

The Management Transformation of Huawei

Huawei has become China's most prominent multinational company and a leader in the ICT sector. Given unprecedented access to the company, the authors of this book examine the management transformation of Huawei from its inception in 1987 until 2019, observing in detail not only the creation of its organizational routines but also the breaking of routines across most major functional areas: management, product development, HR, supply chain, finance, R&D, intellectual property, and international business. "Dynamic capabilities" are central to theories of competitive advantage and this book highlights Huawei as an ideal case study for the successful implementation of change routines and change-supporting values. The chapters cover all the major change initiatives the firm has undertaken since 1996 to import best practices from the west, with the help of consultants. The insights presented in the book will be particularly interesting for academics in the field of strategy, management, and business history.

XIAOBO WU is the professor of Innovation and Strategic Management, School of Management, Zhejiang University. He has received the title of Chang Jiang Scholar Professor from the Ministry of Education, China, for his outstanding achievements in innovation and entrepreneurship research and education.

JOHANN PETER MURMANN is the professor of Strategic Management and Director of the Institute for Management and Strategy, University of St. Gallen. He is the author of *Knowledge and Competitive Advantage: The Coevolution of Firms, Technology and National Institutions* (Cambridge University Press, 2003), which won the International Schumpeter Prize, and co-editor of *China's Innovation Challenge* (Cambridge University Press, 2016). He is a deputy editor of *Management and Organization*.

Cambridge University Press
978-1-108-44514-6 — The Management Transformation of Huawei
Xiaobo Wu , Johann Peter Murmann , Can Huang , Bin Guo
Frontmatter
[More Information](#)

CAN HUANG is a professor, head of the Department of Innovation, Entrepreneurship and Strategy, and co-director of the Institute for Intellectual Property Management at the School of Management, Zhejiang University. He is also a member of the advisory boards for the Research Center for Technological Innovation at Tsinghua University, the CIPRUN Intellectual Property Management Research Center at the University of Electronic Science and Technology of China, and the Asia Pacific Innovation Conference. He is a senior editor of *Management and Organization Review* and a member of the editorial boards of several other academic journals.

BIN GUO is Professor of Innovation Management and Strategy, and vice-chairman of the Professor Committee, at the School of Management, Zhejiang University. He is the deputy director of the Joint Research Center for Global Manufacturing and Innovation Management, at Cambridge University and Zhejiang University.

Cambridge University Press
978-1-108-44514-6 — The Management Transformation of Huawei
Xiaobo Wu , Johann Peter Murmann , Can Huang , Bin Guo
Frontmatter
[More Information](#)

The Management Transformation of Huawei

From Humble Beginnings to Global Leadership

XIAOBO WU
Zhejiang University

JOHANN PETER MURMANN
University of St. Gallen

CAN HUANG
Zhejiang University

BIN GUO
Zhejiang University



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press
978-1-108-44514-6 — The Management Transformation of Huawei
Xiaobo Wu, Johann Peter Murmann, Can Huang, Bin Guo
Frontmatter
[More Information](#)

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/9781108445146

DOI: 10.1017/9781108550987

© Xiaobo Wu, Johann Peter Murmann, Can Huang, and Bin Guo 2020

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2020

First paperback edition 2022

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

Library of Congress Cataloging in Publication data

Names: Wu, Xiaobo, 1960– author. | Murmann, Johann Peter, 1967– author. | Huang, Can, author. | Guo, Bin, 1971– author.

Title: The management transformation of Huawei : from humble beginnings to global leadership / [by] Xiaobo Wu, Zhejiang University, China, Johann Peter Murmann, University of St. Gallen, Can Huang, Zhejiang University, China, Bin Guo, Zhejiang University, China.

Description: Cambridge, United Kingdom ; New York, NY : Cambridge University Press, 2020. | Includes bibliographical references and index.

