

NIRMALYA KUMAR / PHANISH PURANAM


INDIA INSIDE

**THE
EMERGING
INNOVATION
CHALLENGE
TO THE
WEST**

HARVARD BUSINESS REVIEW PRESS

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**HARVARD BUSINESS REVIEW PRESS
BOSTON, MASSACHUSETTS**

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Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

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Library of Congress Cataloging-in-Publication Data

Kumar, Nirmalya.

India inside : the emerging innovation challenge to the West / Nirmalya Kumar, Phanish Puranam.

p. cm.

ISBN 978-1-4221-5875-3 (alk. paper)

1. Technological innovations—India. 2. Diffusion of innovations—India. 3. New products—India. 4. Research, Industrial—India.

I. Puranam, Phanish. II. Title.

HC440.T4K86 2012

338'.0640954—dc23

2011021193

The paper used in this publication meets the requirements of the American National Standard for Permanence of Paper for Publications and Documents in Libraries and Archives Z39.48-1992.

Also by the Authors

Nirmalya Kumar, *Marketing as Strategy: Understanding the CEO's Agenda for Driving Growth and Innovation*
(Boston: Harvard Business School Press, 2004)

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(Boston: Harvard Business Press, 2009)

To Surabhi, my sister

Innovation's mirror is constancy;
thank you for always being there

—NK

To Panchali, my wife

For making this possible

—PP

Preface

When we were children growing up in India, it was drilled into us, both at school and at home, what an old and great civilization India was. We were taught about the discoveries and inventions that India had offered to the world over the centuries.

Our history lessons began with the Indus Valley civilization, which flourished between 3300 and 1300 BC. This always led to a fascinating discussion of the urban planning system at Mohenjo-Daro (now in Pakistan), one of the largest cities of the civilization, excavated in the 1930s. The city is believed to have had the world's first urban sanitation system. Individual homes obtained water from municipal wells and had a room that was apparently set aside for bathing, from which wastewater was directed to covered drains that lined the major streets.

Our mathematics teachers invariably mentioned that India gave the world the concept of zero and the decimal system. While today we are aware that these observations are subject to considerable debate, we took them at face value as school-children. For us, it was a demonstration of India's long history of contributions to the world of science and mathemat-

ics. Famous Indian mathematicians, astronomers, and other scientists—from Aryabhata in the fifth to sixth century, to Bhaskara I and Bhramagupta in the seventh century, all the way to Ramanujam and Bose in the early twentieth century—were superstars for us.

How could we not aspire to go to university, having been taught that Nalanda, in northeastern India, was one of the earliest full-fledged universities in the world? It had been functioning as a center of learning from 497 AD on. Nalanda, meaning “insatiable in giving,” was devoted to Buddhist studies, but it also imparted education in the arts, astronomy, mathematics, medicine, and politics. At its peak, its dormitories and libraries had two thousand professors educating ten thousand students, supposedly attracted from as far away as China, Greece, Japan, Persia, and Turkey. Nalanda died a slow death between the eleventh and twelfth centuries, around the time when the oldest surviving Western universities, Bologna in Italy and Oxford in England, began their life.

Having grown up with these beliefs as schoolchildren, we arrived at university and the first serious consideration of career opportunities, and had to confront the painful realities of contemporary India. Ironically, the Indus Valley irrigation system was better than that which existed in parts of modern India! Most of the recent “Indian” advances in science were made by those of our compatriots who had migrated to the West and pursued their discoveries at famous American and European universities. Our families include scholars with international reputations, but watching their efforts to produce world-class research within the constraints of Indian universities helped make salient the disparity of working conditions between what they faced and what their Western collaborators faced.

Instead, we observed that innovation in India had contorted itself mainly into an ingenuity to overcome import, licensing, and other bureaucratic controls. The most popular concepts in industrial innovation were the CKD (completely knocked down) units that were imported and subsequently assembled in India using “screwdriver technology” and “reverse engineering” (no explanation is necessary). Given this reality, as was the case for the majority of the graduating classes of elite Indian educational institutions, we headed to the United States for postgraduate studies. Yet, while Indian innovation seemed to have gone into hiding, Indian entrepreneurship in the broadest sense of the word never did. It was alive and well in the form of *jugaad*, or the concept of making the best of a situation and inventing solutions to problems using limited resources, through a combination of imagination, creativity, and even cunning.

