

# Preface

## PREAMBLE

UNDP has been defining human development as “the process of enlarging people’s choices,” said choices being allowing them to “lead a long and healthy life, to be educated, to enjoy a decent standard of living”, as well as “political freedom, other guaranteed human rights and various ingredients of self-respect” (UNDP, 1997, p. 15). Human development is a well-being concept within a field of international development. It involves studies of the human condition with its core being the capability approach (Google/Wikipedia definition).

The word “ubiquitous” can be defined as “existing or being everywhere at the same time”, “constantly encountered”, and “widespread”. When applying this concept to technology, the term ubiquitous implies that technology which is everywhere and we use it all the time (RECT, 2016). Ubiquitous technology is often wireless, mobile and networked, making its users more connected to the world around them and the people in it.

Along this discourse, human computer interaction (HCI) came into being with the mission of understanding the relationship between humans and computers. However, the relationship has altered radically with the changes in socio-technical arena that many researchers and practitioners are questioning about its domain and reach in upcoming years. Computer systems have entered into our lives in such a way that it appears that they are monitoring as well as guiding us, including the provision of providing all-out support in versatile forms (Sellen, Rogers, Harper & Rodden, 2009, Echeverria, Nussbaum, Calderon, Bravo, Infante & Vasquez, 2011, Jacko, 2012).

The contemporary world is changed by technologies which have profoundly transformed our living. Computers are increasingly becoming part of our daily environments, in public places like airports and shopping malls, or in private places such as our home and office. This transformation has extended our minds to become open to the world. With versatile usage of computers, it has become part and parcel of our livelihood and living (Rogers, 2009).

Simultaneously, with affordable computing devices, like mobile phones, accessibility has increased across the globe. More and more people are using computing devices to reach each other in various forms and natures. In the age of this technology era, through the utilization of social networks, the reach of usability has become ubiquitous in nature. A village farmer in the Amazon, a schoolchild in Nigeria, or an elderly person from Australia is communicating with each other uninterruptedly across the globe at any time, at any place.

Upholding these concepts and contexts, the book, has tried to include research topics and agendas on ubiquitous usage of technologies for human development. The book has incorporated topics from e-learning and e-business to topics on open innovation with emphasis on ICT4D.

## **ORGANIZATION OF BOOK CHAPTERS**

Chapter one discusses about a specific trend in the aspect of information and communication technologies for development (ICT4D) that is modernization. Since evolving into an established science in the 1990s, the field of ICT4D has seen unprecedented and fast-growing rates of publication, curriculum venues, and development projects around the globe. To this context, ICT4D literature is informed by a variety of theories, such as capability approach, livelihoods, participatory development and others. In the process of asserting its body of knowledge, however, ICT4D has tended to overlook the theory of modernization. For example, under labels such as technology fix, technology transplant, a computer per child, etc., the theory of modernization has been equated with the failures of and threats against development. At the same time, the theory of modernization has lost its value among development practitioners and theorists. This chapter assesses the theory of modernization. The author argues that there is no such thing as a developed nation without modernization. The chapter derives some points of departure for contemporary ICT4D research.

Information and Communication Technologies (ICT) are tremendously influencing every discipline under the sun including Education. It is affecting every aspect of education from teaching-learning to assessment and evaluation. It improves the effectiveness of education. It aids literacy movements. It enhances scope of education by facilitating mobile learning and inclusive education. It facilitates research and scholarly communication. Impact of ICT and its potential for the education field is manifold. It positively affects all the stakeholders of the education field. Chapter two discusses the various aspects of ICT in education along with the various challenges posed by ICT. Author argues that the challenges include economical issues, educational and technical factors. Author further argues that appropriate content, design and workability of ICT also play a crucial role in adoption of ICT in the education field. The chapter delineates in brief the challenges and probable solutions.

