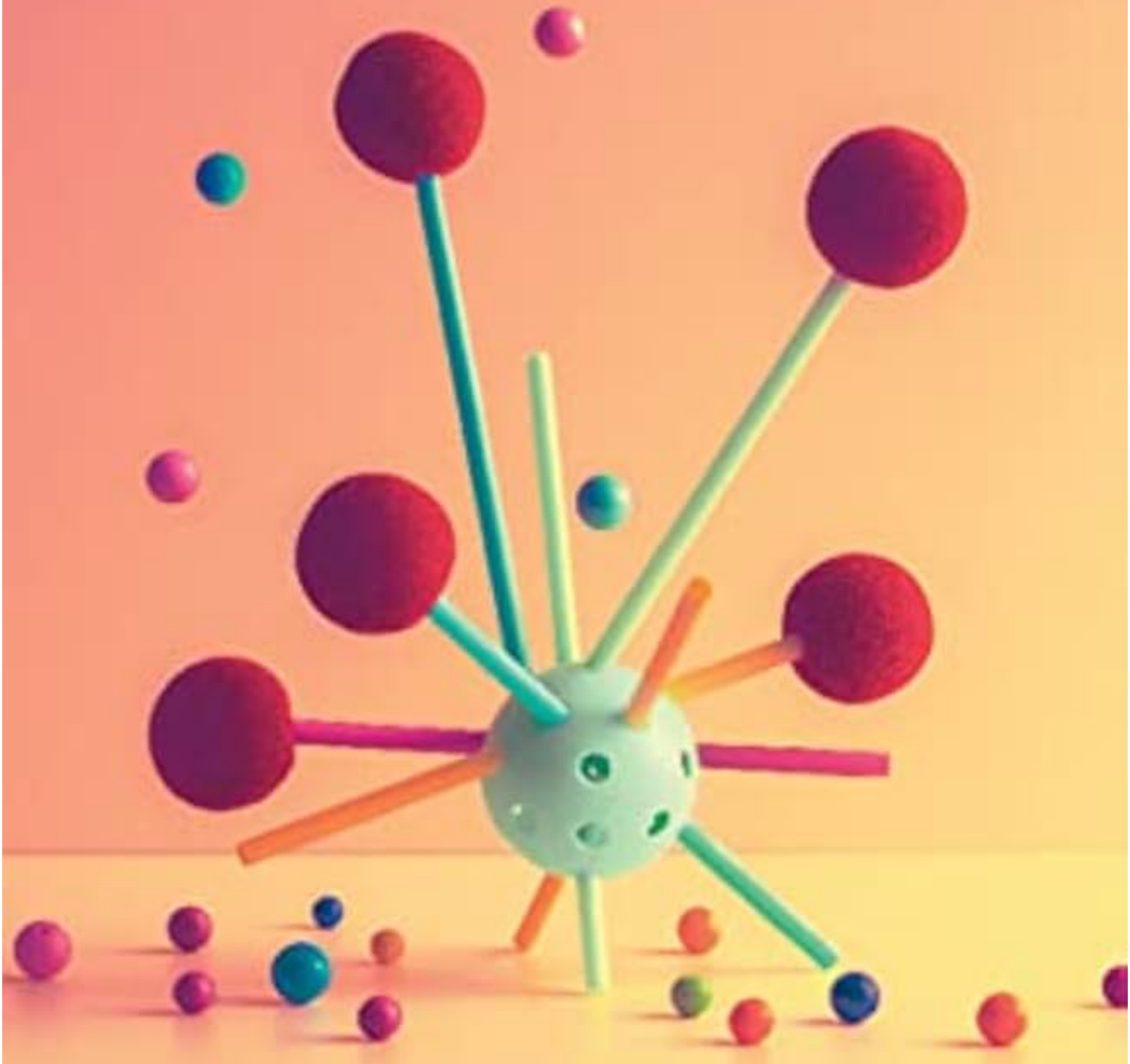
Digital Entrepreneurship

Management, Systems and Practice

Vincenzo Morabito



Digital Entrepreneurship

A comprehensive guide to digital entrepreneurship, bridging academic research and industry practice. Morabito provides a strategic overview of the main challenges and trends related to digital entrepreneurship, structured in three parts. Part I focuses on strategy and management issues, guiding readers through the theory and practice of building, implementing and growing new digital ventures and outlining the skills that are necessary for digital entrepreneurs to succeed and lead. Part II focuses on digital business systems, describing the main technological aspects that support and comprise the core infrastructure for digital entrepreneurship, including social media and the Internet of Things. Finally, Part III provides analyses of three core industries in which digital ventures are particularly important: fintech, manufacturing and fashion. Digital Entrepreneurship will appeal to students and researchers in the areas of digital strategy/innovation and information systems management. It will also be of interest to practitioners looking to develop or innovate digital ventures.

Vincenzo Morabito is Associate Professor at the Management & Technology Department, Bocconi University (Università Commerciale Luigi Bocconi), Milan, Italy. He has participated in various research projects, many financed by Italian Ministry of University and Scientific Research (Ministero dell'Università e della Ricerca Scientifica e Tecnologica).

Digital Entrepreneurship

Management, Systems and Practice

Vincenzo Morabito
Bocconi University

CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India

103 Penang Road, #05–06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org Information on this title:
www.cambridge.org/9781108845519

DOI: 10.1017/9781108979917

First published 2022

Printed in the United Kingdom by TJ Books Limited, Padstow Cornwall

A catalogue record for this publication is available from the British Library.

Library of Congress Cataloging-in-Publication Data
Names: Morabito, Vincenzo, author.
Title: Digital entrepreneurship : management, systems and practice / Vincenzo Morabito, Bocconi University.
Description: 1 Edition. | New York : Cambridge University Press, 2022. | Includes index.
Identifiers: LCCN 2021001941 | ISBN 9781108845519 (hardback) | ISBN 9781108969857 (paperback) | ISBN 9781108979917 (ebook)
Subjects: LCSH: Information technology – Economic aspects. | Entrepreneurship. | Information technology – Management. | Strategic planning.
Classification: LCC HC79.I55 M67 2021 | DDC 658/.05–dc23
LC record available at https://lccn.loc.gov/2021001941

ISBN 978-1-108-84551-9 Hardback
ISBN 978-1-108-96985-7 Paperback

Contents

Figures

Tables

Acknowledgments

This book has been written over the last two years, and I want to acknowledge a number of people for their support, useful comments and cooperation during that time. Special mentions go to Professor Vincenzo Perrone at Bocconi University, Professor Vallabh Sambamurthy at Wisconsin School of Business and Professor Franco Fontana at LUISS University as main inspirations and mentors. Moreover, I acknowledge Professor Giuseppe Soda at Bocconi University and the rest of the department colleagues, in particular Professor Arnaldo Camuffo, Professor Anna Grandori, Professor Severino Salvemini and Professor Giuseppe Airoldi, 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 also acknowledge some colleagues from other universities with whom I've had the pleasure of working and conversing and from whom I've received useful comments as well as valuable insights for this book: among others, Anindya Ghose, Heinz Riehl Chair and Professor of Business at New York University Leonard N. Stern School of Business; Vijay Gurbaxani, Professor of Business and Computer Science at Paul Merage School of Business, University of California Irvine; Saby Mitra, Associate Director of Risk for the Institute for Information Security and Privacy at the Georgia Institute of Technology; Ravi Bapna, Board of Overseers Professor in the Information and Decision Sciences at the University of Minnesota Carlson School of Management; Stephanie Woerner, Research Scientist at MIT Center for Information Systems Research; Sam Ransbotham, Professor of Information Systems in the Carroll School of Management at Boston College; Tobias Kretschmer, Head of Institute for Strategy, Technology and Organization at Ludwig Maximilian University, Munich; Jan Mendling, Professor at the Institute for Information Business at Vienna University of Economics and Business; Christopher L Tucci, Professor of Digital Strategy and Innovation at the Imperial College Business School; Garrick Hileman, Head of Research at Blockchain; Marinos Themistocleous, Director of

the Institute for the Future at the University of Nicosia; Federico Pigni, Professor at Grenoble School of Management; Vincent Mangematin, Dean and Chief Academic Officer at KEDGE Business School; Antonio de Amescua and Román López-Cortijo, Professors of Computer Science at Carlos III University, Madrid; Paolo Aversa, Senior Lecturer in Strategy and MBA Director at Cass Business School; Stefano Zanero, Computer Engineering Associate Professor at the Polytechnic University of Milan; Angela Sasse from University College London; and Ferdinando Ametrano, Bitcoin and Blockchain Technologies Lecturer at the Polytechnic University of Milan and Bicocca University.