Identifiers: LCCN 2019040751 (print) | LCCN 2019040752 (ebook) | ISBN 9781108426435 (hardback) | ISBN 9781108445146 (paperback) | ISBN 9781108550987 (epub)

Subjects: LCSH: Hua wei ji shu you xian gong si—History. | Telecommunication—Management—China. | International business enterprises—China.

Classification: LCC HE8430.H83 W89 2020 (print) | LCC HE8430.H83 (ebook) | DDC 338.8/872139167—dc23

LC record available at <https://lccn.loc.gov/2019040751>

LC ebook record available at <https://lccn.loc.gov/2019040752>

ISBN 978-1-108-42643-5 Hardback

ISBN 978-1-108-44514-6 Paperback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication, and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

Contents

List of Figures	<i>page</i> vii
List of Tables	x
List of Contributors	xi
Preface	xiii
XIAOBO WU	
1 The Management Transformation of Huawei: An Overview	1
JOHANN PETER MURMANN	
Commentary: Arie Y. Lewin, Liisa Välikangas, and Ying Zhang	52
2 The Executive Management Team and Organizational Change: A Routinized Transformation Perspective	71
ZIYI ZHAO, BIN GUO, AND XIAOBO WU	
Commentary: Jean Chen	107
3 Transforming Product Development at Huawei: The IPD Initiative	110
ZIHAN ZHANG AND JOHANN PETER MURMANN	
Commentary: Jaeyong Song	133
4 Huawei's Transformation of Supply Chain Management	136
YING LI, CAN HUANG, AND YONGYI SHOU	
Commentary: Yongjiang Shi	167
5 Financial Management Transformation in Huawei	171
CAN HUANG AND XIAO CHEN	
Commentary: Ram Mudambi	206

vi CONTENTS

6	The Transformation of Huawei's HR System	209
	HONGQI XU AND JOHANN PETER MURMANN	
	Commentary: Katherine R. Xin	238
7	Huawei's Internationalization Journey	244
	WEN (HELENA) LI, XIAORAN CHANG, AND BIN GUO	
	Commentary: Carl F. Fey	286
8	Huawei's R&D Management Transformation	292
	LANHUA LI, BIN GUO, JOHANN PETER MURMANN, AND DONG WU	
	Commentary: Frans Greidanus	344
9	Huawei's Intellectual Property Management Transformation	347
	JOHANN PETER MURMANN, CAN HUANG, AND HAOYU ZHANG	
10	The Management Transformation of Huawei: Concluding Thoughts from a Comparative Perspective	381
	JOHANN PETER MURMANN	
	Appendix A Number of Employees and Sales, 1987–2018	411
	Appendix B List of Presentations at Ruihua Institute of Innovation Management, Zhejiang University	413
	Appendix C Interviews Conducted for the Book	419
	Appendix D The Huawei Basic Law (1998)	420
	Index	451

Figures

1.1	Sales growth of Huawei, ZTE, Cisco, and Ericsson since 1987 (in million USD)	<i>page 7</i>
1.2	Huawei's revenues and employees, 1987–2018, and the timing of major transformation initiatives	9
1.3	Huawei's major transformation initiatives	43
1.4	Functional interdependence in transformation initiatives	44
A1.1	CEO influence on organizational design and strategy	55
2.1	The three-level transformation team	75
2.2	The matrix structure in 2009	91
2.3	The dual-identity of the Executive Committee in 2011	94
3.1	The product development cycle of Huawei from 2003 to 2007	117
3.2	The product failure rate of Huawei from 2001 to 2006	117
3.3	The simple version of the cross-functional team structure in Huawei	120
4.1	Supply chain processes based on the SCOR model	145
4.2	Integrative IT system in Huawei	148
4.3	Supply chain management department in Huawei	151
4.4	The "cell division" method	157
4.5	Global supply chain of Huawei	158
4.6	Huawei global supply chain: configuration mapping	170
5.1	Operating profit margin of Huawei 2000–2006	183
5.2	The relationship of four teams in IFS	193
7.1	The trend in overseas sales and total sales	247
7.2	Huawei's internationalization process	248
7.3	The project-based "Iron Triangle"	263

