

Vincenzo Morabito

# Trends and Challenges in Digital Business Innovation

 Springer

Vincenzo Morabito

# Trends and Challenges in Digital Business Innovation

# Trends and Challenges in Digital Business Innovation

Vincenzo Morabito

# Trends and Challenges in Digital Business Innovation



Springer

Vincenzo Morabito  
Department of Management and Technology  
Bocconi University  
Milan  
Italy

ISBN 978-3-319-04306-7      ISBN 978-3-319-04307-4 (eBook)  
DOI 10.1007/978-3-319-04307-4  
Springer Cham Heidelberg New York Dordrecht London

Library of Congress Control Number: 2013958136

© Springer International Publishing Switzerland 2014

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law. The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media ([www.springer.com](http://www.springer.com))

# **Foreword**

This book aims to improve the understanding of trends and challenges in digital business innovation at the European as well as at the global level. It helps create a connection between business readers and academic research. The book summarizes what is hot—each year—in digital business, but with a focus on showing something new to professionals from an academic perspective. In this book, Vincenzo has put together several topics, clustering them in three Parts that could be seen as the steps of a roadmap. The book focuses first on the main digital systems' trends (Part I), trying to examine technological issues such as Big Data, Cloud Computing, Mobile services, etc., from a managerial perspective, aiming to reach a wide spectrum of executives, including those without an IT background. These last two Chapters shift the perspective of Part I, introducing the reader to Part II, which analyses and discusses the managerial challenges of technological trends focusing on governance models, the transformation of work and collaboration as a consequence of the digitization of the work environment, and finally dealing with what may be considered the real challenge to digital business: how to manage, control, and exploit a company's identity and brand in a competitive digital environment. Part II frames the managerial challenges so that they can complement the IT manager's perspective, while providing a useful summary of the state of the art for other non-IT executives. Part III discusses how companies have carried out “innovation in practice”, providing easy to read and structured forms on what were some of the more interesting experiences at a global level in 2013. It is a challenge for any scholar to identify the most popular digital business topics in any given year. Given this, summarizing the vast literature in information systems, digital marketing, and computer science and identifying the most cutting edge phenomena is an arduous task. I congratulate Vincenzo for this book and look forward to seeing it in print soon.

Anindya Ghose

# Preface

This book aims to discuss and present the main trends and challenges in Digital Business Innovation to a composite audience of practitioners and scholars. Accordingly, each considered topic will be analyzed in its technical and managerial aspects, also through the use of case studies and examples, the book having two main objectives:

- to review and discuss recent digital trends emerging from both managerial and scientific literature. Furthermore, the book aims to summarize, compare, and comment challenges and approaches to business digital transformation of organization, being a simple yet ready to consult scientific toolbox for both managers and scholars;
- to be the first of a yearly outlook focused on digital trends emerging from both the managerial and scientific literature, supporting organizations to identify and take advantage of digital business innovation and transformation, as well as its related opportunities.

As for the review objective, it is yet challenging to find a unified survey of current scientific work concerning relevant topics to digital business innovation, such as, for example, the different perspectives of Information Systems research (from management to computer science and engineering, among others). Furthermore, it is yet difficult to find such kind of unified survey acting as an instrument for providing practitioners a perspective on academic research, suitable to be used by them in their day-to-day activities or simply as an update on what academia may offer with regard to the industry proposals. Notwithstanding some journals such as, e.g., MIT Sloan Management Review, IEEE Computer, or the Communications of the ACM (CACM) have such a mission of connecting research and industry practices, at the best of the author knowledge they do not provide a yearly integrated summary or critical review, encompassing their respective areas (management, engineering, and computer science). However, these publications are going to be a part of the large set of information and body of knowledge together with other journals such as, e.g., Management of Information Systems Quarterly (MISQ), Communications of the Association for Information Systems, Management of Information Systems Quarterly Executive (MISQE), Information Systems Research, European Journal of Information

Systems, Journal of Information Technology, Information Systems Journal, and conferences such as International Conferences of Information Systems (ICIS), European Conferences of Information Systems (ECIS), America's Conferences of Information Systems (AMCIS) (just to mention some of the Management of Information Systems research sources), that this book aims to consider for identifying the challenges, ideas, and trends, that may represent "food for thoughts" to practitioners.