Furthermore, I want to gratefully acknowledge all the companies that have participated in research interviews, case studies and surveys.

Financial institutions: Agos Ducato, Aldermore Bank, Banca Carige, Banca Credito Trevigiano (BCT), Banca d'Italia, Banca Euromobiliare, Banca Fideuram, Banca Mediolanum, Banca Monte dei Paschi, Banca Passadore, Banca Popolare dell'Emilia Romagna, Banca Popolare di Bari, Banca Popolare di Sondrio, Banca Popolare di Vicenza, Banca Sistema, BancoBPM, Bancomat, Barclays, BAWAG, BCC Roma, BNL-BNP Paribas, Borsa Italiana, BPER, Cariparma, Cassa Depositi e Prestiti, Cassa di Risparmio di Firenze, Cedacri, Che Banca!, Compass, Corner Bank, Credem, Credit Agricole, Crédit Agricole Life Insurance Europe, Credito Emiliano, Deutsche Bank, Dexia, FCA Bank, Istituto Centrale delle Banche Popolari Italiane, ING Direct, Intesa SanPaolo, Intesa SanPaolo Luxembourg, Intesa SanPaolo Servitia, Istituto per le Opere Religiose, JP Morgan Chase, Key Client, Luxemburg Stock Exchange, Mediobanca, Monte Titoli, Nexi, Poste Italiane, Profamily, Raiffeisen Bank, Royal Bank of Scotland, SEC Servizi, Société Européene de Banque, Standard Chartered, UBI Banca, UBS, Veneto Banca, Volksbank Wien, WeBank and Widiba.

Insurance: Allianz, Aspe Re, Assicurazioni Generali, Assimoco, Aviva, Cardif, Cattolica Assicurazioni, Coface, Europe Assistance, Eurovita Assicurazioni, Foyer, Groupama, Munich RE, Novae, Poste Vita, PRUDENTIAL, Reale Mutua, Sara Assicurazioni, Standard Life Aberdeen, Tysers, UnipolSai, Uniqa Assicurazioni, Vittoria Assicurazioni and Zurich.

Industrial: A1 Telekom, A2A, ABB, Accenture, Acea, Aci, Aci Informatica, Acqua Minerale S. Benedetto, Adidas, Aeroporti di Roma, Alitalia, Alliance Boots, Alpitour, Amadori, Amazon, Amplifon, Anas, Angelini, ArcelorMittal, Areti, Armani, Arval, Astaldi, AstraZeneca, ATAC, ATM, Auchan, Audi, Augusta Westland, Autogrill, Autostrade per l'Italia, Avio, Baglioni Hotels, Barilla, BASF, BasicNet, Bayer

Pharmaceuticals, Be Consulting, Benetton, Between, BMW, Boeing Defence, Bormioli, BOSH, Bottega Veneta, Bravo Fly, Brembo, Brunello Cucinelli, BSH, Business Integration Partners, Calzedonia, Cementir, Centrica Energy, Cerved, Chiesi Farmaceutici, CIA Agricoltori Italiani, CNH Industrial, Coca Cola HBC, Comau, Coop Italia, Costa Crociere, Daimler, Dainese, D'Amico, Danieli, Danone, De Agostini, Diesel, Dimar, Dolce & Gabbana, Ducati, EDF, Edipower, Edison, Elettronica, Elica, ENAV, Enel, Enel-X, Engie, Eni, ENRC, E. ON, ERG, Ermenegildo Zegna, Eurobet, Fastweb, FCA, Fendi, Ferrari, Ferretti, Ferrovie dello Stato, Ferservizi, Fincantieri, G4S, GE Capital, General Electric, GFT, GlaxosmithKline, Glencore, Grandi Navi Veloci, Grimaldi, Gruppo API, Gruppo Coin, Gruppo De Agostini, Gruppo Hera, GVC Holdings PLC, H3GWind, Hupac, IGT, Il Sole24Ore, Ingenico, Infineon, Interoll, IREN, Istituto Europeo Oncologico, Istituto Poligrafico e Zecca dello Stato, ItalGas, ITV, Jaguar Land Rover, Kuwait Petroleum, Labelux Group, Lamborghini, La Perla, Lastminute Group, Lavazza, LBBW, Leaseplan, Leonardo-Finmeccanica, Levi's, Linde, Linkem, L'Oreal, Loro Piana, Lottomatica, Lucite International, Luxottica, Magneti Marelli, Mail Boxes Etc, MAN, Mapei, Marcegaglia, Maserati, Mediaset, Menarini, Mercedes, Messaggerie Libri, Metaenergia, Metro Italia Cash & Carry, Miroglio, MM S.p.A., Mondelez International, Mossi & Ghisolfi, Natuzzi, NH Hotel, Novartis, Octo Telematics, Oerlikon Graziano, Olivetti, OSRAM, PAX Italia, Perfetti, Pernod Ricard, Peroni, Pfizer, Philip Morris Int., Philips, Piaggio, Pinko, Pirelli, Poliform, Pomellato, Porsche, Postel, Prada, Premier Oil, Procter & Gamble, ProSiebenSat1, Prysmian, RAI, Retonkil Initial, Rexam, RFI, RHI, Rizoma, Roche, Rolex, RWE, Saipem, Sandoz, Sanofi Aventis, Schindler Electroca, SEA, Seat PG, Selex, SIAE, Sigma-Tau, Sisal, SisalPay, Sky Italia, Snaitech, Snam, Sorgenia, Suzuki, Teksid, Telefonica, Tenaris, Terna, TIM, Tods, Trenitalia, Trussardi, TuevSued, Tyco, Uber, Unicoop Firenze, Unilever, Valentino, Virgin Atlantic, Vodafone, Volkswagen and Whirlpool.

ICT: Almaviva, Cabel Holding, Engineering, Ericsson and Oasi Servizi.

Public: Agenzia per l'Italia Digitale, Comune di Milano, Consip and Regione Lombardia.

Others who participated in research interviews, case studies and surveys for this book include: Silvio Fraternali, Paolo Cederle, Massimo Milanta, Massimo Schiattarella, Diego Donisi, Marco Sesana, Mario Di Mauro, Giovanni Damiani, Gianluigi Castelli, Salvatore Poloni, Milo Gusmeroli, Pierangelo Rigamoti, Danilo Augugliaro, Ranieri De

Marchis, Francesco Giordano, Nazzareno Gregori, Edoardo Romeo, Elvio Sonnino, Pierangelo Mortara, Massimo Messina, Mario Collari, Giuseppe Capponcelli, Massimo Castagnini, Pier Luigi Curcuruto, Giovanni Sordello, Maurizio Montagnese, Massimo Tessitore, Alberto Sferch, Enrico Bagnasco, David Cis, Bruce Hodges, Carlo Brezigia, Massimo Malagoli, Riccardo Sfondrini, Fabio Ugoste, Giuseppe Virano, Domenico Fileppo, Giovanni Mori, Roberto Di Fonzo, Umberto Angelucci, Giuseppe Dallona, Davide Tesoro Tess, Gilberto Ceresa, Rene Keller, Jesus Marin Rodriguez, Fabio Momola, Rafael Lopez Rueda, Eike Wahl, Marco Cecchella, Carmine Artone, Maria-Louise Arscott, Antonella Ambriola, Andrea Rigoni, Giovanni Rando Mazzarino, Paolo Martella, Alfredo Altavilla, Silvio Sperzani, Samuele Sorato, Alessandro Preda, Andrea Cardamone, Salvatore Molè, Alberto Ripepi, Alfredo Montalbano, Cristina Porzio, Gloria Gazzano, Massimo Basso Ricci, Giuseppe De Iaco, Isabella Fumagalli, Riccardo Amidei, Davide Ferina, Massimo Ferriani, Roberto Burlo, Cristina Bianchini, Dario Scagliotti, Ettore Corsi, Luciano Bartoli, Stewart Alexander, Luca Ghirardi, Francesca Gandini, Francesco Del Pizzo, Vincenzo Tortis, Agostino Ragosa, Sandro Tucci, Vittorio Mondo, Giangaddo Prati, Andrea Agosti, Roberto Fonso, Federico Gentili, Nino Lo Banco, Fabio Troiani, Federico Niero, Sebastiano Marulli, Gianluca Zanutto, Mario Bocca, Marco Zaccanti, Anna Pia Sassano, Fabrizio Lugli, Alessandro Garofalo, Marco Bertazzoni, Vittorio Boero, Francesco Maldari, Francesco Durante, Carlo Achermann, David Cis, Stefano Achermann, Jean-Claude Krieger, Mario Martinelli, Reinhold Grassl, François de Brabant, Maria Cristina Spagnoli, Pietro Amorusi, Alessandra Testa, Anna Miseferi, Matteo Attrovio, Giorgio Mosca, Roberto Saracino, Nikos Angelopoulos, Igor Bailo, Stefano Levi, Luciano Romeo, Alfio Puglisi, Gennaro Della Valle, Massimo Paltrinieri, Luca Vanetti, Pierantonio Azzalini, Carlo Garuccio, Enzo Contento, Marco Fedi, Fiore Della Rosa, Dario Tizzanini, Francesca Durì, Gabriele Scarponi, Carlo Capalbo, Bruce Hodges, Pietro Maranzana, Vittorio Giusti, Piera Fasoli, Carlo di Lello, Gian Enrico Paglia, George Sifnios, Francesco Varchetta, Gianfranco Casati, Fabio Benasso, Angela Gemma, Alessandro Marin, Gianluca Guidotti, Fabrizio Virtuani, Luca Verducci, Marco Valioni, Luca Falco, Francesco Pedrielli, Riccardo Riccobene, Roberto Scolastici, Paola Formenti, Stefano Malvicini, Nicoletta Rocca, Emanuele Balisteri, Mario Breuer, Fabio Caressa, Simonetta Consiglio, Luca Gasparini, Mario Costantini, Matteo Colombo, Marco Lanza, Marco Poggi, Gianfranco Ardissono, Alex Eugenio Sala, Daniele Bianchi, Giambattista Piacentini, Daniele Savarè, Fabio Cesaretti, Marcello

