary for the acronyms used throughout the book[6].

The index is neither complete nor is consistent in the selection of its entries. Here are some of the items missing: p.6, India and China, p.7, Chile, India and Mexico; from p.8, Vietnam, Columbia, Burkina Faso, Ghana, Mali, Senegal, Uganda, Zambia, the

International Institute of Communication Development (IICD), Manobi, WAP, Alcatel, Sonatel, Canadian International Development Center; p.9, the Philippines, VPP, Grameen Bank of Bangladesh; p.15, Japan, Korea and Nepal; p.25, adaptive structuration theory, p.26, bottom-of-the-pyramid; p.147, Bangladesh, India, Indonesia, Korea, Pakistan, Philippines, Thailand, but not China, Malaysia or Singapore, etc. The index references the 'technology acceptance model (TAM)' and the 'theory of planned behaviours (TPB)' on p.61 but not in p.69 and does not refer to TAM in p. 12. IDF is mentioned in the text in p.69, but is not in the index (presumably this is a typographical error and what is meant in IDT, i.e., the innovation diffusion theory). The concept of 'duality of structure' is in the index but not 'knowledgeability' (pp.27, 29). On p.127, the reference Ghannam (2011) is not in the proper alphabetic order.

In their preface, the editors define their goals as follows:

1 To evaluate various theoretical and disciplinary perspectives towards ICT deployment for development studies

2 To identify and assess the dynamics and kinetics of ICT adoption use and resulting impacts;

3 To evaluate the advantages and challengers of using ICTs in developing societies

4 To pay attention to the cultural and contextual variables and peculiarities in different societies

5 To draw the relevant policy implications for commercial and not-for-profit entities in developing societies

In the opinion of the reviewer, none of these goals were met in their totality.

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Notes

1 The website that the author has offered (p.84): http://www.ces.org was no longer active on 25 January 2016.

2 It should be also noted that the GSM developers had not anticipated the popularity of SMS, even though it was part of the first agreement on GSM services [Gow and Smith, (2006), p.55; Hillebrand, (2002), p.267].

3 The combination GNU/Linux is typically called 'Linux'.

4 This consortium, founded in 1993, groups the main software developers and system integrators and focuses on standards for web services.

5 Economic development can be measured in several ways such as the value of the gross domestic product (GDP) per capital, the amount of capital formation, the degree of import substitution, the quantity and quality of exports, the overall well-being of the population in terms of health, education, income distribution, knowledge accumulation, etc. (Burton, 2001).

6 For the example, the biography of one contributor (Mashiat Mostafa) mentions her studies at AUW (p.xix) without indicating that this is the Asia University of Women at Chittagong, Bangladesh.