viii LIST OF FIGURES

7.4	The support system: the system department-based “Iron Triangle,” the representative office and the regional department (DP: department)	264
8.1	The five stages of Huawei’s R&D management transformation	293
8.2	Theoretic framework for transformation management	295
8.3	Huawei organizational structure in 1992	304
8.4	Huawei’s organizational structure after the transformation of the digital unit	307
8.5	Structure of the central R&D department in 1995	311
8.6	Matrix management in the central R&D department	316
8.7	New matrix management in the IPD system	326
8.8	The six phases of R&D in IPD	327
8.9	Huawei’s sales from 2002 to 2007	332
8.10	Main international research centers	333
9.1	Total R&D Investment of Huawei, 2004–2018 (in million USD)	348
9.2	Yearly number of Chinese patent applications by Huawei and ZTE, 1985–2013	353
9.3	Yearly number of US patent applications by Huawei and key competitors, 1980–2013	354
9.4	Yearly number of patent applications in the European Patent Office by Huawei and key competitors, 1980–2013	355
9.5	Number of employees at ZTE and Huawei, 2010–2018	356
9.6	3G W-CDMA number and share standard essential patents	357
9.7	Number and share of declared essential patents for the LTE standard (as of 2013)	358
9.8	Number of contributions to the LTE (4G) standard	359
9.9	Number of Huawei-involved intellectual property cases	373

10.1	Share of foreign sales of Huawei and Alibaba (2011–2018)	387
10.2	Share of economic activity in Chinese manufacturing and utility sectors (2000–2017)	393
10.3	Sales growth of Huawei and Datang since 1988 (in million USD)	393
10.4	Combination, reconfiguration, and asset protection skills	397
10.5	Transformation/reconfiguration skills	401

Tables

A1.1	Origins of internal requisite variety at Huawei	<i>page 58</i>
2.1	The history of Huawei's transformation and its consultants	79
2.2	Three stages of Huawei's leadership structure	87
5.1	Days of sales outstanding (DSO) and inventory turnover days (ITO) of Huawei, 2008–2015	195
5.2	Huawei's acquisitions after 2011	199
6.1	Main challenges for Huawei's HR system and changes made (1987–2016)	234
7.1	Some examples of cooperation with partners	274
8.1	Content summary of three R&D management transformations	336
8.2	Summary of characteristics of four steps in each transformation	339
9.1	Number of essential LTE (4G) patents by firm and total royalty rates	350
9.2	Top 5G SEP owners	360
9.3	Top companies making technical contributions to the 5G standard	361
10.1	Change meta routines at Huawei and their supporting values	399

Contributors

Xiaoran Chang China Jiliang University

Jean Chen University of Macau

Xiao Chen Zhejiang University

Carl F. Fey Aalto University

Frans Greidanus Zhejiang University

Bin Guo Zhejiang University

Can Huang Zhejiang University

Arie Y. Lewin Duke University

Lanhua Li Zhejiang University

Wen (Helena) Li University of Technology Sydney

Ying Li Shandong University

Ram Mudambi Temple University

Johann Peter Murmann University of St. Gallen

Yongyi Shou Zhejiang University

Yongjiang Shi Cambridge University

xii LIST OF CONTRIBUTORS

Jaeyong Song Seoul National University

Liisa Välikangas Danish Technical University & Hanken School of
Economics

Dong Wu Zhejiang University

Xiaobo Wu Zhejiang University

Katherine R. Xin China Europe International Business School (CEIBS)