Ronco, Tommaso Pellizzari, Filipe Teixeira, Andrea Giovanni Mugnai, Roberto Riccardi, Barbara Monfredini, Luigi Zanardi, Valerio Momoni, Daniele Panigati, Christian Ciceri, Maurizio Pescarini, Ermes Franchini, Francesco Mastrandrea, Vincenzo Cervino, Federico Boni, Vincenzo Pensa, Roberto D'Attili, Ernesto Ciorra, Fabio Veronese, Mauro Minenna, Giampiero Astuti, Massimo Romagnoli, Vasco Tomaselli, Nicola Grassi, Alessandro Capitani, Mauro Frassetto, Bruno Cocchi, Marco Tempra, Martin Brannigan, Alessandro Guidotti, Monica Colleoni, Gianni Leone, Stefano Signani, Domenico Casalino, Fabrizio Lugoboni, Giorgio Piotti, Roberto Ghislanzoni, Giuliano Capizzi, Fabrizio Rocchio, Mauro Bernareggi, Claudio Sorano, Marcus Heidmann, Paolo Crovetti, Antonio Perrotti, Alberto Ricchiari, Alessandro Musumeci, Luana Barba, Pierluigi Berlucchi, Matthias Schlapp, Ugo Salvi, Giovanni Paolo Bruno, Elisabetta Torri, Daniela Manuello, Danilo Gismondi, Elisabetta Nobile, Patrick Vandenberghe, Daniele Balbo, Claudio Colombatto, Massimiliano Ciferri, Danilo Ughetto, Tiberio Strati, Massimo Nichetti, Fabio Maini, Stefano Firenze, Remo Nadali, Vahe Ter Nikogosyan, Giorgio Voltolini, Franco Caraffi, Andrea Maraventano, Martin Giersich, Michela Scovazzo, Massimo Bertolotti, Guido Oppizzi, Alessandro Bruni, Marco Franzi, Stefano Gentili, Guido Albertini, Massimiliano De Gregorio, Chiara Pellistri, Vincenzo Russi, Franco Collautti, Massimo Dall'Ora, Fabio De Ferrari, Giuseppe Alibrandi, Marco Moretti, Mauro Ferrari, Domenico Solano, Pier Paolo Tamma, Susanna Nardi, Massimo Amato, Alberto Grigoletto, Nunzio Calì, Arturo Baldo, Fabio De Santis, Gianfilippo Pandolfini, Guido Rindi, Cristiano Cannarsa, Fabio Degli Esposti, Riccardo Scattaretico, Claudio Basso, Mauro Pianezzola, Piergiorgio Grossi, Marco Zanussi, Alberto Fenzi, Davide Carteri, Simonetta Iarlori, Marco Prampolini, Luca Terzaghi, Christian Altomare, Paolo Gasparato, Pasquale Tedesco, Fabio Boschiero, Franco Colzani, Elisabetta Castro, Maria Dentamaro, Roberta Crispino, Carlo Castiglioni, Nicoletta Carlomagno, Francesco Modesti, Isabel Castillo, Aldo Borrione, Paolo Beatini, Maurizio Pellicano, Ottavio Rigodanza, Angelo D'Alessandro, Marcello Guerrini, Stefano Torcello, Francesco Germini, Michela Quitadamo, Massimo Severin, Salvatore Rocco, Chiara Galli, Dario Castello, Giorgio Degli Abbati, Giuseppe Bramante, Marco Casati, Stefano Boscolo, Fabio Boschiero, Silvia Zanni, Fabio Cestola, Roberto Mondonico, Alberto Alberini, Pierluca Ferrari, Umberto Stefani, Elvira Fabrizio, Salvatore Impallomeni, Dario Pagani, Eric Peyer, Jean-Luc Martino, Marino Vignati, Giuseppe Rossini, Paolo Calvi, Francesco Genovese, Alfio Puglisi, Renzo Di Antonio, Maurizio Galli, Filippo Vadda, Roberto Casula, Marco De

Paoli, Paolo Cesa, Armando Gervasi, Riccardo Delleani, Luigi Di Tria, Marco Gallibariggio, David Alfieri, Graziano Cavallo, Mirco Carriglio, Pier Francesco Gavagni, Maurizio Castelletti, Gaetano Scebba, Roberto Andreoli, Barbara Monfrini, Vincenzo Campana, Marco Ravasi, Antonella Cirina, Fabio Grassi, Mauro Viacava, Giacomo Carelli, Flavio Glorio, Alessio Pomasan, Salvatore Stefanelli, Roberto Scaramuzza, Marco Zaffaroni, Giuseppe Langer, Francesco Bardelli, Davide Barbavara, Daniele Rizzo, Silvia De Fina, Gabriele Raineri, Paulo Morais, Massimiliano Gerli, Andrea Facchini, Massimo Zara, Luca Paleari, Alessandra Ardrizzoia, Andrea Dupplicato, Alberto Maldino, Carlo Bozzoli, Luigi Borrelli, Marco Iacomussi, Enrico Senatore, Marco Tendas, Stefano Ceravolo, Mario Dio, Giulio Mattietti, Alessandro Poerio, Fabrizio Frustaci, Roberto Zaccaro, Maurizio Quattrociocchi, Gianluca Giovannetti, Francesco Frau, Massimo Alberti, Andrea Lippi, Pierangelo Colacicco, Paolo Lissoni, Silvio Sassatelli, Filippo Passerini, Mario Rech, Claudio Sordi, Tomas Blazquez De La Cruz, Elia Mariani, Paolo Torazzo, Diego Ceresa, Matteo Arpini, Luca Spagnoli, Fabio Oggioni, Dante Buccelloni, Luca Severini, Roberto Conte, Federica Dall'Ora, Alessandro Tintori, Giovanni Ferretti, Patrizia Tedesco, Antonio Rainò, Claudio Beveroni, Chiara Manzini, Simone Macelloni, Francesco Del Greco, Luca Sacchi, Alessandro Sala, Miriam Imperato, Lorenzo Tanganelli, Ivano Bosisio, Alessandro Campanini, Pietro Donati, Matteo Ortenzi, Giovanni Pietrobelli, Pietro Pacini, Vittorio Padovani, Luciano Dalla Riva, Grazia Campanile, Jarvis Macchi, Gabriele Lunati, Lucinda Spera, Paolo Pecchiari, Francesco Donatelli, Massimo Palmieri, Rossana Barzizza, Giovanni Rossi, Alessandro Cucchi, Riccardo Pagnanelli, Raffaella Mastrofilippo, Roberto Coretti, Alessandra Grendele, Ruggero Platolino, Stefano Smareglia, Roberto Corradini, Luca Del Din, Marianna Pepe, Massimo Rigobon, Antonina Tornabene, Matteo Dell'Orto, Sonia Aidani, Gabriele De Villa, Myrtille Clement Fromentel, Matteo Nube, Daniele Galleani, Andrea Arrigoni, Davide Casagrande, Lucia Gerini, Filippo Cecchi, Silvia Spadaccini, Massimilano Spadini, Gianlorenzo Magnani, Antonio Chiappara, Marzio Bonelli, Giovanni Gurioli, Roberto Privitera, Fabio De Maron, Alberto Peralta, Stefano Sala, Massimo Pernigotti, Massimo Rama, Francisco Souto, Oscar Grignolio, Gianni Rumi, Mario Mella, Massimo Rosso, Mauro Restelli, Filippo Onorato, Stefan Caballo, Ennio Bernardi, Gianluigi Zarantonello, Matteo Formenti, Aldo Croci, Giuseppe Genovesi, Gianrico Sirocchi, Maurizio Romanese, Daniele Pagani, Derek Barwise, Luca Ingrao, Guido Vetere, Christophe Pierron, Pietro Giardina, Guenter Lutgen, Lorenzo Marietti, Domenico Porto,

