

Introducing and Discussing Information and Technology Management for Organizational Innovation and Change

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Abstract This chapter focuses on the interplay between information technology and organizational systems. It introduces the volume, providing a brief overview of some of the most relevant frameworks, approaches, and tools in the IS field which will be discussed later. The volume is divided into II parts, each one focused on a specific theme, such as ‘ICT, organizational innovation and change’ and ‘ICT and knowledge management’.

This book explores a range of critical issues and emerging topics relevant to the linkages between information technology and organizational systems. It encourages debate and opens up new avenues of inquiry in the field of Information Systems, organization and management studies, by investigating themes of growing research interest from multiple disciplinary perspectives such as organizational innovation and impact, information technology, innovation transfer, and knowledge management.

The title of this book, ‘Managing Information and Technology for Organizational Innovation and Change’, already implies the understanding that information and technology are two crucial factors for developing innovation and for managing change within organizational contexts. Information and technology were widely recognised by the managerial literature as a major source of competitive advantage and increased business performance [1, 2]. In the last decades, organizations have increasingly invested in Information and Communication Technology (ICT) for improving their efficiency and effectiveness and thus for providing an opportunity for their businesses. Indeed, ICTs were often recognized as a way to develop organizational innovation and to lead organizational change [3–6]. However, empirical experience has immediately shown that ICT adoption is

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a necessary but not sufficient condition for improving individual, group and organizational performance, so opening the academic debate on the relevance of managing information and technology within an organizational setting.

In respect of other disciplines, the IS literature was often reluctant to generalize the relationships between information technology and organizational change. Building upon the research of Pfeffer [7], Markus and Robey [5] and Orlikowski [8], it is well-known that organizational change could be caused by information technology—the so-called technological imperative, by the motives and actions of information technology designers aimed at satisfying manager’s information processing needs—the organizational imperative, and by the interaction between information technology and its human and organizational users—the emergent perspective. Thus, technology is both an external force influencing organizational structure and the outcome of managers’ strategic choices and social actions. On the other hand, as Orlikowski [8] stated, the link between technology and organizations is affected by the human actions and by the socio-historical context where technology is developed and used.

Recognizing the existence of such different paradigms, this volume stresses the relationships between ICT, organizational innovation and change and looks to enhance their ties. On the other side, it also explores the role of information and knowledge within organizational settings by emphasizing the contribution of ICT in knowledge management activities.

The volume is divided into II sections, each one focused on a specific theme such as ‘ICT, organizational innovation and change’ and ‘ICT and knowledge management’. The content of each section is based on a selection of the best papers (original double blind peer reviewed contributions) presented at the annual conference of the Italian chapter of AIS, held in Genoa, Italy, in November 2014.

1 Part I: ICT, Organizational Innovation and Change

This section explores the relationships between ICT, organizational innovation, and change. The aim of this section is to investigate the factors leading individuals and organizations towards ICT’s adoption and usage, as well as the effects of such technologies on working practices, interaction and communication between people, and the organizational structure.

ICTs are part of corporate transformations in today competitive environments, often enabling new organizational forms and business models both in the Public and Private Sectors. Organizations expect to use the new ICT to run new processes, innovate products and services, reduce operating costs, and improve business management aimed at transforming their internal structures into better achieving organizations. The adoption and usage of ICT is usually accompanied by re-designing the business processes and changes in the organizational structure.

Empirical evidence and academic literature have widely shown that the effective implementation of new ICT is one of the most challenging tasks faced by managers,

since it requires people to understand, absorb and adapt to the new requirements [9, 10]. Managers often consider the implementation and adoption of ICTs as a way for promoting and realizing organizational and managerial changes [11–14]. However, organizational change does not only arise from ICT adoption and usage, but also depends upon a combination of technical and social influences which cannot always be controlled [15, 16]. Indeed, the success or failure of ICT implementation and adoption are mediated by a number of factors, many of which require an in-depth understanding of the organizational context and human behaviour [10, 17–21].

This part of the volume has 10 contributions aimed at exploring the interplays between ICT, organizational innovation and organizational change, by using different methodologies, theories and approaches. These researches stress the role of ICT, discussing the limiting and encouraging factors in technology adoption and usage and the effects of such technology on organizations arising from the interaction with human choices and institutional properties.

Spagnoli, Bellini, and Ghi's paper aims to develop a methodology for evaluating the economic, social, legal and environmental impacts of a cloud computing initiatives in the Italian PA and, in particular, in the Ministry of the Economic Development.

Castelnovo, Sorrentino, and De Marco explore a new e-government initiative in Italy, named municipal One-Stop Business Shops (SUAPs), developed and launched by Italian legislator in 1998 for simplifying government relations with business and industry.

Spinelli analyzes the literature on IT adoption in SMEs and combines perspectives from various research streams in order to identify its determinants—barriers and incentives. The paper explores well-established research areas and aims at highlighting links which are underdeveloped or ignored, and provides directions for future research.

Marchegiani and Rossi's paper also explores the interplay between technology and organizational change, but focusing on the effects of recent technological innovations on the valorization of cultural heritage. This research is aimed at identifying the sense-making that each actor confers to the technological innovations, and its impact on cultural heritage valorization.

Zardini, Rossignoli and Campedelli, instead, explore the interplay between ICT and organization within a peculiar sector of Italian PA, such as the healthcare sector. Using the Zaharia and colleagues framework, the study investigates the impacts of Electronic Medical Record's (EMR) implementation in an Italian university hospital.