Hongqi Xu Zhejiang University

Haoyu Zhang Zhejiang University

Ying Zhang Erasmus University

Zihan Zhang Zhejiang University

Ziyi Zhao Hangzhou Normal University

Preface

Ever since *Industrial Civilization* arose in the eighteenth century, enterprises based on the factory system have been the main players in the economic arena for most countries. In China, Jiangnan Manufacturing Bureau (the term bureau here, “ju” in Chinese, was used as part of the name for thirty-plus factories) was established in September 1865, and since then the country undertook more than 150 years of experimentation: *the Self-Strengthening Movement (1861–1895)*, *National Capitalism, Compradors, Public and Private Joint Ventures*, *156 Soviet-Aided Projects and Soviet Experts*, *the Great Iron and Steel Production Movement*, *the Great Leap Forward Movement*, *The Charter of the Anshan Iron and Steel Company*, *Learning from Daqing in Industry Development*, *the Self-Reliance Plan*, and so on. It is a fact that China has never stopped learning from the developed world – the United Kingdom, Japan, Germany, the United States, and the Soviet Union.

Such learning became more intensive with China’s “Reform and Opening-up Drive” in the late 1970s. After going through many setbacks, China finally started to catch up. In terms of the scale of manufacturing, the endeavor to surpass the United Kingdom and to catch up with the United States in the 1960s was obviously not so successful. But today China has managed to exceed the United Kingdom, Italy, France, Germany, and has eventually taken over Japan and the United States in terms of the size of its economy. In the past decade a good number of Chinese companies have come a long way from “catching up” to becoming global leaders in their own right.

Today’s bookstores, libraries, internet platforms, and social media networks are filled with many heroic tales of successful companies – so many that it is almost confusing for the readers to make their selections. As scholars, when we reflect on the

xiv PREFACE

achievement some of the leading companies, we aim to go beyond telling inspirational tales and ask the “why” question behind the success. What were the reason why some companies became so successful while many others languished or failed?

Many well-known management theories have been developed since the advent of *Industrial Civilization* that pose these “why” questions: from the United Kingdom, Adam Smith’s *The Wealth of Nations* and *Division of Labor Theory*; from France, Henri Fayol’s *General and Industrial Management* and *Fourteen Principles of Management*; from Germany, Max Weber’s *The Protestant Ethic and the Spirit of Capitalism* and *Bureaucratic Management Theory*; from the United States, F. W. Taylor’s *The Principles of Scientific Management*, Elton Mayo’s *Human Relations Management Theory*, Maslow’s *Hierarchy of Needs*, Herbert Simon’s *Decision Making Theory*, Peter Drucker’s *Modern Management Theory*, Michael Porter’s *Competitive Strategy*; from Japan, William Ouchi’s *Theory Z*, and also theories of *Total Quality Management* and *Lean Production* developed by the Americans based on the Japanese business management practice, and on top of these, there are also books distilled from management practices from those world-renowned companies that have created global impact, such as: Alfred Sloan’s *My Years with General Motors*, Alfred Chandler Jr.’s *The Visible Hand: Managerial Revolution in American Business*, Takahiro Fujimoto’s *The Evolution of the Toyota Manufacturing System*. By no means is this list exhaustive.

With rise of Chinese economy in recent times and the success of some its firms on a global scale, there has been considerable interest both in China and the rest of the world to understand how similar or different the management of Chinese firms are from the management of firms in Western countries. To what extent are management principles universal and to what extent are they idiosyncratic to development stage and the cultural and social conditions of a country? These are questions that not only are central to the contemporary scholarship but also of great interest to the

leading Chinese and Western companies that operate in the Chinese context.