Alessandro Di Fonzo, Carlo Romagnoli, Claudio Luongo, Riccardo Angeli, Giovanni Bagnoli, Andreas Weinberger, Luca Martis, Stefano Levi, Paola Benatti, Massimiliano Baga, Matteo Baido, Marco Campi, Laura Wegher, Sebastiano Cannella, Diego Pogliani, Gianpiero Pepino, Rosy Bellan, Alessandro Marzi, Simona Tonella, Thomas Steinich, Barbara Karuth-Zelle, Ralf Schneider, Rüdiger Schmidt, Wolfgang Gärtner, Alfred Spill, Marco Damiano Bosco, Mauro Di Pietro Paolo, Paolo Brusegan, Giovanni Cialariello, Stefano Mander, Arnold Aschbauer, Ralph Karliczek, Robert Wittgen, Peter Kempf, Wilfried Reimann, Abel Archundia Pineda, Jürgen Sturm, Stefan Gaus, Peter Rampling, Elke Knobloch, Andrea Weierich, Andreas Luber, Heinz Laber, Sandra Betocchi, Daniel Besse, Michael Hesse, Markus Lohmann, Andreas König, Herby Marchetti, Marcell Assan, Klaus Straub, Robert Blackburn, Wiebe Van der Horst, Mattias Ulbrich, Matthias Schlapp, Jan Brecht, Enzo Contento, Michael Pretz, Gerd Friedrich, Florian Forst, Robert Leindl, Wolfgang Keichel, Stephan Fingerling, Sven Lorenz, Martin Hofmann, Nicola Benvegnù, Nicolas Burdkhardt, Armin Pfoh, Kian Mossanen, Anthony Roberts, John Knowles, Lisa Gibbard, John Hiskett, Richard Wainwright, David Madigan, Adam Ewell, James Freeborough, Matt Hopkins, Gill Lungley, Simon Jobson, Glyn Hughes, John Herd, Mark Smith, Jeremy Vincent, Guy Lammert, Steve Blackledge, Mark Lichfield, Jacky Lamb, Simon McNamara, Kevin Hanley, Anthony Meadows, Rod Hefford, Stephen Miller, Giovanni Leone, David Edwards, David Edwards, Stuart Lawson, Dean Eaves, Paul Johnson, Martin Beaver, Diana Medeiros-Placido, Jeremy Waters, Parker Humbert, Rob Lankey, Chris Michael, Willem Eelman, David Bulman, Neil Brown, Alistair Hadfield, Carsten Poetzschke, Andrey Martovoy, Marc Hotton, Neil Dyke, Tod McKenna, Andy Wilson, Kerry Grinham, Simon Hogg, Daniele Vigna, Roberta Rossi, Edoardo Anzani, Enrico Cagnin, Enrico Masoero, Cristian Pistamiglio, Davide Collavizza, Marco Triozzi, Antonia Casamassima, Daniele Valesani, Roberto Catto, Manuel Vanzetti, Francesco Baldi, Alessandro Ghio, Ivan Pavesio, Fabrizio Andrisani, Azzurra Ciraci, Francesco Maldotti, Francesco Mannaioli, Christophe Salomon, Giovanni Ballotta, Alexander Heinrich, Andrea Molteni, Michel Vukusic, Alexander Angebrandt, Christoph Auerbach, Rainer Kiel, Sherin Abraham, Arianna Paiella, Umberto Costanzini, Alessandro Caridi, Andrea Della Vedova, Fabian Topp, Andrea Pettinelli, Eckart Pech, Olaf Frank, Silviu Popescu, Tina Pogacic, Wolfgang Hanzl, Alexander Stock, Gerald Prangl, Alexander Bockelmann, Antonio Bergalio, Peter Novak, Melanie Kehr, Sven Laue, Joerg Benischke, Michele Fioravanti, Silvia Morabito, Marina

Morabito, Enzo Greco, Andrea Arancio, Daniele Pedrazzi, Angelo Parente, Alessandro Gentili, Fabio Potenza, Alessandro Linguanti, Giuseppe Napolitano, Federica Susanna Beretta, Alessandra Faranda, Ivano Di Lauro, Alessio Taruffi, Giulio Capacchione, Francesca Cavallari, Alessandro Fiumara, Giuseppe Portoricco, Emiliano Muroni, Alberto Giaccone, Maria Rosaria Carlesimo, Paolo Bazzocchi, Andrea Mori, Emiliano Sorrenti, Marco Rizzoli, Priscila Bossi, Michele Panigada, Ivano Gatti, Fabrizio Rigolio, Gennaro Bisesti and Francesco Bianco Marino.

I would especially like to gratefully acknowledge Gianluigi Viscusi and Alan Serrano-Rico at Brunel University who provided me with 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 the Business Technology Organization (BTO) Research Program who supported me in carrying out interviews, surveys and data analysis: Giuseppe Pugliese, Antonio Attinà, Marco Castelli, Umberto Bosisio, Alessandro Poli, Roberta Raimondi, Federico Latella, Alessia Bonanno, Luigi Scipioni, Lorenzo Chiara, Andrea Della Rocca, Francesco Schipa, Fabio Formosa and Roberto Valerio. Among my research partners, I would like to especially acknowledge Florenzo, Fabrizio, and Martino who made this journey possible.

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

Finally, I acknowledge my daughters Vittoria and Angela whose constant support, patience and understanding made this book happen as well as Hanaa for the positive energy that she transferred to me.

Abbreviations

3D	three-dimensional
AI	artificial intelligence
API	application programming interface
AR	augmented reality
BBC	British Broadcasting Corporation
CA	California
CEO	chief executive officer
CIC	community interest company
CIO	chief information officer
CMO	chief marketing officer
CRM	customer relationship management
CTO	chief technology officer
e-commerce	electronic commerce
EHS	environment, health and safety
FDA	Food and Drug Administration
EU	European Union
GDP	gross domestic product
GPS	Global Positioning System
H1	First Half
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
ICT	information and communication technologies
IoT	Internet of Things
IP	Internet Protocol address
IPO	initial public offering
IPR	intellectual property rights
IT	information technology
KPI	key performance indicator
m-commerce	mobile commerce
MPEG	Moving Picture Experts Group
NGOs	nongovernmental organizations
OEE	overall equipment effectiveness

OLED	organic light-emitting diode
PC	personal computer
PDF	Portable Document Format
PPC	pay-per-click
Q&A	questions and answers
R&D	research and development
RFID	radio-frequency identification
ROI	return on investment
RSS	rich site summary | really simple syndication
SEO	search engine optimization
SME	small to medium-sized enterprise
SMS	short message service
STEM	science, technology, engineering and mathematics
TV	television
UK	United Kingdom
URL	Uniform Resource Locator
US	United States
USA	United States of America
USD	United States dollar(s)
VC	venture capital
VIP	very important person
VP	vice president

Introduction

Digitalization has been a driver of transformation in business and society, leading to radical changes in the ideas and shapes of what work is, what organizations are and how value can be captured and created. One of the key issues of digitalization has been its capacity to enforce new ecosystems and the consequent rise of a new breed of entrepreneurs and ventures exploiting the opportunity of digital business. Therefore, this book discusses and presents the main challenges and trends related to digital entrepreneurship to an audience of managers and scholars. Moreover, this volume aims to provide a unified survey of both practice and current scientific work on the topic, considering the key issues for strategy and management as well as the role of technology in developing new digital ventures. Thus, as in my previous volumes, I will consider different perspectives, from information systems, technology management and innovation research to strategy and marketing, among others. Accordingly, this volume aims to create a bridge between industry and academia, presenting practices that are suitable for use by established businesses and digital entrepreneurs through the lens of academic work. This book continues the mission of my former published volumes in providing practitioners with a toolbox and "food for thought," too. So, as in previous work, each theme will be analyzed in its technical and managerial aspects, also through the use of case studies and examples.

