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IFIP – The International Federation for Information Processing

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

> IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is about information processing may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly, National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

Yogesh K. Dwivedi Helle Zinner Henriksen
David Wastell Rahul De' (Eds.)

Grand Successes and Failures in IT

Public and Private Sectors

IFIP WG 8.6 International Working Conference on Transfer and Diffusion of IT, TDIT 2013
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Preface

This book presents the proceedings of the 2013 Conference of Working Group 8.6 of the International Federation for Information Processing (IFIP). The focus of WG8.6 is the diffusion, adoption, and implementation of information (and communication) technologies. This was the first time that the Group had met outside of its usual haunts, of North America and Europe, apart from one visit to Australia. We were delighted that the Indian Institute of Management in Bangalore agreed to host the conference. Not only is this an important step in broadening the international reach of the Group, but with Bangalore known as the Silicon Valley of India, reflecting the city's position as the nation's leading IT exporter, what better place in which to gather!

The central theme of the 2013 conference was the continuing difficulty of bringing information systems (IS) projects to successful fruition. Despite decades of research and the accumulation of a substantial knowledge-base, the failure rate of IS initiatives continues unabated. The recent abandonment of a multi-billion dollar project to computerize health records in the UK, the National Programme for Information Technology (NPfIT), provides just one spectacular recent example, and sadly it is not difficult to unearth more, as the papers in the book attest. Why is this so, we asked in our Call for Papers? Is the fault one of theory and inadequate understanding? Or is the problem one of knowledge transfer, the failure to embed research knowledge in the working practices of managers and policy-makers?

The primary aim of the conference was therefore to help advance our understanding of the success and failure of technology-based innovation. We asked a number of rhetorical questions to stimulate debate and reflection. Whether our theoretical base is too narrow was one such question. It is arguable that some theories, such as diffusion theory and the ubiquitous TAM (Technology Acceptance Model), have been over-represented in our research endeavors. Or maybe IS researchers have become too infatuated with theory, making our work inaccessible to practice? Papers addressing theory in a critical way were therefore very welcome, presenting and illustrating alternative conceptual lenses and standpoints.

While the conference theme explicitly invoked "grand successes and failures," the scope was not limited to large projects, and papers addressing smaller initiatives were explicitly encouraged. Indeed, we asked, perhaps there is much to be learned from considering questions of scale. Extending the variety of research methodologies was another area where we thought innovation could assist progress in the research community. Finally, we felt that there were organizational contexts that have also been relatively neglected. The bulk of IS research has tended to concentrate on commercial enterprises, yet the degree of

contemporary IT-enabled change in the non-profit sectors is at least as great, and the challenges arguably stiffer.

The Call for Papers solicited submissions in two main categories: full-length journal style papers and short papers, which could be research in progress or polemical "position papers." In total, 65 submissions were received, representing a broad international cross-section of authors. While the majority were from the UK (29%), there was a strong local showing, with 19% of authors from India. This was our first meeting in a developing country, and we were very pleased with the high number of local submissions. A further 24% of authors were from western Europe, with The Netherlands and Scandinavia leading the way, followed by the US and Canada (13%). Australia and Singapore each represented 5% of the authorship, and other countries included Bangladesh, South Africa, New Zealand, and Namibia. The reviewing process was rigorous, with two independent reviews sought, and we are indebted to the international Program Committee for the sterling work they did, and the constructive feedback they provided, which enabled authors to improve their papers. Without their support, this conference would not have been possible. Although rigorous, the review process was nonetheless conducted in an inclusive, developmental spirit. Some full papers, for instance, which did not reach the acceptance threshold were felt to contain ideas of genuine merit. We wanted to give the authors an opportunity to share these with colleagues; authors were given the option of preparing a short paper and almost all took advantages of this.