Notwithstanding the book adopts an academic approach as for sources collection and analysis, it is also concrete, describing problems from the viewpoints of managers, further adopting a clear and easy-to-understand language, in order to capture the interests of top managers as well as graduates students.

Taking these issues into account, this book is distinctive for its intention to synthesize, compare, and comment major challenges and approaches to business digital transformation of organization, being a simple yet ready to consult scientific toolbox for both managers and scholars. Finally, as said above, the book aims to be the first of a yearly outlook focused on digital trends emerging from both the managerial and scientific literature. In what follows an outline of the book is provided.

## Outline of the Book

The book argument is developed along three main axes. In particular, Part I first considers *Digital Systems Trends* issues related to the growing relevance, on the one hand, of *Big Data*, *Cloud Computing*, and *Mobile Services* for business; on the other hand, it discusses the drivers and challenges of *Social Listening* and *IT Consumerization*, topics of strategic interest for IT and Marketing executives, in order to enable an effective understanding of today's organizations as well as users behavior and needs. Thus, in this part of the book the main technological trends, actually debated in both academia and industry, will be discussed and analyzed in their managerial challenges and opportunities. The trends have been selected also on the basis of focus groups and interviews to 80 European IT executives from different industries (finance, manufacturing, utilities, service, among others). Focusing on systems evolution trends from a technology push perspective, the analysis will move from information and service infrastructure topics such as *Big Data* and *Cloud Computing*, through *Mobile Services* as platforms for socializing and "touch points" for customer experience, to emerging paradigms that actually are transforming marketing, governance, and the boundaries of organizations as well as our own private life (i.e., *Social listening* and *IT Consumerization*).

Subsequently, the Part II of this book considers *Digital Management Trends*, focusing on work practices, identity/brand digital transformation, and governance. In this Part, the analysis will focus on the main managerial trends, actually answering and reacting to the systems' trends surveyed in Part I. Also in this case the selected topics result both from academia and industry state-of-the-art analyses

and from focus groups and interviews to 80 European IT Executives from different industries (finance, manufacturing, utilities, and service, among others), likewise. Focusing on management evolution trends, the argumentation adopts a management pull perspective to consider how *work and collaboration* may be reconfigured or adapted to the new digital opportunities and constraints emerging from social networks paradigms, such as, e.g., crowdsourcing and people services. Moreover, this part of the volume will explore the identity challenges for businesses both as security and privacy issues; digital identity will be discussed also as with regard to brand management in the actual digital ecosystems, and the consequent constant revision of value propositions and business models for rebranding a company digital business, due to strict time to market. Furthermore, the last Chapter of this part of the volume will discuss the governance defies raised by the previous-mentioned changes and reconfiguration of organizational resources and structure.

Finally, Part III will discuss first ([Chap. 9](#)) the underlying issues and the most relevant concepts for understanding Business Model Innovation, providing general insights on the state-of-the-art and basic constructs of this research stream, suitable to support an understanding of its evolution in current digital business innovation experiences and practices. Then, [Chap. 10](#) will present and review case studies of digital innovation trends at global level. Thus, the Chapter aims to discuss examples of digital innovation in practice, providing fact sheets suitable to build a “map” of the 10 most interesting digital innovations actually available worldwide. Besides an introduction to the factors considered in the choice of each innovation, a specific description of it will be developed. The considered 10 innovations will be discussed in their relationship to the topics of the previous Parts/Chapters, both providing insights on their potential evolution trends and unmatched characteristics, likewise. Finally, the conclusion will provide a summary of all arguments of the volume together with general managerial recommendations.