Outline of the Book

The book argument is developed along three main axes, following a structure similar to the one adopted in my previous books [1–3], considering, first (Part I), strategy and management issues for digital entrepreneurship; subsequently (Part II), the role of technology, focusing on key digital business systems suitable to enable and for consideration by digital entrepreneurs and ventures; and, finally (Part III), the challenges and development of digital entrepreneurship in *three* key industries

(fintech, manufacturing and fashion), through presentation and review of case studies at a global level.

In Part I, I first discuss digital entrepreneurship's main characteristics and types (Chapter 1) before considering its relationship with innovation and the related challenges for new ventures as well as different kinds of organization apart from start-ups (Chapter 2). I focus specifically on digital marketing as a key aspect for digital entrepreneurs wanting to successfully target and manage their customers (Chapter 3). I conclude the first part of the volume by analyzing the education and skills required for digital entrepreneurship (Chapter 4). I begin Part II by exploring the key challenges of digital information and communication technologies (ICT) for digital entrepreneurship (Chapter 5). I then consider in detail three key digital technologies for digital entrepreneurship: social media (Chapter 6), the Internet of Things (Chapter 7) and blockchain (Chapter 8). Finally, as already mentioned, I investigate, in Part IlI, the challenges and development of digital entrepreneurship in the fintech, manufacturing and fashion industries alongside discussion and analysis of case studies at a global level.

As in my previous volumes [1–4], I adopt both a scientific approach and a concrete stance to introduce the characteristics, challenges and opportunities of digital entrepreneurship with the goal of providing insights and "tools" for understanding and acting through new ventures in the current digital competitive environment. Thus, this book is ideally connected to my former volumes on digital challenges and trends as well as Big Data and analytics [1–3], aiming to synthesize the issues and be a ready-to-consult guide to the key topics of digital business innovation for both managers and scholars.

References

1. Morabito V. *The Future of Digital Business Innovation*. Springer (2016).
2. Morabito V. *Big Data and Analytics*. Springer (2015).
3. Morabito V. *Trends and Challenges in Digital Business Innovation*. Springer (2014).
4. Morabito V. *Business Technology Organization – Managing Digital Information Technology for Value Creation – The SIGMA Approach*. Springer (2013).

Part I

Strategy and Management

1 Digital Entrepreneurship and Digital Business

1.1 Introduction

The digital revolution, brought about by the wide adoption and use of numerous technological tools such as smartphones, the Internet, social media and cloud technology, has created explosive changes in the economies and markets in which businesses operate. By 2020, it is estimated that there will be 50 billion Internet enabled devices, which in the entrepreneurial world is translated into more potential customers for businesses to reach. Offering billions of emerging opportunities, the digital disruption has transformed businesses as well as their processes and activities, reinventing their relationships with stakeholders such as suppliers, vendors and customers. In the era of digital trends, entrepreneurs are exploiting the dynamics of digital technologies in order to create value, expand their business and ultimately achieve high revenues that translate into the success of the firm [1]. "Software is eating the world" was the phrase used by famous Internet pioneer Mark Andreessen when trying to describe the extent of the digital phenomenon, with more and more businesses in almost every industry being run online and offering their products and services through the Internet. From movies to agriculture and defense, firms around the world have embraced the digital disruption [2].

1.2 Defining Digital Entrepreneurship and Digital Business

Over the last few decades, the concept of entrepreneurship has received significant attention from extant literature, where academic consensus on an equivocal definition has not been achieved yet.

In the early twentieth century, Joseph Schumpeter, who is considered the father of the contemporary version of entrepreneurship, in his seminal work described entrepreneurship as a process that involves the creation of new opportunities through "creative destruction," by breaking the equilibrium and embracing change [11]. In other words, an entrepreneur is an

individual who introduces innovations, in the form of processes, products and services, into the existing system, and is willing to take the risk as well as the responsibility involved in creating and implementing a new business strategy for an existing firm or in starting up a new business. Several studies in the literature try to define the concept of entrepreneurship and contribute additional value.

Table 1.1 presents some of the various definitions that have been proposed by authors in extant literature. It can be observed that some definitions omit the aspect of innovation while others tend to focus on the outcomes of entrepreneurship, with some concentrating on different instances of it such as "international" entrepreneurship. Overall, although there has been no mutual consensus on a global definition, studies seem to agree that at the core of entrepreneurship lie the aspects of innovation, risk-taking, seeking of new opportunities and creation of

Table 1.1 *Definitions of entrepreneurship*

Author	Definition
Shane and Venkataraman 2000 [3]	"We define the field of entrepreneurship as the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited . . . Consequently, the field involves the study of sources of opportunities; the *processes* of discovery, evaluation, and exploitation of opportunities; and the set of *individuals* who discover, evaluate, and exploit them" (p. 218).
Casson 1982 [4]	"An entrepreneur is someone who specializes in taking judgmental decisions about the coordination of scarce resources" (p. 20).
Cuervo et al. 2007 [5]	"Entrepreneurship includes the identification and assessment of opportunities, the decision to exploit them oneself or sell them, efforts to obtain resources and the development of the strategy and organization of the new business project" (p. 3).
Frank Knight 1921 [7]	"Universal foreknowledge would leave no place for an 'entrepreneur.' His role is to improve knowledge, especially foresight, and bear the incidence of its limitations" (p. lix). "Let us consider first the simple case of unique and undivided exercise of the function, the control and uncertainty-bearing being all concentrated in the same individual, under the assumption that outsiders[,] whether employed by him or not [,] have neither opinions upon nor interest in the question of his competence. It will further simplify the problem if we begin by assuming that this is the only type of entrepreneurship in our society" (p. 280).

Table 1.1 *(cont.)*

Author	Definition
Reynolds 1999 [8]	"Any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business" (p. 3).
Ruiz 2016 [9]	"Entrepreneurship means an undertaking by an individual, a team of individuals, or an established private or public entity in any of the following activities or areas. Any attempt at new business or new venture creation such as self-employment, founding a new business organization, or expanding an existing business. Any attempt at creating a new public initiative such as a new public organism, or expanding an existing organism. Any attempt at innovation, such as launching new products or services, new strategic development, new organization of resources (including human), entering new markets (including internationalization), creating new sectors, social development, or any other action that adds economic or social value" (p. 1029).
Oviatt and McDougall 2005 [10]	"International entrepreneurship is the discovery, enactment, evaluation, and exploitation of opportunities – across national borders – to create future goods and services" (p. 540).

new business activity as well as management of the new business and value creation [6].

Similar to the concept of entrepreneurship and taking into account its core aspects, digital entrepreneurship entails pursuing opportunities by utilizing information communication technologies (ICT) such as cloud computing, mobile computing and social media, providing entrepreneurial innovation in order to create value and gain competitive advantage over operations as well as competitors [6, 12].

Digital entrepreneurship can be defined as "the pursuit of the generation of value through the creation or expansion of economic activity by identifying and exploiting new ICT or ICT enabled products, processes and corresponding markets"[6]. If we considering digital enterprise to be the intersection of physical and digital economy, as depicted in Figure 1.1, as well as the intersection of digital technologies and entrepreneurship [14], we can differentiate digital entrepreneurship from traditional venturing in the following respects:

- **Focus.** Digital entrepreneurship is focused on technology innovations that are inspired by developments in science and engineering,

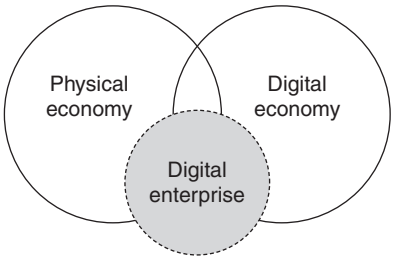


Figure 1.1 Digital enterprise as the intersection of physical and digital economy
Source: Adapted from [13].

promoting the emergence of novel entrepreneurial opportunities including promising markets, novel products and even new customer segments and industries [15].

