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Global Innovation and Economic Value

 Springer

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ISSN 2198-0012 ISSN 2198-0020 (electronic)
India Studies in Business and Economics
ISBN 978-81-322-3758-7 ISBN 978-81-322-3760-0 (eBook)
<https://doi.org/10.1007/978-81-322-3760-0>

Library of Congress Control Number: 2017948612

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Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer (India) Pvt. Ltd.
The registered company address is: 7th Floor, Vijaya Building, 17 Barakhamba Road, New Delhi 110001, India

Preface

The task seemed daunting. The world outlays billions of dollars on innovation, but there has been no holistic assessment of its outcome. Do we have the answer to the question: *have investments in innovation paid off?* Outlays are not outcomes. This book is a study aimed at providing a comprehensive assessment of the impact of innovation and should count as a pioneering effort.

How does this book provide a wholesome appraisal of value created by innovation? It captures the *societal value* that innovation delivers to humanity, the *economic value* that it endows to nations and the *financial value* that it provides to innovating firms. Each of these values must be positive to conclude that innovation pays. The book has a truly global canvas and accentuates innovation in the Technology and Pharmaceutical sectors, the two largest bastions of innovation. Big data and analytics underpin the development of the material used. Datasets include 86 million patent records and 8 million financial records. This is one of the largest datasets analysed for developing a book. Such rich data drawn globally, annuls region-specific idiosyncracies and make the findings robust.

Anecdotal examples of innovation point to value accrual. America spends the most on innovation which partly explains why it is the wealthiest nation in the world. IBM's IP licensing is worth more than \$1 billion. TI fully exploited the DSL patents that they acquired almost three decades ago. The Gillette shaver protected by a fortress of 57 patents has a dominant 75% market share. Apple's recent design patents have enabled them to become the most valuable company in the world. With cumulative sales of more than \$120 billion, Pfizer's IP protected Lipitor was the biggest selling branded drug ever; when the patents expired in November 2011, sales dropped a whopping 42% the next month. The 'One-click-ordering' patent catapulted Amazon to become a leading e-commerce company. A whole new industry was born when Xerox patented the photocopying technology. Equally important has been the creation of societal value of innovation (decreased infant mortality due to new medicines, for example) and economic value (such as increase in per capita income and productivity due to innovation). The book is replete with real-world examples of innovation creating value, a recurring theme that runs through the book. The book is developed in the backdrop of the period 1990–2016,

a period of frenzied innovation and economic distress which saw the disruptive advent of Internet, an upsurge in mobile communication and a paradigm shift in personal computing.

Chapter 1 deals with the various facets of Innovation. The evolving global innovation theme over the last 25 years bring in useful insights. Innovation as a creator of intangible assets and its ability to create value are discussed. The two bastions of innovation, Technology and Pharmacy, are profiled, while we take a peek into innovation at the Silicon Valley. Chapter 2 is focused on the economic impact of innovation. Studies have established that innovation-intensive industries create highly skilled jobs, have higher wages, are more productive, lead exports and enhance competitiveness through thick and thin of business cycles. The link between innovation and economic growth and the effect of innovation on productivity and income has always been under intense gaze. The raging debate on the impact of automation on employment is discussed. Chapter 3 is an analysis at the firm level. That innovation impacts firm performance is not widely disputed. Several examples of successful IP deployment strategies adopted by global companies point to wealth creation. The paradox of India, while being low on innovation but high on firm performance, is seemingly counter-intuitive. The vital societal value created by pharmaceutical innovation is discussed in Chap. 4. Drug innovation has had a profound effect on human life. The impact of new medicines on mortality and the control of endemic diseases and their attendant economic gain buttresses the gains from medical innovation. The impact of disruptive innovations (Internet, Social media, Internet of Things, Autonomous driving) in the digital world is discussed in Chap. 5. The consumer surplus generated by the ubiquitous mobile phones in the connected world is staggering, while the social media platform has become a way of life. The overwhelming impact of IoT to connect all inanimate things (and human beings) has become truly transformative. Finally, the disruptive nature of autonomous vehicles and their ability to create social upheaval is examined. Chapter 6 is devoted to an empirical study of value created by the process of Schumpeterian creative destruction. The study examines whether innovation patterns explain firm performance and investigates whether innovating firms are better in withstanding economic stress. Given the turbulent business environment that is here to stay, the moot point is whether innovating firms can cope better with adversarial business periods.