The final set of 35 full papers appearing in these proceedings were clustered into five main groups, and appear in successive sections of the book. The majority (10) directly addressed the conference theme of IS success/failure; these papers are presented in Part I. Studies of the adoption of IT (typically using TAM like models) have been strongly represented in the work of WG8.6 since its inception, and five papers were assembled under this heading (Part II). Software development is another perennial theme of WG8.6, and four papers had this as their main focus (Part III). A large group of papers (nine in number) examined IT in the public sector; these are compiled in Part IV. The final set of seven papers addressed more general aspects of IS theory and methodology (Part V). In each part, note that papers are listed alphabetically according to the family name of the first author.

Papers in Part I, as noted, address the central issue of the conference, IS success, and its dark side of IS failure. *Bunker* et al. focus on multi-agency disaster management systems arguing for a greater focus on collaboration between organizations in their development. Using extensive survey data, *Coakes et al.* identify success factors for knowledge management projects, drawing on sociotechnical design principles. In the next paper, *Devos et al.* interrogate the failure of an outsourcing venture, particularly the role played by contractual factors. Based on a wide-ranging review of the literature on failure factors, *Dwivedi et al.* propose a taxonomy that takes into account project stages, failure type, and national context. *Elbanna and Linderoth* focus on motivations and drivers where IT adoption is voluntary, using a telemedicine case study to illustrate

their argument. In a novel application of Bartel's theory of market separations, *Gunupudi and De* analyze the problematics of an agricultural market information system in India, while *Janssen et al.* focus attention on the special characteristics of large-scale transformation projects. *Papazafeiropoulou et al.* examine the reasons for improved supply chain performance in a supermarket chain through the implementation of its "green" logistics strategy. Failure factors in a developing country context are next investigated by *Vaidya et al.,* basing their fieldwork on an agricultural marketing project in India that was ultimately abandoned many years after inception. The final paper in Part I, by *Waring et al.,* reflects on the success of a local heath project in the UK focusing on stakeholder engagement.

Part II of the volume contains five papers on IT adoption. Examining the Australian livestock industry, *Hossain and Quaddus* identify market pressure, cognitive pressure, and government support as key drivers of RFID adoption. *Kapoor et al.* find low predictive value for some "innovation attributes," such as relative advantage, for an Indian interbank payment service, although cost did exhibit a strong link with adoption. In a literature study, supplemented by qualitative analysis, *Landeweerd et al.* present a theoretical analysis of user adoption for various Google products; they are pessimistic for Google Health, but positive for Google Search. *Rana et al.* develop an IS success model based on TAM that predicts positive outcomes for a "public grievance redress" system in India, highlighting the model's potential for enhancing the utility of the system. The final paper in this section, by *Srinivasan and Damsgaard*, discusses the tension between the individual orientation of traditional adoption models and "network adoption" in the context of social media.

Part III contains four papers focused on software development. The first two papers specifically examine agile methods. *Baskerville* and *Pries-Heje* analyze the way that agile methods are continuously adapted in practice, characterizing this as a process of fragmentation and "re-articulation," while *Michaelson* looks at the adoption of agile methods in the UK public sector. *Persson* then examines the effectiveness of collocation for collaboration in software development offshoring. Finally, *Thomas and Marath* address the relationship between risk, risk management and the outcome of software projects, using structural equation modeling to develop an integrated model.

Part IV contains a large group of papers addressing ICT developments in the public sector, many in a developing country context. *Bhat* deploys institutional theory, focusing on the way that eGovernment initiatives are legitimated using the example of India's Unique Identification (UID) project. *Brooks and Alam* describe a novel application of "Action Design Research" to develop an information system for land records in Bangladesh. In the next paper, *Haque and Mantode* discuss how information hubs can be created to support sustainable social development and the needs of vulnerable groups, framing their analysis in terms of Actor Network Theory. *Homburg and Dijkshoorn* provide an institutional analysis of the diffusion of personalized services at the municipal level in The Netherlands, emphasizing human agency and persuasion. *Kameswari* applies a "Common Pool of Resources" analysis to two agricultural projects in India,

characterizing information as the "new commons." In an international survey of 187 countries, *Krishnan et al.* address the relationship between dimensions of e-participation and eGovernment maturity. *Molnar et al.* describe a framework for evaluating user experience with high-definition video in the delivery of public services. *Seror* analyzes issues of open source design and sustainability in the context of the Cuban national health care network. The final paper in this section, that of *Thomson and Akesson*, seeks to understand IS development and innovation complexity in governmental IS projects, proposing a novel metaphor, that of "fragmentation."