- **Activity form.** In a digital firm, some or all of the entrepreneurial activities happen digitally instead of via traditional forms. This includes not only firms that have embraced digitization as an endeavor to reduce their costs and improve their customer service, for example through the adoption of a website, or to aid in the distribution of physical goods and services, such as with Amazon or eBay, but also digital enterprises that sell completely digitized products or services, such as music and applications [12, 16].
- **Business strategy and model.** Digital ventures use different business models from those favored by traditional ventures as well as different marketing strategies to promote their products and reach their customers [12, 17].

According to [18], a digital business is defined as an organization that uses a combination of two or more digital technologies in order to create new revenue opportunities, boost customer engagement, penetrate into new markets and increase product or service development speed to market. By harnessing the power of digital technologies such as mobile computing, cloud computing and social media, the digital enterprise achieves mobility by bringing teams of people together regardless of their location, enabling face-to-face interaction among different parties dispersed around the world via social collaboration tools. By leveraging digital technologies to create virtual offices, digitize its business processes or create an e-commerce platform, the digital venture is able to achieve international expansion by introducing its products into the world's most promising markets while at the same time reducing the costs of internationalizing its business activities and operations [19].

The infusion of new digital technologies into the entrepreneurial era has provided digital ventures with a vast amount of business innovative opportunities to explore as well as novel market segments to enter. These digital technologies, which enhance entrepreneurial pursuit as well as play a crucial role in shaping entrepreneurial actions and outcomes, manifest in three interrelated elements, according to [14]:

- **Digital artifacts**. Digital artifacts are digital components or applications embedded into physical objects, providing specific functionality to users. They can be in the form of either stand-alone software and hardware components on physical devices, such as applications in smartphones or fitness watches, or parts of products such as home appliances and personal products (Amazon Virtual Dash Button, Oral-B connected toothbrush). Characterized by reprogrammability and recombinability, digital artifacts are open, flexible, easily modifiable and expansible, enabling the entrepreneur to infuse new functionalities into the object thus generating new entrepreneurial opportunities. For example, drones, digital devices that were originally invented for military services, have been recently modified and adopted by several industries, such as agriculture, logistics and real estate, which are exploiting their functionality in new purposes [14].
- **Digital platforms**. A digital platform is a technology business model that enables exchanges among different groups such as producers and consumers. The most popular example is the Apple iOS platform, otherwise known as Apple Store, where users can buy applications for their smartphones and developers can contribute to the ecosystem with innovative ideas translated into applications. Another example is the Android platform, which operates on similar lines. Emphasizing variability and agility, then, digital platforms create a wealth of opportunities for entrepreneurs, among other things, to develop apps [14, 20].
- **Digital infrastructures**. Digital infrastructures are digital tools, systems and technology structures – such as cloud computing, social media, analytics, 3D printing and digital marketplaces – that offer the necessary collaboration, communication and computing capabilities in order for a digital enterprise to function [14, 21]. Assisting in the digitization of the entrepreneurial process, digital infrastructures are open, dynamic, extremely flexible as well as scalable, as their components can be easily updated or replaced; they therefore promote generation of entrepreneurial ideas that can be translated into development of successful products and services [21].

Overall, digital technologies have been embraced by digital ventures as they lie at the heart of every entrepreneur's powers of innovation and

economic competitiveness. Two of these technologies, namely social media and the Internet of Things (IoT), will be discussed in greater detail in Chapters 6 and 7, respectively.

1.3 Types of Digital Venture

Digital ventures range from large enterprises, already established in several industries, to small businesses or start-ups that use ICTs in order to create value and carry out business activities targeted toward their customers.

Academics and industry experts agree that start-ups can been defined as organizations that have been designed to scale very quickly into large companies [22, 23]. Although there is no timescale that determines how long a company can be considered a start-up, reaching certain thresholds – for example achieving revenue of more than $20 million, employing more than 80 people, having a high growth rate, founders being able to sell their shares, acquiring endeavors from larger companies – can signal the end of its "start-uphood." All in all, when a start-up starts becoming profitable, it means that it will cease being a start-up very soon [23].

While start-ups are considered to represent a big percentage of today's digital firms, small and medium-sized enterprises (SMEs) have long dominated the markets, characterized as the "backbone" of every economy. More specifically, SMEs represent 99.8 percent of the European economy; almost all European businesses can be considered as SMEs [24]. But how do start-ups and SMEs differ? Some key differences are listed here [25, 26]:

- **Growth:** As already mentioned, start-ups are designed to scale quickly and evolve into big companies; they are eager to reach their aspirations and disrupt the market. A small business, on the other hand, usually offers traditional products and services and is mostly focused on making profit within controllable boundaries with a set number of customers; it does not have high expectations in terms of scaling and growth.
- **Innovation:** A small business is usually not something new in the industry, while start-ups are infused with innovation, trying to translate novel ideas into products and services in ways that have never been done before, thus disrupting the industry. A very well-known example is Uber, which will be discussed in greater detail in Section 1.7.
- **Focus:** While small businesses are focused on their profit with low operational costs, start-ups are more concerned about scaling fast and growing quickly by bringing innovative ideas into the market.

- **Funding:** Small businesses usually rely on personal savings, bank loans and friends or family funds, while start-ups usually receive funding from investors and venture capitalists.
- **Exit strategy:** For a small business, future aspirations involve passing the company to the next generations such as family members or a large company that is interested in buying it. However, start-ups aim much higher, to sell big to a large corporation or go public (initial public offering (IPO)).

That covered some of the main differences between start-ups and SMEs. The next sections provide a deeper look at digital ventures: both start-ups (Section 1.3.1) and spin-off companies (Section 1.3.2).

1.3.1 Start-Ups: Big Ideas from Small Businesses

Focused on growth with no geographical boundaries, a start-up team works with excitement to solve existing critical problems by introducing innovative ideas, ultimately aiming to make an immediate impact in the market [23]. One of the central characteristics of a start-up is innovativeness: "[T]o be a startup is to claim a freshness that suggests a finger on the pulse of the future" [23].

Lying at the heart of entrepreneurship, innovation constitutes a key value for the success as well as the longevity of a business. An innovative company constantly keeps up with trends and demands and seizes arising opportunities to fulfill the ever-changing needs of customers by coming up with novel ways to produce products or services. In the entrepreneurial world, open innovation refers to the notion that ideas and resources should be shared among a wide range of players such as large firms and start-ups. Open innovation, which will be discussed in greater depth in Chapter 2, is facilitated through several digital technologies that offer tremendous opportunities for a firm's growth and success. As shown in Figure 1.2, in the open innovation ecosystem, the demand and supply sides of innovation are connected through bridge-makers, who constitute the "glue" between the two actors of the ecosystem. For example, Singularity University, founded by Peter Diamandis and Ray Kurzweil in the NASA research park in California, is characterized as a one-of-its-kind hybrid accelerator; it serves as a bridge-maker connecting the demand and supply sides of innovation, offering both educational programs to potential students and innovative partnerships within a business incubator to start-up companies, to help them in their entrepreneurship endeavors [19].

Small start-ups tend to collaborate with large established enterprises, with benefits accruing to both sides: on the one hand, start-ups are eager to enter the market and present themselves as a "best of breed" product provider choice; on the other hand, large firms gain access to new technologies and highly skilled talents while at the same time decreasing their research and development (R&D) costs [19].

Most young entrepreneurs – founders of small start-ups who embrace innovation and are eager to succeed – choose to establish collaborations with a variety of different large organizations, such as governments, nonprofit organizations, academic institutions and researchers as well as incubators or accelerators, in order both to speed up the process of translating their ideas into products and to accelerate their entrance into the relevant markets. Through these partnerships and collaborations with business incubators or multinational companies, start-ups gain the opportunity to leverage a wide range of resources including access to finance as well as foreign investment, mentoring services, efficient marketing strategies, robust sales resources and greater production scale [19].