Chapter three explains the theory behind an information communication technology (ICT) being developed to provide marginalized populations with a tool for uniting the voices of progressive-minded activists. The theory suggests that with this technology, seemingly incompatible progressive groups might enlarge their campaigns for social equity, creating a global, heterogeneous network. The author emphasizes that the ICT allows for the capture of crowd-sourced artistic creativity, and through algorithms that have been shaped by academics in public administration, makes content retrievable as pluralistic, policy-supporting narrative threads. In this aspect, the new narratives should also work to alter the discourse within communities by diminishing the worldview threats associated with zero-sum ideology. This ICT is seen as vital because of how powerful lobbyists have consistently been successful in skewing the outcomes of policymaking decisions and elections. The author also emphasizes that the system is firmly rooted in the small-group, consensus-building organizational theories of respected authors dating back to the 1970s.

The use of Information and Communication Technology (ICT) in education, which is gaining momentum in the new era of globalism as the telecom revolution has hastened the pace of globalization and vice-versa; along with the catalyst role ICT-enabled education plays in promoting inclusive growth and human development for all. Chapter four discusses the use of ICT in the Indian classroom. Author argues that ICT in education is becoming universally popular and widespread as people across the length and breadth of the globe are looking at ways and means to improve educational access through modern technology and techniques. Along this context, author further argues that emerging economy like India embarked on their 'New Economic Policy' in 1991 with the help of accelerating economic

growth facilitated by modern technology and communication systems in almost all areas ranging from banking to trade to education.

Collaborative learning experiences not only promotes critical thinking and reflection in students but also encourages them to develop a sense of community, thus enabling the creation of an environment in which further collaborative work can happen. While technologies to facilitate collaborative learning include a range of features and functionalities, chapter five focuses on ten types of tools that deals with idea generation and brainstorming, mapping, design, online group work and document collaboration, and online communication. This chapter explains the online collaboration with its features, preparation required by institution and role of teacher presence in online learning. It highlights various tools based on its function with suitable examples. It also explores paradigm shift from academic librarian to blended librarian, possible hurdles and benefits. The blended librarian is versed in both print and online tools and can help faculty meet course goals, regardless of the medium or technology. The chapter concludes with how the idea of an online collaborative learning methodology is likely to evolve and make significant benefits to education, and probably to post-educational business collaboration as well.

New advances of Information and Communication Technologies (ICT) continue to rapidly transform how business is performed and change the role of information systems in business and our daily life. In this context, the importance of supporting decision making for improving business performance is becoming crucial and at the same time, a challenging task in enterprise management. The amount of data in our world has been exploding and Big Data represents a fundamental shift in business decision-making. Analyzing such so-called Big Data is becoming a keystone of competition and the success of organizations which depend on fast and well-founded decisions taken by relevant people in their specific area of responsibility. Business Intelligence (BI) is a collection of decision support technologies for enterprises aimed at enabling knowledge workers such as executives, managers, and analysts to make better and faster decisions. Chapter six reviews the concept of BI as an open innovation strategy and address the importance of BI in revolutionizing knowledge towards economics and business sustainability. Authors emphasize that using Big Data with Open Source Business Intelligence Systems will generate the biggest opportunities to increase competitiveness and differentiation in organizations. In this chapter, authors describe and analyze four popular open source BI systems - Jaspersoft, Jedox, Pentaho and Actuate/BIRT.

E-learning includes several types of media which delivers text, audio, images, animation, and streaming video, and includes technology applications and processes, such as audio or video tape, satellite TV, CD-ROM, and computer-based learning, as well as local intranet/extranet and web-based learning. E learning is a learner-friendly mode of learning, offering alternative, self-paced and personalized ways of studying. Chapter seven explains the synchrosdnous and asynchronous mode of e learning with its available features. It also defines and summarizes the impact of open source software on teaching and learning process. The numerous open source e learning tools are being discussed with examples, such as Open source LMS, Open source authoring tools, Open source audio editing software, Open source social bookmarking tools, Open source CMS and others. It also throws light on free e learning tools useful in e learning such as Slideshare, Youtube, Wikis, RSS, Wordpress etc. The search engines especially for academic purposes and for Open CourseWear are also discussed in the chapter. Furthermore, it identifies open courseware around the world spanning various subjects. The chapter concludes with various e learning initiatives in India.