Part V gathers together a diverse set of papers that take IS theory and/or methodology as their main interest. *Gangadharan et al.* propose a methodology for deciding between the decommissioning of legacy systems and their continuation.*Larsen and Levine* consider the relationships between our discipline and cognate fields using the ideas of discourse communities and families of fields. *Madsen et al.* propose a novel framework for outsourcing decisions, with esthetic, symbolic, and instrumental dimensions; two projects are presented, in Denmark and Bangladesh. *Mkhomazi and Iyamu* examine factors that can guide the selection of theoretical frameworks for IS studies, with a particular interest in socio technically oriented theories. The paper by *Rao and De* then argues for the use of Stone's strong structuration theory (SST) as a lens for studying technology assimilation. *Vaziri and Ghadiri* present a novel neuroscientific model of human cognition for studying human-computer interaction, with specific applicability to problems of demographic transition. Finally, *Wastell* argues for a greater focus on individual variation in design science studies, as opposed to the search for universal principles.

The book is completed by Parts VI and VII that, respectively, compile the shorter papers (research in progress, practice papers, position papers) and poster papers.

In addition to the above papers, there were several invited academic presentations. We were delighted that *Geoff Walsham* accepted our invitation to address the opening plenary. His paper was entitled "Successes and Challenges in ICT-Based Projects: Some Evidence from India." Walsham discussed examples of successful ICT-based systems, going on to develop important implications for IS research. This preface concludes with a précis of his talk, quoting from the abstract he provided. The second academic keynote presentation was by *Karl Kautz*; a full copy of his paper opens the proceedings. The third academic keynote was provided by *Raghav Rao*, Editor of *Information Systems Frontiers*, on the subject of "Community Intelligence and Social Media." An invited essay by the Conference Chair (*David Wastell*) also appears in part V of the book.

In his address, Walsham began by highlighting examples of success in the Indian context, including "the business process and software outsourcing sectors... the phenomenal growth of the mobile phone across all strata of society... as well as specific IS initiatives such as the Indian Railways reservation system, and computerized land registration and bill payments systems in Andra Pradesh." While it is good to celebrate success, Walsham reminded us of the specter of failure

highlighting "the failure of top-down projects to meet needs at lower levels, such as early attempts at the introduction of GIS for land management." He cautions that some of the successes he mentions "are not always easily sustainable over time, or do not benefit all sectors of society, particularly the poor," adding that "further challenges include the need to tackle major projects such as the provision of public health information systems ... where, in order to be effective, change needs to take place in a whole host of other areas such as human capacity building, attitudinal change, financing, and institution building."

In conclusion, Walsham pertinently asks what can IS academics contribute in this space of successes, failures, and complex challenges, making three cardinal points:

Firstly, I wish to argue that theory is a key contribution as a way of trying to generalize our experiences to be of relevance to wider contexts. But our theories of systems design and development do not seem up to the task of dealing with IS in a broader context of major institutional and societal change. We need to extend our theoretical scope and this brings me to a second implication, namely, the need to embrace multi-disciplinarity. I have argued elsewhere that the days of IS being the only player in the field of ICT implementation have gone. I believe that the IS field, with over 30 years of experience of IS diffusion, adoption and implementation, still has a lot to offer, but only if we actively engage with other disciplines with common interests: anthropology, computer science, organizational theory, science and technology studies, geography, sociology, development studies etc. My final point is to argue that the IS field needs to have a clear moral agenda to make the world a better place, rather than, for example, merely to make money. This is needed in order to inspire future generations of IS academics and practitioners that our field is a worthwhile focus for their working lives.

Socially relevant, multi-disciplinary research, guided by a strong moral compass: an inspiring vision for the Working Group and for the IS field in general. We hope that our gathering in Bangalore makes some small but important steps along the road ahead.

April 2013

Yogesh K. Dwivedi
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