It took a decade after the initiation of the economic liberalization in 1991 to get the country’s business houses and economy in order. The pulls of family and, to our pleasant surprise, work saw us returning to India with increasing frequency. We could not help but notice a country that appeared to be taking the first steps toward becoming a serious player in the innovation space. This book was prompted by the question as to whether these steps could lead to a giant leap for Indian innovation, with the “Made in India” label becoming synonymous with innovation. Our research led us to realize that perhaps this is not the correct frame of reference. Instead, as we contend in this book, “India Inside” can be just as synonymous with innovation as “Made in India.” Through several recommendations we make at the end of each chapter, we hope to provide some answers for both policy makers and companies in India and the West. But because Indian innova-

tion is still an emerging story, there is ample opportunity for countries and firms to shape the trajectory of this phenomenon. As a result, we also hope that the book will raise many questions about the future of Indian innovation and its implications for the West.

This book builds on the previous work of pioneering colleagues such as C. K. Prahalad's bottom of the pyramid and Vijay Govindarajan's reverse-innovation concepts. Our goal, however, is not to restrict Indian innovation to what is visible to end users in the developed world. Instead, we propose that Indian innovation can be a ubiquitous, invisible force originating out of India.

Some of our colleagues have asked us why we did not write a comparative assessment of India *and* China. While some of the analysis in this book does compare India and China, the focus of this book is unambiguously on India. This is not to deny that China will very likely be as important as India, if not more important than India, on the global innovation stage in the coming years. Yet, India and China are large enough, important enough, and interesting enough in their own right to merit dedicated books on each single country alone. Moreover, we as authors simply do not know China the way we know India. Consider this, then, if you will, a book by people who know and care about India.

Acknowledgments

Our first and deepest gratitude is to all the managers, academics, and policy makers who took time from their busy schedules to meet with us. Therefore, we start by thanking those who met with us to share their insights:

V. Bharathwaj, 24/7 Customer

T. Hariharan, 24/7 Customer

Mohit Jain, 24/7 Customer

P. V. Kannan, 24/7 Customer

Kumar Mangalam Birla, Aditya Birla Group

Subhash Bana, Alcatel-Lucent

Pratap Reddy, Apollo Hospitals

Anandh Balasundaram, AstraZeneca

Tanjore Balganesesh, AstraZeneca

Sudhir Nambiar, AstraZeneca

Baba N. Kalyani, Bharat Forge

Vinita Bali, Britannia

Pradipta K. Mohapatra, Business Coaching Foundation
India

Samir K. Brahmachari, CSIR and DSIR

Naresh Kumar, CSIR

Acknowledgments

Satish Reddy, Dr. Reddy's Laboratories
Sudeep Kumar, CSIR
V. K. Gupta, CSIR
Sarv Saravanan, EMC
Aniruddho Basu, Ericsson
Ashish Gupta, Evaluserve
Marc Vollenweider, Evaluserve
Siddharth Nambiar, Evaluserve
Guillermo Wille, General Electric
Mano Manoharan, General Electric
Gopichand Katragadda, General Electric
Ashok Kumar, Government of India
Kanwaljit Singh, Helion
Rishi Krishnan, IIM Bangalore
S. K. Nandy, Indian Institute of Science
V. Rajaraman, Indian Institute of Science
Subhash Dhar, Infosys
Sanjay Mohan, Infosys
Sanjay Purohit, Infosys
Akash Deep Batra, Infosys
Rahul Bedi, Intel
Kishore Ramisetty, Intel
Praveen Vishakantaiah, Intel
Rahul Agarwal, Erehwon Consulting
Kumar Parakala, KPMG
Harsh Mariwala, Marico
Srini Koppolu, Microsoft
Nina Choudhuri, Microsoft
Ajay Piramal, Piramal Enterprises
Somesh Sharma, Piramal Enterprises
Bomi Gagrath, Pfizer Ltd.

Acknowledgments

Sunil Madhok, Pfizer Ltd.
Wido Menhardt, Philips
Vandana Subramanian, Philips
Erik M. Vermeulen, Philips
S. Bhaskaran, Philips
Harsh Dhand, Philips
Sudarshan K. Arora, Ranbaxy
Sandeep Singhal, Sequoia Capital India Advisors
Siddharth A. Pai, TPI Advisory Services India
I. Vijaya Kumar, Wipro Technologies
V. R. Venkatesh, Wipro Technologies

We were fortunate to be supported by a great team during the course of our research. A special thanks to Tufool Al-Nuaimi, Karin Baye, Suruchi Bhargava, Donna Everett, Eddie Guzdar, and Suseela Yesudian.

Prashant Bhardwaj helped us gain access to his network of managers and academics in Bengaluru. Aniruddho Basu deserves special thanks for carefully reading and sharing comments on early drafts. We also thank our coauthors, Kannan Srikanth (ISB), Saikat Chaudhuri (Wharton), Suma Athreye (Brunel), Tufool Al-Nuaimi and Gerry George (Imperial), on various research projects about innovation in India, insights of which infuse this book.

The research costs for this book were partly borne by the Management Innovation Lab (led by Professor Julian Birkinshaw) and the Centre for Marketing at London Business School. Our own research has been continuously supported by the Aditya Birla India Centre at London Business School. The school and we are grateful to Kumar Mangalam Birla for generously funding the Centre in his father's memory.