I must mention people who helped me in the preparation of this book. Prof. Krishna Sundar of IIM-Bangalore helped me with research material which has clearly enriched the book that much more. I am grateful to Vasanta Kottapalli, a senior professional in the Silicon Valley, who had the difficult task of reviewing the raw version of the book. I am deeply indebted to her. I am equally thankful to Vinayak who also went through the first version of the book and helped me clean up the contents. My wife Rekha and daughter Malavika watched me banging on my laptop with trepidation, wondering aloud whether I would ever finish the book (it has taken 2 years), but shared my joy when the book was completed.

Writing a book on innovation is a double-edged sword; while one admittedly deals in cutting edge, the canvas is so large that one faces the risk of being pilloried for not covering specific aspects of innovation. In my humble defense, I submit that this book is focused on answering the question: *has it been worth it (investing on innovation)?*

Bengaluru, India

Vijay Kumar

Contents

1 Facets of Innovation	1
The Idea of Innovation	4
The Value of Innovation	5
The Spark of Innovation	6
Global Innovation	10
Who's Spending on Innovation?	15
Innovation Trends	19
The Dominance of Technology Innovation	23
Innovation in the US	29
A Special Place—The Silicon Valley	36
Chinese Innovation	41
References.	44
2 The Economic Impact of Innovation	49
The Economics of Innovation	53
Innovation and Productivity	57
Income Rises with Innovation	64
Innovation Improves Standard of Living	70
Impact of Automation on Employment	74
Is the Impact of Innovation Waning?	84
References.	89
3 Monetizing Innovation	95
The Rise of Intangibles	97
Patenting and Value Creation	100
Extracting Value from IP	109
Are Patents Detrimental for Innovation?	121
R&D and Value Creation	123

Innovation Pays Off at Apple	126
The Curious Case of India—Low on Innovation, but High on Performance	130
References.	141
4 The Societal Value of Pharmaceutical Innovation.	147
Societal Value of Medical Innovation	156
Infectious Diseases	157
Chronic Diseases.	162
Economic Impact of Pharmaceutical Innovation	170
Life Expectancy Is Correlated with Income.	173
Has Pharmaceutical Innovation Been Financially Remunerative?	176
The Evolving European Pharmaceutical Innovation	181
References.	183
5 The Value of Disruptive Innovations	189
The Internet.	191
The Economic Impact of the Internet	192
The Consumer Surplus Generated by the Internet.	198
Sectoral Impact of the Internet	201
The Value of <i>Mobile</i> Internet	205
The Oligopoly in the Internet	211
Social Technologies	213
Facebook.	220
Internet of Things (IOT)	223
The Economic Impact of IOT	224
The IOT Landscape.	229
Autonomous Vehicles	236
The World of Driverless Vehicle	237
Fewer Accidents, Saving Lives	242
Collateral Impact of Autonomous Vehicles	244
The Economic Impact of Autonomous Vehicles	247
References.	251
6 The Economics of Creative Destruction.	257
Is Creative Destruction a Better Value Creator?	261
Preceding Studies	263
Theory and Hypotheses.	265
Firm Performance Measures	265
The Link Between Innovation and Firm Performance	267
Schumpeterian Patterns and Innovation-Firm Performance Models	270
Coping with Turbulent Times	272
Data	274

Selection of Schumpeterian Firms 274

 Knowledge Base 276

 Consistency of Innovation 277

 Concentration of Innovation 277

 Churn Among Innovators 281

Panel Regression Procedures 284

Methodology 285

Results, Analysis and Interpretation 288

Additional Validation for H4a–H4c (M-I, M-II Firm Performances
Are Different) 293

Additional Validation for H6a–6c (Economic Stress Analysis) 297

Implications of the Findings 298

 Research Implications 298

 Managerial Implications 299

Conclusions 300

References 301

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