Vincenzo Morabito

# Acknowledgments

This book is the result of a comprehensive research, where several people are worth to be acknowledged for their support, useful comments and cooperation. A special mention to Prof. Vincenzo Perrone at Bocconi University, Prof. Vallabh Sambamurthy, Eli Broad Professor at Michigan State University, and Prof. Franco Fontana at LUISS University as main inspiration and mentors.

Moreover, I acknowledge Prof. Giuseppe Soda, Head of the Department of Management and Technology at Bocconi University, and all the other colleagues at the Department, in particular Prof. Arnaldo Camuffo, Prof. Anna Grandori, Prof. Severino Salvemini, and Prof. Giuseppe Aioldi, all formerly at the Institute of Organization and Information Systems at Bocconi University, who have created a rich and rigorous research environment where I am proud to work.

I acknowledge also some colleagues from other universities with whom I've had the pleasure to work, whose conversations, comments, and presentations provided precious insights for this book: among others, Prof. Anindya Ghose at New York University's Leonard N. Stern School of Business, Prof. Vijay Gurbaxani at University of California Irvine, Prof. Saby Mitra at Georgia Institute of Technology, Prof. Ravi Bapna at University of Minnesota Carlson School of Management, George Westerman at MIT Center for Digital Business, Prof. Ritu Agarwal at Robert H. Smith School of Business, Prof. Lynda Applegate at Harvard Business School, Prof. Marco de Marco at Università Cattolica del Sacro Cuore di Milano, Tobias Kretschmer, Head of Institute for Strategy, Technology and Organization of Ludwig Maximilians University, Prof. Marinos Themistocleous at the Department of Digital Systems at University of Piraeus, Prof. Chiara Francalanci at Politecnico di Milano, Wolfgang König at Goethe University, Adriano Solidoro at University of Milano-Bicocca, Luca Giustiniano at LUISS University, Prof. Zahir Irani at Brunel Business School, Prof. Sinan Aral at NYU Stern School of Business, and Ken and Jane Laudon.

Furthermore, I want to gratefully acknowledge all the companies that have participated to the research interviews, case studies, and surveys. In particular, for the financial institutions: Banca Mediolanum, Banco Popolare, Banca Popolare dell'Emilia Romagna, Banca Popolare di Milano, Banca Popolare di Sondrio, Banca Popolare di Vicenza, Barclays, BCC Roma, BNL-BNP Paribas, Carige Group, Cariparma Credit Agricole, Cassa di Risparmio di Firenze, Cedacri, Che Banca!, Compass, Credito Emiliano, Deutsche Bank, Dexia, HypoVereinsbank,

ICBPI, ING Direct, Intesa Sanpaolo Group, IREN, Mediobanca, MPS Group, Poste Italiane Group, SEC, Société Européene de Banque, UBI Banca, Unicredit Group, Veneto Banca and WeBank. For the insurance sector: Allianz, Ergo Previdenza, Generali Group, Groupama, Poste Vita, Sara Assicurazioni, UGF Group and Vittoria Assicurazioni. For all other sectors: Acea, Aci Informatica, Amplifon, Anas, Angelini, ArcelorMittal, Armani, ATAC, ATM, Auchan, Autogrill, Autostrade per l'Italia, Avio, Baglioni Hotels, Barilla, Brembo, Chiesi Farmaceutici, CNH Industrial, Coca Cola HBC, Coop Italia, Costa Crociere, Danone, De Agostini, Diesel, Dimar, Dolce & Gabbana, Ducati, Edipower, Edison, Eni, Enel, ERG, Fastweb, Ferrari, Ferrero, Ferrovie dello Stato Group, Fiat Group, Finmeccanica Group, GlaxosmithKline, Grandi Navi Veloci, Gruppo Hera, Gtech, H3G, Il Sole24Ore, Kuwait Petroleum, Lamborghini, LBBW, Levi's, L'Oréal, Loro Piana, Luxottica Group, Magneti Marelli, Mapei, Marcegaglia, Messaggerie Libri, Miroglio, Oerlikon Graziano, Perfetti, Pirelli, Prysmian, Rolex, Saipem, Snam, Sorgenia, Telecom Italia, Terna, Unilever, Vodafone and Wind. For the public sector: Agenzia per l'Italia Digitale, Comune di Milano and Consip.