More specifically, in the case of business incubators and accelerator programs, start-ups benefit from several advantages such as office space and professional services, business advice and even early-stage funding in order to get the initial "boost up." In some cases, large-company accelerators even

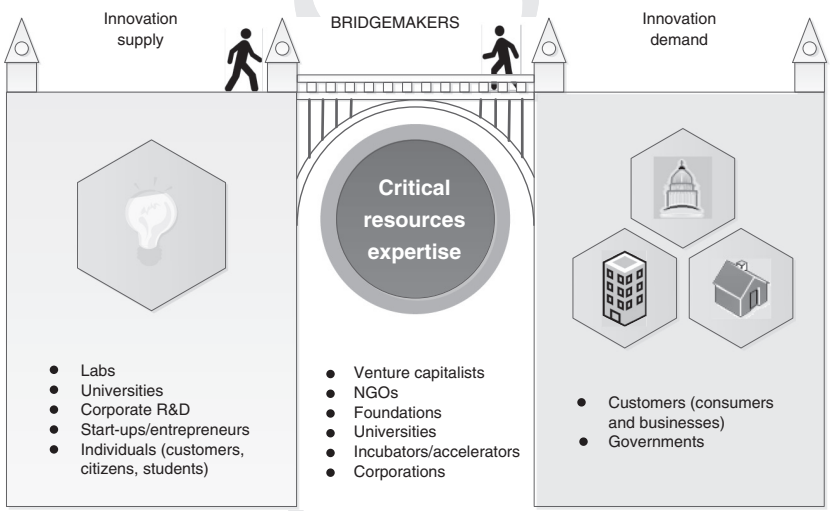


Figure 1.2 Open innovation and bridge-makers
Source: Adapted from [19].

end up buying the start-ups they have been working with. Establishing a connection with a large enterprise gives start-ups the opportunity to exploit the market recognition of the enterprise-partner and to benefit from an already established brand name, thus gaining credibility and increasing their potential to create enhanced revenue as an outcome of their business activities [19].

Corporate-led accelerators are gaining public attention; one example is the recently established Microsoft Ventures, which invests in early-stage start-ups that are developing products and services using technologies such as cloud, security and machine learning. Furthermore, Microsoft Accelerator has a number of accelerator programs worldwide, which offer to late-stage start-ups a variety of workshops as well as access to funding and connections with customers and other venture capital investors [19, 27, 28].

1.3.2 Spin-Offs from Large Enterprises

Although acquisitions of small start-ups by large corporations such as Microsoft, Apple and Facebook are very popular these days, another trend in the market is de-merging, that is, spin-off companies being created as offspring of large enterprises [29]. Gareth Wilson, an executive at Fog Creek, a software development company, who participated in the spinning off of Trello and StackOverflow, highlights that spin-offs from an established company constitute a high risk but at the same time a great opportunity to create a successful new business. Although customers tend to associate one thing with a name, a spin-off is preferred by investors as it shows a focused company perspective and offers financial benefits and attractive returns to stakeholders [30–32].

While in the USA every year only around fifty companies emerge from the de-merging of large business corporations' key assets as separate legal entities, academic institutions are considered a very fruitful source of spin-offs. Recent research has shown that in today's business environment, university spin-offs have shown outstanding performance as they are 108 times more likely to go public than any other average company [31]. As intellectual property of the academic institution, including the active involvement of the inventor, a university spin-off is a new company that exploits the university's scientific and technological knowledge as well as the outcomes of university research. Critical steps for developing a university spin-off include [33]:

- generating the business idea
- translating the idea into the business process
- creating the firm
- contributing value to the stakeholders, customers and employees.

By commercializing the university's technology, a university spin-off is translating research ideas and results into market solutions, thus contributing to the economic development of the academic institution while at the same time creating opportunities for the local economic community too. NaturalMotion, a digital animation company created by a PhD zoology student, is a brilliant example of how academic research can lead to huge success. A spin-off company from Oxford University, focused on animation technology in the film and game industries, NaturalMotion was recently acquired by NASDAQ-listed Zynga for $527 million, making it the highest university spin-off sale in years [34].

1.4 Setting Up an Online Business

In today's global economy, emerging technologies have penetrated into the processes and services of nearly all organizations with e-business as well as e-commerce, becoming an integral part of their business strategy. Both e-business and e-commerce have facilitated easier and quicker business transactions while at the same time increasing competition among vendors. E-commerce is becoming bigger every year, with estimates for worldwide e-commerce retail sales reaching $4 trillion in 2020 [35]. Digital entrepreneurs need to understand, follow and implement a series of critical steps in order to set up an online business [36, 37]:

- **Decide the business**: The first important step for a digital entrepreneur when planning an e-business is selecting the product(s) or service(s) that will be offered to customers. By thoroughly investigating the market and understanding the current competition, the digital entrepreneur is able to identify a niche to enter and set a business strategy and future goals.
- **Create the business plan**: Developing a business plan constitutes the most critical step for the success of any digital business. It includes defining the needs of the online business, its aims and objectives as well as its viability. Although it is crucial to undertake this planning process at the starting point of setting up a company, however, entrepreneurs should not get too bogged down with it and should instead keep their business plan flexible and capable of evolving around their mission, vision and values.
- **Design and build the website**: A successful digital business includes a well-considered and thorough plan that accounts for elements such as programming capabilities and design skills as well as sales and marketing abilities. Even when a company has the most innovative product in the market, if its website application does not provide ease of use, intuitive navigation and flexible processes, the digital endeavor will

eventually fail. Multiple technologies can be used in order to develop an e-commerce website – for instance HTML, Java, PHP, SQL – depending on the preferences and skills of the digital team. As the website is the only storefront of the business, ensuring that it is customer friendly by paying attention to critical elements such as web content, ease of use and site navigation will contribute to achieving high customer satisfaction, which will in turn lead to customer retention and attraction of new customers from competitors [37–39].

- **Develop the marketing strategy**: After the online business has been set up, the next critical step is to attract customers. Developing a digital marketing strategy, which will be discussed further in Chapter 3, is a crucial component of the success of any online business. Search engine optimization (SEO), pay-per-click advertising (PPC), email marketing, content marketing and web analytics are only a few of the wide range of options that a digital business can deploy in order to increase traffic to its website and attract buyers. Identifying the right online marketing tools to deploy as well as evaluating existing media channels and assets for utilization enables a digital business to build up effective online marketing campaigns that will incrementally lead it to accomplish its overarching goals [40].

1.5 The Role of E-commerce

While e-business refers to businesses that run their operations online or use Internet technology in order to improve their productivity and profitability, e-commerce describes the activities of marketing, buying as well as selling products and services to customers using Internet technologies. The difference between the two terms lies in the fact that the first one is broader, encompassing use of technologies not only to buy and sell goods and services but also to collaborate with business partners, process e-transactions and run internal processes such as inventory management, human resources and finance [41].

E-commerce is used by businesses in order to execute transactions (i.e. sales) facilitated by modern technology (i.e. the Internet, computer, online, email) to provide customers (i.e. selling, shopping, buying) products and services (i.e. shop, web store, delivery). E-commerce automates enterprises' business processes, providing twenty-four-hour goods and services availability, thus making products and services available anytime and anywhere. It also provides faster and reliable communication with customers and partners and cuts down operational costs. Moreover, e-commerce websites provide a platform where all information is available online at one place, facilitating more shopping options to customers,

who can easily compare products and prices, as well as expedited delivery of the product [42, 43]. A common classification of the several business models of e-commerce includes [44, 45]:

- ***B2B (business-to-business)***: The B2B business model describes businesses that focus on selling their products to other businesses. Both the buyer and the seller constitute separate business entities. Prominent examples include Cisco, IBM and Hewlett Packard (HP).
- ***B2C (business-to-consumer)***: Characterized as the second largest and earliest form of e-commerce, B2C is where a business sells its products, including physical goods, services and information goods, directly to consumers. By drastically reducing transaction costs for organizations, B2C increases customers' access to information, enabling them to choose from a wide range of products and find the most competitive price among many vendors.
- ***C2C (customer-to-customer)***: This model describes transactions between private individuals selling or purchasing assets such as cars, residential property and motorcycles, personal services and new or used products. Online marketplaces such as eBay, Etsy and Craigslist facilitate the execution of these transactions by offering a space where sellers can pay to advertise products for sale, including images and descriptions. Furthermore, portals such as eBay offer online real-time bidding where consumers can participate in online auctions to bid for items being sold on the website.
- ***B2G (business-to-government)***: B2G is an underdeveloped area of e-commerce but one that is steadily growing. It describes use of the Internet to execute various operations and transactions between organizations and the public sector, including procurement, licensing and filing of taxes.
- ***C2B (customer-to-business)***: In this model, the opposite of B2C, a private individual, such as a blogger or a photographer, sells value to companies by offering to advertise those companies' products or services for a fee, for example through reviews or sharing on social media as in the case of current "influencers."
- ***Mobile commerce***: M-commerce refers to the purchasing of goods and services by consumers through wireless technologies such as smartphones and tablets. As the penetration of smartphones has grown among consumers and rocketed with the introduction of the first iPhone in 2007, e-commerce is fast transforming to m-commerce. Rapid developments in mobile technologies along with the popularity of social media have created a habit shift such that consumers now tend to use their mobile phones rather than desktop applications [44–46].