Ennas, Marras and Di Guardo investigate the trends in microprocessor market in order to understand if competition between rival technologies can be reopened after a dominant paradigm occurs. The results show the existence of a non-conventional S-curve trend.

Depaoli, Resca, De Marco and Rossignoli aim to assess Claudio Ciborra's legacy of Information Systems Studies and Organizational Studies. Comparing Ciborra's seminal work, 'The Labyrinths of Information', with papers published in

four top IS journals, the research shows that Ciborra's thinking contributed to the swing toward a more praxis-oriented attitude in the IS discipline.

Based on the social innovation literature, and digital social innovation in particular, Passani, Spagnoli, Bellini, Prampolini and Firus's paper analyzes the social, economic, political and environmental impacts of the Collective Awareness Platform for Sustainability (CAPS) by using an ad hoc methodology, such as IA4SI, developed for assessing the projects related to digital social innovations.

Pozzi, Pigni, Vitari, Buonanno, and Raguseo conduct a literature review on the business model studies in the IS discipline. Using an electronic search, the paper provides an overview of business model studies in IS field, highlighting the main research streams and limitations.

Finally, using a case-study method, the paper of Makhoulf and Allal-Cherif explores the consequences of simultaneous implementation of different process approaches in Telkom. The research is aimed at analyzing the contributions of the implementation of these approaches and problems resulting concerning governance, agility and strategic flexibility.

2 Part II: ICT and Knowledge Management

This section explores the relationship between ICT and knowledge management. The aim is to investigate how individuals, groups and organizations manage information and knowledge and which technologies enable them to run this process more efficiently.

The literature has widely recognized knowledge as a strategic asset for organizational growth and sustained competitive advantage [9, 22–26]. Nowadays, organizations view knowledge as a crucial resource, a key for survival and success mainly due to high competition and increasingly dynamic environments. Unlike before, the business complexity and the growth in information volume, velocity, and variety have significantly increased the difficulties for individuals in managing knowledge activities within organizational settings [9, 27]. People need advanced effective methods and tools to take advantage of the ways that knowledge is acquired and exploited within organizations [28, 29]. In order to face knowledge management issues, software houses and vendors have designed various platforms enabling organizations to develop, share and access huge quantities of available resources from internal and external sources [30]. Recently, organizations are often looking for new ways and tools to acquire knowledge from outside [31, 32]. Communities of practice and cloud, social and mobile platforms are some examples [33–35].

This part of the volume has 10 contributions aimed at exploring the interplays between information, technology, and knowledge management. Using different methodologies, theories and approaches, these researches stress the different concepts and meanings of information and knowledge, discussing the role of various

platforms in creating, sharing and storing knowledge within an organization and between organizations.

Marzo and Braccini's paper aims at investigating the behavioural differences between digital natives and digital immigrants in terms of trust and control. This research designs an experiment based empirical study that might highlight potential differences in trust and control dynamics between digital natives and immigrants. It provides an insight into psychological aspects whose dynamics might influence individuals' behavior in teams.

Caporarello, Magni and Pennarola explore the interplay between ICT and learning within the education sector. The paper investigates the support factors influencing tablet-mediated learning effectiveness by stressing the role of 'Support Activities' in determining it.

Abbate and Cesaroni focus on the crucial role of information within academic spin-off companies. Using an explorative qualitative analysis, the paper explores how academic spin-off companies generate and disseminate useful market information within their organizational boundaries. Findings show the relevance of the activities of generation, dissemination and integration of market information for academic spin-off companies.

Ambrosino and Sciomachen's paper explores product flows within the multi-channel distribution network with the aim of minimizing logistic costs. It describes and compares different inventory management policies and presents a two-phase procedure aiming at integrating, in the same framework, inventory and distribution functions thanks to information sharing.

Dameri, Garelli and Resta's paper explores the relationships between information, technology and organizations. The paper focuses on the unsupervised neural networks (NN) for analysing data regarding business performance at infra-city level. A micro-territorial dash-board based the unsupervised neural networks for collecting business performance data and thus for supporting small territory development policies was developed and tested in the Municipality of Genoa.

Delibes Rodriguez and Hart's paper focuses on the Pre-emptive Customer Experience Management Systems, tools designed for collecting the customer experience data through network experience survey. This research explores how those systems are designed and implemented and how they should be, and what their benefits are for mobile broadband communication.

Ficco and Rak address their research on the topic of cloud computing, focusing on the threats arising from cyber attacks, and 'Economic Denial of Sustainability' (EDoS) in particular, against cloud applications. The paper proposes an approach to mitigate economic effects of EDoS attacks against cloud applications.

Like the Ficco and Rak research, Amato, Di Martino, Xhafa, and Venticinque's paper also investigates the cloud computing paradigm, but by focusing on the different techniques and tools that support users in decision making. Using the combination of the Grid and Cloud paradigms, it proposes a methodology that provides the flexibility of Cloud Computing avoiding the need for users to learn new resource access.

Raguseo, Vitari and Pozzi, instead, explore the relationship between ICT and knowledge management, focusing on a peculiar platform for generating and capturing data natively in digital form, integrating this data in the appropriate business processes, and effectively managing data once produced. In particular, this research investigates whether the development of the Digital Data Genesis dynamic capability in firms leads to valuable outputs in terms of data quality and data accessibility.

Finally, Rocchi, Spagnoletti and Datta investigate digital platforms with particular reference to their maintenance process from the perspective of the software vendor. The paper aims to explore the digital platform evolution processes in order to identify new methods for guiding the emergence of complex socio-technical systems.

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