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1 Where Are the Indian Googles, iPods, and Viagras?

OVER TWO DECADES, India has established itself as the global hub for software development and back-office services. The story of how Indian software engineers capitalized on the millennium-bug scare to create an information technology (IT) services juggernaut has inspired countless other Indian firms to attempt to repeat the same feat for customer contact, analytics, legal, and medical transcription services. In many of these segments, India has achieved a dominant share of the offshore market, with estimates that India accounts for 65 percent of the global offshore IT industry and 45 percent of the global business process outsourcing industry.¹

Moving work offshore to India has had some inescapable implications for the mobility of white-collar jobs in the Western world. The traditional concern in the West has been about immigrants coming onshore to compete for local jobs; now, the effects of that competition can be felt from distant offshore locations such as India. Although estimates of the extent of the flight of jobs from the developed world to India remain embroiled in controversy, there is little doubt that the process has caused considerable angst in the West. Support for free trade has fallen as people in the developed world have grown alarmed by its perceived threats, rather than charmed by its potential virtues. Thus, in a recent global poll of forty-seven countries, the United States came in dead last in the percentage of the population supporting free trade.²

Yet many Western elites argue that this fear is misplaced, because the distinctive advantage, still monopolized by the developed world, is innovation. For example, in *The World Is Flat*, Thomas Friedman argues that apprehension about free trade is based on the mistaken assumption “that everything that is going to be invented has been invented, and that therefore economic competition is a zero-sum game.”³ In his view, innovation and idea generation will continue to keep Western companies and populations economically supreme, with the “more sophisticated tasks being done in the developed world and the less sophisticated tasks in the developing world—where each has its comparative advantage.”⁴ The more aggressive proponents in this camp offer a powerful retort to the conjecture that India can make the transition from services to innovation: “So where are the Indian Googles, iPods, and Viagras?”

The conventional wisdom in India seems to echo this view.⁵ While recognizing their own achievements, many Indian

managers we met in the course of our research for this book repeatedly expressed their opinion that providing services on demand was one thing, but coming up with truly innovative products and services was quite another. These managers also frequently expressed their frustration at seeing their companies and industries locked into traditional paradigms, with no sense of how and whether to move into new, innovative product and service realms. In the plaintive words of one manager, “When will we cease to be e-coolies?”⁶

The desire to go beyond “renting out IQ” to “start creating IP” (intellectual property) is becoming widespread in India’s successful IT industry. Consider Infosys, perhaps India’s best-known firm. Microsoft and Infosys commenced commercial operations about five years apart, in 1975 versus 1981, respectively. Yet Microsoft’s fiscal year 2010 revenues were \$62 billion, with profits of \$19 billion, while Infosys barely managed to top \$4 billion in revenues and \$1 billion in profits. This disparity reflects fundamental differences in their business models: whereas Microsoft has incessantly focused on developing innovative products, Infosys has focused on services. It is not as though Microsoft’s programmers are from another planet—a significant percentage of them are of Indian descent. Even iconic Indian firms such as Infosys now recognize that the challenge is to move from “outsourced and made in India” to “imagined and owned in India.”⁷

Yet we must also bear in mind that only a few decades ago, Japan and Korea were prematurely categorized as havens for low-cost production, incapable of innovation. The 2010 *BusinessWeek* ranking of the most innovative companies in the world shows the fallacy of this prediction, with Toyota ranked at five, LG Electronics at seven, Sony at ten, Samsung

at eleven, Nintendo at twenty, and Hyundai at twenty-two!⁸ Is it really all that far-fetched to imagine that the 2020 rankings could contain a significant number of Indian companies (beyond the Tata Group, already there at seventeenth) among the most innovative? Could “Made in India” become synonymous with innovation?

We spent four years trying to answer these questions, by investigating whether India could change from being the favored destination for offshore services to a locus of innovation. With its systematic, research-based approach, this book is the result of (1) more than fifty in-depth face-to-face interviews with CEOs, scientists, engineers, policy makers, and industry observers; (2) analyses of data on more than three hundred projects from surveys and internal company records to learn how globally distributed work is managed; (3) textual analyses of nearly one thousand media articles; and (4) statistical analyses of more than three decades’ worth of patent data associated with inventors in India.⁹ Unless otherwise indicated, the quotations in this book are from the aforementioned interviews we conducted during our research.

“Indians Don’t Do Innovation”

At the beginning of this research project in 2007, when we posed the question “Can India do for innovation what it has already done for services?” to executives in both Western and Indian companies, we often received a dismissive response: Indians simply do not “do innovation.” Usually, this scoff effectively terminated the conversations. Some executives more politely, though no less equivocally, asserted that “Indians