I would especially like to acknowledge all the people that have supported me during these years with insights and suggestions. I learned so much from them, and their ideas and competences have inspired my work: Silvio Fraternali, Paolo Cederle, Massimo Milanta, Massimo Schiattarella, Diego Donisi, Gianluca Pancaccini, Giovanni Damiani, Gianluigi Castelli, Salvatore Poloni, Milo Gusmeroli, Pierangelo Rigamonti, Danilo Augugliaro, Elvio Sonnino, Massimo Messina, Mario Collari, Massimo Castagnini, Pier Luigi Curcuruto, Giuseppe Dallona, Gilberto Ceresa, Jesus Marin Rodriguez, Fabio Momola, Rafael Lopez Rueda, Eike Wahl, Ruediger Schmidt, Marco Cecchella, Maria-Louise Arscott, Antonella Ambriola, Giovanni Sordello, Andrea Rigoni, Giovanni Rando Mazzarino, Silvio Sperzani, Samuele Sorato, Alfredo Montalbano, Gloria Gazzano, Massimo Bassi Ricci, Giuseppe De Iaco, Riccardo Amidei, Davide Ferina, Massimo Ferriani, Cristina Bianchini, Dario Scagliotti, Ruggero Platolino, Ettore Corsi, Luciano Bartoli, Marco Ternelli, Alessandro Cucchi, Carlo Felice Ferrarini, Marco Tempra, Luca Ghirardi, Francesca Gandini, Vincenzo Tortis, Agostino Ragosa, Sandro Tucci, Vittorio Mondo, Enzo Bertolini, Roberto Fonso, Mario Bocca, Marco Zaccanti, Fabrizio Lugli, Marco Bertazzoni, Vittorio Boero, Jean-Claude Krieger, Maria Cristina Spagnoli, Alessandra Testa, Anna Miseferi, Carlo Brezigia, Mirco Carriglio, Matteo Attrovio, Nikos Angelopoulos, Paul Thysens, Luciano Romeo, Roberto Burlo, Gennaro Della Valle, Massimo Paltrinieri, Pierantonio Azzalini, Enzo Contento, Marco Fedi, Fiore Della Rosa, Carlo Capalbo, Simone Battiferri, Carlo di Lello, Gian Enrico Paglia, Fabrizio Virtuani, Luca Verducci, Luca Falco, Roberto Scolastici, Nicoletta Rocca, Mario Breuer, Marco Lanza, Marco Poggi, Giambattista Piacentini, Francesco Mastrandrea, Mauro Minenna, Massimo Romagnoli, Nicola Grassi, Gianni Leone, Domenico Casalino, Paolo Crovetti, Alberto Ricchiari, Alessandro Musumeci, Matthias Schlapp, Ugo Salvi, Danilo Gismondi, Patrick Vandenberghe, Guido Oppizzi, Alessandro Bruni, Marco Franzì, Guido Albertini, Vincenzo Russi, Diego Donisi, Fabio De Ferrari, Mauro Ferrari, Massimo Amato, Nunzio Calì, Gianfilippo Pandolfini, Cristiano Cannarsa,