Chapter eight discusses about two issues that are prevalent in community media, such as Information communication technology (ICT) and Community participation. While several studies have explored community media and ICT in Uganda, the view that ICT has changed the way media operate to an

## **Preface**

extent of reversing the agenda-setting role to the listeners needed further investigation. Using Kagadi-Kibale Community radio (KKCR), the chapter shows how ICT is spreading in one Ugandan region and the relationship that technology has with participation in community media activities. Findings of this research show that there is need to redefine the relationship between ICT and geographically defined community media as usage of ICT is dependent on forces that still require decades to harmonize. The chapter, therefore, suggests that an alternative to community media, herein called Basic Media, is best suited to match the communication patterns of a developing world.

Along the context of ICT4D, innovation is treated as a recognized driver of economic prosperity of a country through the sustained growth of its entrepreneurships. Moreover, recently coined term open innovation is increasingly taking the lead in enterprise management in terms of value addition. Foci of academics, researchers and practitioners nowadays are revolving around various innovation models, comprising innovation methods, processes and strategies. Chapter nine seeks to find out various open innovation researches and practices that are being carried out circumscribing development of entrepreneurships, particularly the sector belonging to the small and medium enterprises (SMEs) through a longitudinal study. Along this context, the chapter put forwards part of a continuous study investigating into researches in the area of open innovation for entrepreneurship development that are being carried out by leading researchers and research houses across the globe, and at the same time it is also investigating open innovation practices that are being carried out for the development of entrepreneurships, emphasizing on SMEs. Before conclusion the chapter has tried to develop a framework to instigate future research.

It is well known that a large number of ICT for development (ICT4D) projects experience a variety of challenges, especially when conducting field research with disadvantaged communities in developing nations. Using cluster analysis, chapter ten identifies the six most common factors associated with a majority of ICT4D project challenges, and depicts the inter-relationship between these factors and over 100 distinct challenges reported by existing literature. In addition, based on the secondary analysis of 380 research artifacts in the ICT4D literature, this chapter proposes ways to manage the scope, time, costs, quality, human resources, communication, and risks for addressing ICT4D project challenges. Findings of the research inform researchers about the best practices for conducting ICT4D research with disadvantaged communities in developing nations.

In spite of the increased acceptance by most of the corporate business houses around the world, the adaptation of strategies and concepts belonging to the newly evolved dimension of entrepreneurships, the open innovation (OI), countries in the East, West or South are yet to adapt appropriate strategies in their business practices, especially in order to reach out to the grass roots communities, or to the masses. So far, firms belonging to the small- and medium-sized enterprises (SMEs) sector, irrespective of their numbers and contributions towards their national economies are lagging behind far in accepting open innovation strategies for their business advancements. While talking about this newly emerged business dimension, it is comprised of complex and dynamically developed concepts like, management of various aspects of intellectual property, administration of patents, copyright and trademark issues or supervision of market trend for minute details related to knowledge acquisition. All these issues are largely responsible to add value to the business plan in terms of economic or knowledge gain, and organizations acting in this aspect deserve comprehensive research and investigation. As most of the developed countries are already in the advanced stage in adopting open innovation strategies, finding this as a weak link in terms of entrepreneurships in less developed countries, chapter eleven intends to seek answers related to the mentioned issues focusing adaption of open innovation strategies in developing and transitional economies. It is a study on business houses or national efforts from countries belonging to these catego-

ries, deducting from a longitudinal literature review. The chapter goes on looking into other aspects of business development incorporating various OI concepts, synthesizes to build a reasonable framework to be applicable in the target economies, points out to some future research aspects and concludes the finding of this research. This study expects to enhance knowledge of entrepreneurs, academics and researchers by gaining specific knowledge on trends of open innovation strategies in developing and transitional countries.

