Preface

The continuous accelerating advances in information and communication technologies (ICT) research create a necessity to possess a concise list of current research on emerging opportunities, issues, and challenges in the field. This will not only enable fresh researchers to get started with their research work but also enable instructors of ICT research courses to better prepare their students especially at postgraduate level.

This collection, entitled *Cases on ICT Utilization, Practice and Solutions: Tools for Managing Day-to-Day Issues* provides practical examples of how some researchers used different tools to solve many day-to-day computing problems, as well as covering the future research direction in the field. The book will be valuable reading material for every postgraduate student in various ICT fields. The book summarizes present past, current, and future research directions in different fields of ICT by providing in-depth insight into the current state of research; identify successful approaches, tools and methodologies in ICT research; explore points of good practices, while addressing potential pitfalls to avoid, and examining and evaluating solutions to some of ICT researchers’ toughest challenges.

This book is organized in five distinct sections, providing the most wide-ranging coverage of topics such as: (1) Fundamental Research Concepts and Methodology; (2) Web Services and Technologies; (3) ICT Outsourcing; (4) Security Issues and Implications; (5) Other application areas. The following provides a summary of what is covered in each section:

Section 1, Fundamental Research Concepts and Methodology, forms the foundation of the book. The first chapter addressed crucial theories essential to the understanding of research methodology within the field of information and communication technology. The case in this section investigated the challenges of interpretive, case study research strategy and empirical techniques applied in the information systems discipline. It focuses on the realistic challenges that researchers face while conducting a qualitative, interpretive, case study, particularly during data collection.

Section 2, Web Services and Technologies, provides in-depth coverage of different web services as well as technological frameworks to provide the reader with a comprehensive understanding of the emerging technological developments within the field. The section presents an extensive coverage of various tools and technologies such as mobile, web 2.0, advances in semantic web and ontologies, e-commerce and e-filling that practitioners and academicians alike can utilize to develop different techniques. The section also addresses the issue of integrating information and communication technology in teaching and learning.

Section 3, Information Technology Outsourcing (ITO), presents an in-depth look into various challenges facing ITO industries. Real case study on health information systems (HIS) outsourcing was also discussed. The section enlightens readers about fundamental research on one of the many methods used
to facilitate and enhance the ITO. Through these rigorously research cases, the reader is provided with examples of research methods and the analysis of relevant issues in the field. Solutions and recommendations are provided to deal with key issues that are critical in the management and implementation of ITO.

Section 4, Security is an essential element of information technology infrastructure and applications. Concerns about security of networks and information systems have been growing along with the rapid increase in the number of ICT users and the value of their transactions. The hasty security threats have driven the development of security numerous measures to detect and protect the ICT infrastructure ahead of the threat. Though a lot of information is available on the internet about security methodologies, tools and techniques but it all is spread on so many sites and one has to spend a considerable part of his precious time to search it. In this section, a thorough survey has been made in many cases/chapters to facilitate and assist the researchers in various security issues. The issues and defend challenges in fighting with cyber attacks have also been discussed. The section provides best available up-to-date advancement in the area. The practical implementation of core tools such as biometrics, encryption, spam detection methods, and authentication systems used for protecting both wired and wireless networks were discussed.

The concluding section (5) of this book highlights research potential within the field of fiber optics, while exploring details study of erbiumdoped fiber amplifier (EDFA and erbium doped fiber laser (EDFL). In this section, research papers have been reviewed to show and clarify their strengths and weaknesses from different perspectives. It concludes by describing the future direction in optical communication particularly in EDFA and EDFL.

The second part introduces a general-purpose simulation package for power electronics. However, because of the generality of these tools and their drag-and-drop and ad-hoc features, learners usually face problems in designing a converter circuit. In this section, the problem above is addressed by introducing a design aid tool that guides the student over prescribed steps to design a power electronics circuit.

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