Davide Carteri, Luca Terzaghi, Christian Altomare, Pasquale Tedesco, Ottavio Rigodanza, Lorenzo Pizzuti, Marcello Guerrini, Fabio Cestola, Alberto Alberini, Umberto Stefani, Elvira Fabrizio, Dario Pagani, Marino Vignati, Giuseppe Rossini, Renzo Di Antonio, Armando Gervasi, David Alfieri, Roberto Andreoli, Vincenzo Campana, Piera Fasoli, Alberto Grigoletto, Riccardo Scattaretico, Marco Ravasi, Mauro Viacava, Salvatore Stefanelli, Marco Zaffaroni, Giuseppe Langer, Daniele Rizzo, Massimiliano Gerli, Fabio Oggioni, Luca Severini, Roberto Conte, Nazzareno Gregori, Alessandro Campanini, Gabriella Serravalle, Giovanni Pietrobelli, Pietro Pacini, Stefano Firenze, Dario Castello, Michela Quitadamo, Francois De Brabant, Luciano Dalla Riva, Paolo Pecchiari, Francesco Donatelli, Massimo Palmieri, Riccardo Pagnanelli, Pierluigi Berlucchi, Raffaella Mastropiippo, Davide Casagrande, Luca Martis, Stefano Levi, Patrizia Ferrari, Massimiliano Baga, Marco Campi, Laura Wegher, Diego Pogliani, Alessandra Grendele e Gianluca Pepino.

I would especially like to gratefully acknowledge Gianluigi Viscusi at EPFL-CDM-CSI, Alan Serrano-Rico at Brunel University, and Nadia Neytcheva Head of Research at the Business Technology Outlook (BTO) Research Program who have provided me valuable suggestions and precious support in the coordination of the production process of this book. Furthermore, I acknowledge the support of Business Technology Foundation (Fondazione Business Technology) and all the bright researchers at Business Technology Outlook (BTO) Research Program that have supported me in carrying out interviews, surveys, and data analysis: Florenzo Marra, Alessandro De Pace, Alessandro Scannapieco, Matteo Richiardi, Ezechiele Capitanio, Giulia Galimberti, Arianna Zago, Giovanni Roberto, Massimo Bellini, Tommaso Cenci, Marta Silvani, Giorgia Cattaneo Puppo, Andrada Comanac.

A special acknowledgement goes to the memory of Prof Antonino Intrieri who provided precious comments and suggestions throughout the years.

Finally I acknowledge my family whose constant support and patience made this book happen.

Vincenzo Morabito

# Contents

## Part I Digital Systems Trends

<b>1</b>	<b>Big Data</b>	3
1.1	Introduction . . . . .	3
1.1.1	Big Data Drivers and Characteristics . . . . .	5
1.1.2	Management Challenges and Opportunities . . . . .	9
1.2	Case Studies . . . . .	15
1.3	Summary . . . . .	19
	References . . . . .	19
<b>2</b>	<b>Cloud Computing</b>	23
2.1	Introduction . . . . .	23
2.1.1	Cloud Computing: Service Models . . . . .	24
2.1.2	Cloud Computing Service Providers . . . . .	25
2.2	Strategic and Managerial Challenges and Opportunities . . . . .	26
2.2.1	Challenges Accompanying Cloud Computing . . . . .	27
2.2.2	Advantages and Risks in Cloud Computing Outsourcing Projects . . . . .	28
2.2.3	Managing Changes and Organizational Issues . . . . .	32
2.3	Deployment Models (Private, Public, Community and Hybrid) . . . . .	33
2.4	Guidelines and Recommendations . . . . .	34
2.4.1	Choosing a Cloud Computing Service Provider . . . . .	34
2.4.2	Cloud Computing Project Implementation Life Cycle . . . . .	36
2.5	Case Studies . . . . .	41
2.6	Summary . . . . .	44
	References . . . . .	44
<b>3</b>	<b>Mobile Services</b>	47
3.1	Introduction . . . . .	47
3.2	Mobile Services Drivers and Challenges . . . . .	50
3.3	Digital Management Solutions . . . . .	56
3.4	Case Studies . . . . .	60