While talking about successful entrepreneurship and value addition within an enterprise through innovation, one could realize that the innovation paradigm has been shifted from simple introduction of new ideas and products to accumulation of diversified actions, actors and agents along the process. Furthermore, when the innovation process is not being restricted within the closed nature of it, the process takes many forms during its evolution. Innovation has been seen as closed innovation or open innovation, depending on its nature of action, but the contemporary world may have seen many forms of innovation, such as technological innovation, products/services innovation, process/production innovation, operational/management/organizational innovation, business model innovation or disruptive innovation, though often they are strongly interrelated. Definition of innovation has also adopted many transformations along the path, incorporating innovations within the products, process or service of an enterprise to organizational, marketing, or external entities and relations. Nature and scope of agents and actors even vary widely within the innovation dynamics, when the open innovation techniques are being applied to enterprises, designated as small and medium enterprises (SMEs).

Researching in this paradigm, one has to look for some underlying issues that should be attended through responding to research questions as the research continues. Among many of the fundamental questions on innovation advancement for SMEs development there are a few, how to acquire precise information on the flow-chart of their business operations, gain knowledge on specific parameters of their business processes, utilizing existing potential capacities to extend their knowledge towards successful innovation acquisition and dissemination, and to extend their knowledge platform through various capacity development initiatives. They aggregate further, when issues of opportunities and challenges are being researched along the path of SME development through open innovation. Along these aspects, chapter twelve ascertains diverse aspects of opportunities and challenges surrounding the open innovation processes, and designs action plans to empower SMEs in reaching out to the grass roots communities utilizing open innovation strategies. Primary focus of this research is to enable SMEs in finding out their innovation potentiality and empower them through various capacity development initiatives. However, the specific focus will adhere to adaptable technology transfer through open innovation. Along the route to justify the research potential and validate the research hypotheses (whether this research will add any economic value or knowledge gain), this study will conduct an extensive literature review on the various patterns of open innovation (crowdsourcing or collaborative), investigate case studies to learn about intricate issues surrounding their operational strategies (conducted by European Commission, OECD and similar institutions) and conduct surveys among selected SMEs (email, web based, egroups) in several phases. Research design includes the formulation of strategies to resolve acquired research questions; collection and recording of the evidences obtained from the literature review or case studies or surveys; processing and analyzing gathered data and their appropriate interpretations; and publication of results. Analysis included both qualitative (descriptive and exploratory) and quantitative (inferential statistics) methods.

Chapter thirteen covers design experiences gained by working with two non-governmental organizations and one day-labor organization for the informal job seekers and employers—day-labor market

## **Preface**

(DLM). The three design architectures implemented for the DLM organizations are presented. On critically discussing the designs, it is found that even when users are portrayed as similar in the way they work and the things they do, their Information Management Systems (IMS) functional software requirements remain contextual up to the details. The synthesis of the designs shows that there is a need to focus on the different functional information needs, including the ones that may seem insignificant even where non-functional requirements may be the same for seemingly similar users. From this argument, it is important to note that information systems designers, especially for Day labor market organizations, should go deeper into their users and beyond the “about us” information to understand the unique features and requirements of each user group. The chapter concludes that designers should not assume that seemingly similar organizations/ users can be approached from the “one size fits all” IMS perspective.

## **CONCLUSION**

Including research and case studies ranging from e-learning to open innovation, this book has created a separate sphere of study in the aspect of ICT4D. The book will find importance not only in the research arena to researchers, but also in the practical world to practitioners. The book stands on its own with the inclusive research potential and innovative study.

*Hakikur Rahman*  
*BRAC University, Bangladesh*  
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