Having acknowledged the main e-commerce business models that exist today, the digital entrepreneur is able to recognize the right niche to market as well as all the options at hand that can be exploited in order to create a successful online business.

1.6 Risks and Challenges

The wide adoption and deployment of digital technologies for entrepreneurial purposes offers tremendous opportunities to digital firms but, at the same time, includes several pitfalls and hazards. Digital opportunities and risks are two different sides of the same coin. In today's entrepreneurial world, already established digital firms, as well as entrepreneurs and managers that are interested in starting up a new digital business, need to understand the risks and challenges that are associated with digital entrepreneurship and its opportunities [26]. Some key challenges are:

- ***Security***: Although the benefits of the digital revolution are undisputable, they are accompanied by important risks and challenges. Digital threats can result in a wide variety of implications for organizations such as operational, financial, legal, intellectual property and reputation risks [47]. Cybercrime-related risks are at the top of the list of five global business risks creating major concerns for digital entrepreneurs using digital platforms and infrastructures as means to offer their products and services to customers [48]. Protection of digital intellectual property and business information against cyber criminals constitutes one of the most critical challenges for today's digital entrepreneurs. While large enterprises may have the financial resources to implement strong security measures, small businesses and SMEs face a major threat regarding cyber security. Due to financial and management constraints, SMEs usually choose not to prioritize implementation of a digital security management strategy. Furthermore, deployment of certain digital technologies and more specifically cloud computing encompasses several critical concerns, such as lack of security control in the cloud as well as regulatory and compliance issues and lack of cloud usage visibility. Since most of the critical and personal data of customers, such as personal details and bank details, is stored in the cloud and several new security threats appear every day, a digital firm should ensure that a strong security strategy is followed in order to retain the trust of its current customers and not lose new ones [24, 48–50].
- ***Financial challenges***: The recent financial crisis, resulting in a highly volatile business environment, contributed to banks becoming reluctant to provide loans to start-ups and small businesses. At the same time, venture capital funds have started following a less risky strategy, thus preferring to invest in late-stage start-ups. As a result, access to

funding constitutes a major challenge for digital entrepreneurs [19, 51]. However, financial challenges will occur in different stages and in different time periods for every digital firm. Although, as discussed in Section 1.3.1, several accelerator and incubator programs exist in order to aid start-ups, digital firms should plan their funding strategy ahead of their launch. One very popular practice for raising business finance is crowdfunding, where start-ups can collect funds from many different people in exchange for shares in the company. While this has been characterized as a considerably efficient funding option for a new company and the future of fundraising, a digital business should be aware of some critical challenges [52]:

- *Planning the time frame and amount*: The start-up team should plan thoroughly and determine the specific amount they aim to raise through crowdfunding as well as the time frame for starting their campaign and reaching their goal amount.
- *Choosing the platform*: Today, there are several crowdfunding platforms available, all created for the same purpose but targeted at different audiences. Some platforms are targeted at individuals who can contribute small amounts, while other platforms are more focused on investors and entrepreneurs who are interested in investing millions. Early-stage start-ups that have decided to use crowdfunding as a means of raising business funds should research diligently in order to find the platform that best fits their needs.

- ***Human resources***: In the very early stages of a start-up, the team usually comprises only the co-founders. As time goes by and the needs and demands of the company increase, more experts need to be hired, to complement the existing team, in order for the company to grow and reach its future goals. But finding the right talents that possess the right skills, expertise and mindsets is one of the most critical aspects of the success of a start-up. Not having the right team on board is one of the top reasons why start-ups fail today [51, 53]. Furthermore, digital ventures, either large enterprises or small businesses, are dealing with skills shortages as they all compete for the same underdeveloped pool of science, technology, engineering and mathematics (STEM) graduates who are in great demand from businesses around the world. At the same time, entrepreneurs are looking for "five-legged sheep" [19], as they are eager to recruit individuals who can successfully do almost everything. The success of any digital firm depends highly on the skills, expertise and knowledge of the workforce that it has employed; thus, the human capital management aspect of the company should be at the top of the list of priorities [19].
- ***Piracy*:** Having reached a worldwide rate of 35 percent with organizations' losses estimated at around $34 billion, piracy constitutes

a tremendous challenge for today's digital entrepreneurs. Digital products, such as movies, music and software, being downloaded by thousands of individuals without payment and permission from the creator is a phenomenon that is spreading across many countries around the globe today. According to Siegfried's 2004 study [54], individuals who illegally downloaded digital goods did not recognize that anything about their actions was wrong, revealing that consumers perceive physical products differently from virtual ones [26]. As a result, digital firms need to be very cautious and undertake strong protective measures against this phenomenon, which can significantly affect their business.

- ***Increased competition***: Digital innovative technologies such as social media, cloud computing and blockchain have changed both economies and societies, creating tremendous opportunities for digital enterprises. At the same time, digital changes have introduced one major challenge that digital firms need to face, namely, increased competition in the market [55]. One popular example is Google, which has been involved in both the social networking and the mobile handset markets, acquiring thousands of customers from other online businesses and leaving entrepreneurs wondering what its next move will be. With e-commerce websites, customers have access to real-time mobile data and are able to compare prices and products across multiple brands on the move; the power is thus completely in their hands. Acknowledging that rapid technological advancements as well as globalization have resulted in a highly competitive environment, entrepreneurs are intensifying their endeavors toward retaining their customers by developing new, innovative products or by shifting their focus from products to services, ultimately aiming to gain a strategic competitive advantage over their competitors. For example, Nike offers a personal customization service in a wide range of its products in an attempt to beat off competition and win the digital game. In a world where technology changes rapidly and new digital platforms and tools keep emerging, digital entrepreneurs should be aware of their market competition and seek innovative methods to retain their customers as well as gain new ones [56].

1.7 Case Studies

In this section, we discuss digital start-up success stories that have utilized digital technologies to accomplish their strategic goals and become strong and prosperous.

The first case study describes Deliveroo, a technology start-up that manages around 5,000 drivers aiming to deliver food from a wide range of restaurants to customers in a maximum time of thirty minutes. Having managed to raise $200 million from investors in its latest funding round in

2015, Deliveroo is currently available in nearly 200 cities across Europe, Asia and Australia, and aims to launch in the USA in the near future [57, 58].

Leveraging the smartphone penetration into people's lives that has radically increased in recent years [66], Deliveroo offers a customer-friendly website and application that enable customers to order online and in real time food from various premium restaurants in the nearby area; it charges a commission fee to restaurants and customers alike [67, 68]. Providing restaurants with low-cost standard Android tablets and relying on the drivers' personal smartphone devices, the majority of them being iPhones, the premium food delivery start-up offers for a small cost the exact same menu catalogs online as the restaurants offer on-site. By leveraging cheap off-the shelf mobile technology, the tech start-up, led by developer and former chief technology officer (CTO) Greg Orlowski, has developed three platforms: a restaurant app, a driver app with a highly complex algorithm and a web app for consumers. Continuously running simulations, redeveloping its software to incorporate new geographies and testing its core routing algorithm in order to select the right driver for each order, the food delivery network understands the delivery process by breaking it down into several steps from picking up food orders to interacting with customers, ultimately aiming to reach the quickest delivery times and the highest customer satisfaction levels [57, 59].

As the mobile tech revolution has significantly decreased the cost of creating an online business, Deliveroo has managed to create a new market by addressing existing but latent customer needs. Having excelled at developing a user-friendly app, providing quick delivery and a simple way of ordering food, Deliveroo has achieved a very high rate of customer retention with the average customer coming back in under twenty-one days and certain customers having spent almost $10,000 on the platform [59].

POINT OF ATTENTION: The invention of new markets has become possible due to the emergence of digital technologies; there are tremendous opportunities for digital entrepreneurs quickly to become the leader of a new market. Smartphone penetration has created new business horizons for businesses that can execute all or most of their processes online. By leveraging the power of existing technologies, these businesses can serve the needs of consumers in a novel way, thus creating new business models and making profit in markets that have not been uncovered before.

The second case study delineates the success story of Uber, a technology start-up that was founded in 2009 by serial entrepreneurs