A few years ago, I had a long conversation with Ren Zhengfei – the founder of Huawei – and Tian Tao, who has been studying and writing about Huawei for many years. That discussion covered the historical changes in both China and the world at large, and our thoughts went back to thousands of years in time. Just like everyone else, we marveled at the continuous growth of the Chinese economy since 1978. After the country implemented the Reform and Opening-Up Strategy, Chinese companies grew at an exponential rate. It is clear that the Chinese companies that became successful were deeply committed to learning from the West in all managerial aspects. But they did not necessarily follow the same development path of Western companies. We also suspected that their success could not be completely explained by the Western management theories. Chinese companies appeared to integrate the traditional Chinese “dialectical Yin and Yang” and “grayness” concept into their management practice, but the gap between “knowing and doing” had yet to be bridged, and the traditional term “Confucian Merchants” could not define them anymore. In a short period of thirty years, Chinese companies went through an equivalent of 100 years of development for their Western counterpart. Companies transitioned from catching up to taking the lead in some sectors, from quantitative change to qualitative change. It seemed to us that these trailblazing Chinese companies deserved to be studied with the same scientific rigor that Western scholars brought the history of IBM, General Motors, Intel, and the like. Furthermore, we strongly felt that the results from such systematic analysis of leading Chinese deserved to be widely disseminated.

Driven by such a mission, and with the support of Tian Tao and a group of former Huawei executives, the Ruihua Innovation Management Institute was founded at Zhejiang University School of Management, codirected by Tiao Tao and myself. We organized quarterly forums on Huawei’s management to analyze key

xvi PREFACE

experiences of Huawei, to find possible rules and principles behind Huawei's management experience, and to extract theoretical ideas that could be applied to other companies. The quarterly forums brought together a large number of retired Huawei executives and scholars. (A list of all presentation can be found in Appendix B.) These presentation and other interviews we did with former Huawei managers formed an invaluable source of information that allowed us to go beyond the material that is available in the public domain to piece together as systematic as possible and account of the management transformations of Huawei.

Just as the core idea of microeconomics features Pareto optimality, for more than a century, the core idea of management has been to establish a balanced and effective allocation and collaboration system, and the core proposition for companies has been to build a stable equilibrium and maintain it for efficiency via means of management. However, Huawei's management practice tells us that when change becomes the new norm, when breaking balance becomes an active means of management behavior where interferences such as iteration, trial and error, mobility, uncertainty, and ambiguity or grayness is no longer exceptions but the rule. The significance of this book in my view is that it takes us behind the scenes of Huawei, but also to show a new perspective of achieving nonlinear growth. For me the book is a new starting point for committing to sorting out the nonlinear growth management law of Chinese companies and the formation of "C theory."

Over the past several years, our research team endeavored to investigate multidimensional facts about Huawei, taking the perspective of time and motion, of change and stability, to discover the key points from Huawei's dynamic process of establishing equilibrium and breaking equilibrium and to reveal the science behind its success. Of course, it is impossible to present Huawei's key for success and come up with a set of complete, in-depth theories in just one book. We admit that we have not said everything one could say about this topic. But we are confident that this book is the most

systematic attempt to date to critically observe and examine the transformation of the Huawei's management practices during its first thirty years of existence from 1987 to 2017.

I would like to extend special thanks to Mr. Tian Tao, Mr. Hu Yanping, and many of the Huawei people for making themselves available to our research team. Without their willingness to share their experience and insights on the history of Huawei, this book would have far poorer. After the first draft of the book manuscript came out, they gave rigorous feedbacks to the viewpoints presented in the book and helped spotting some factual errors we had committed in our analyses and interpretations. I would like to emphasize that the views expressed in this book should not be construed as the views of anyone within Huawei. This book represents an academic effort. The interviews with members of Huawei are only a small portion of information we analyzed. The authors of the chapters and commentaries came to their conclusions based on all the evidence available as will be apparent in the extensive reference list at the end of each chapter. I would also like to thank the commentators who are renowned experts on their subjects, and have given of their time in discussing the draft of the chapters. I am indebted to their insight and comparison between Huawei and other successful companies that they are familiar with, which greatly enriched the contents of this book. Last but not least, I am grateful to our co-authors, many of whom are our former and current PhD students. Without them, this project would not have been possible.

But this book is only the beginning to study Chinese enterprises to extract from their management practices a “C theory” in a general sense. To be sure, other Chinese companies need to be studied in detailed before we can be certain of the robustness of our theoretical ideas.

Xiaobo Wu