3.5 Summary . . . . .	63
References . . . . .	64
<b>4 Social Listening . . . . .</b>	<b>67</b>
4.1 Introduction . . . . .	67
4.2 Marketing Analysis as Social Listening . . . . .	68
4.3 Information Growth and Market Opinion. . . . .	70
4.3.1 Text Mining and Conversation's Analysis . . . . .	72
4.3.2 Classification and Analysis Methods and Solutions . . . . .	72
4.3.3 Marketing Intelligence and Risk Analysis . . . . .	73
4.4 Social Listening Challenges . . . . .	77
4.5 Social Sensing . . . . .	78
4.6 Case Studies. . . . .	81
4.7 Summary . . . . .	85
References . . . . .	85
<b>5 IT Consumerization . . . . .</b>	<b>89</b>
5.1 Introduction . . . . .	89
5.2 Advantages and Risks Associated with IT Consumerization. . . . .	90
5.2.1 Advantages and Opportunities of IT Consumerization. . . . .	91
5.2.2 Challenges and Risks of the Consumerization of IT. . . . .	92
5.3 Steps for IT Consumerization. . . . .	95
5.3.1 Step 1: Understand the Powerful Sources and Adopt the User Perspective . . . . .	96
5.3.2 Step 2: Rethink User Computing—Change Focus from Platform to User . . . . .	96
5.3.3 Step 3: Shorten the Time Frame for New Computing Approach Adoption . . . . .	97
5.3.4 Step 4: Support Employee Owned Devices . . . . .	97
5.4 Business Scenarios for IT Consumerization . . . . .	98
5.4.1 Work from Your Phone . . . . .	100
5.4.2 Bring Your Own Media Tablet. . . . .	100
5.4.3 Bring Your Own Device for Vendors . . . . .	100
5.4.4 The Boardroom. . . . .	101
5.4.5 High-Performance Sales. . . . .	101
5.4.6 Retail Sales . . . . .	101
5.5 Strategies for IT Consumerization. . . . .	102
5.5.1 Going Mobile Strategy . . . . .	102
5.5.2 Modernize the Desktop Strategy . . . . .	102
5.5.3 Virtualization Strategy . . . . .	103
5.5.4 Bring Your Own Device BYOD Strategy. . . . .	103

5.6	Enterprise Drivers Behind the Consumerization of IT . . . . .	104
5.7	Considerations Related to IT Consumerization . . . . .	104
5.8	Social Platforms . . . . .	106
5.9	Case Studies. . . . .	107
5.10	Summary . . . . .	109
	References . . . . .	109

## Part II Digital Management Trends

<b>6</b>	<b>Digital Work and Collaboration</b> . . . . .	113
6.1	Introduction . . . . .	113
6.2	Collaboration Types . . . . .	115
6.3	Cross-Organizational and Cross-Border IS/IT Collaboration . . . . .	115
6.3.1	Communities of Practice . . . . .	118
6.4	Digital Collaboration Systems and Ideas . . . . .	119
6.4.1	Electronic Messaging Systems . . . . .	119
6.4.2	Electronic Meeting Systems . . . . .	120
6.4.3	Asynchronous Conferencing Systems. . . . .	121
6.4.4	Document Handling Systems . . . . .	122
6.4.5	Social Software and Collaborative Systems and Tools. . . . .	123
6.4.6	Online Communities . . . . .	126
6.4.7	Crowdsourcing . . . . .	127
6.5	Case Studies. . . . .	128
6.6	Summary . . . . .	130
	References . . . . .	130
<b>7</b>	<b>Digital Business Identity</b> . . . . .	133
7.1	Introduction . . . . .	133
7.2	Privacy and Security Drivers and Challenges . . . . .	134
7.3	Digital Brand Management . . . . .	138
7.4	Case Studies. . . . .	140
7.5	Summary . . . . .	143
	References . . . . .	143
<b>8</b>	<b>Digital Governance</b> . . . . .	145
8.1	Introduction . . . . .	145
8.2	Opportunities and Challenges Related to Digital Governance . . . . .	147
8.3	Digital Governance Mechanisms. . . . .	149
8.4	Digital Governance Success Factors . . . . .	152