

innovation

Growth Engine for Nation Nice Buzzword but Often Misunderstood

Compiled By Dr. Rajiv V. Dharaskar

In most simplified way, this book explains the Inner Dynamics of the concept of Innovation from A to Z.

In USA, Innovation supports at least 40 million jobs and contribute 34.8 % US GDP. South Korea, the Top most Innovative country of the World could raise GDP (PPP) per capita to \$33140. India is just at \$5410 (123rd position in the world). Innovation is must for economic growth & to become developed nation. But in the Innovation Decade (2011-2020), India slipped 10 ranks (76th position) in Global Innovation Index 2014. How to improve this situation? How to introduce the culture of Innovation in India? What are the root causes of poor Innovation Ecosystem in India? What is the importance of Innovation Clusters? What are the best practices all over the world? How to introduce innovation in industry and R&D labs? How to introduce innovation in Academia? How to enhance employability through Innovation Competencies? I would like to answer these question with the help of hundreds of interesting case studies.

I would like to ignite human brain for innovation through this venture. I am sure once you read few pages of this book, you will be in love with this book. It's for everybody; from industry to academia; from government authorities to office staff; from parents to students; from faculty of medicine or engineering to faculty of Arts; from small scale businessman to corporate house. I have written this book in such way that everybody should be benefited and start thinking creatively. Before my final departure from this world, I would like to see our nation as Developed Nation. It can happen only through Innovation.

I am sure, after "Skill India" and "Make in India" the next slogan will be "Innovation India".



Innovation - Growth Engine for Nation - Nice Buzzword but Often Misunderstood
This book covers almost every essential concepts related to Innovation along with
hundreds of interesting case studies.







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Compiled By Dr. Rajiv V. Dharaskar Ph.D. (Computer Engineering)

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Dedicated To

Dignitaries who are taking keen interest in the field of Innovation in India

Hon. Pranab Mukherjee

President of India



Hon. Narendra Modi

Prime Minister of India



Dr. Raghunath Mashelkar

Former Director General, CSIR



Dr. Rishikesha Krishnan

Director of IIM Indore



Prof. Anil K. Gupta

Professor, Centre for Management in Agriculture, IIM Ahmedabad, Member, National Innovation Council, founder of Honey Bee Network, Executive Vice Chair of the National Innovation Foundation



Published Books: World Class University Series



Funding Techniques of World Renowned Universities

(204 pages, 251 References) Date of Release: 15 Feb 2013



Strategy to Develop World Class University

(500 pages, 444 References) Date of Release: 15 Feb 2013 Date of Release: 15 Aug 2013



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Technology-Storms Redefining World Class Universities

(412 pages, 523 References) Date of Release: 15 Oct 2013



113 Difficulties in Developing World Class Universities

(319 pages, 345 References) Date of Release: 20 March 2014

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Washington Accord & Multi-Objective Integrated Model for Developing WCU

(328 pages, 417 References) Date of Release: 15 Aug 2014

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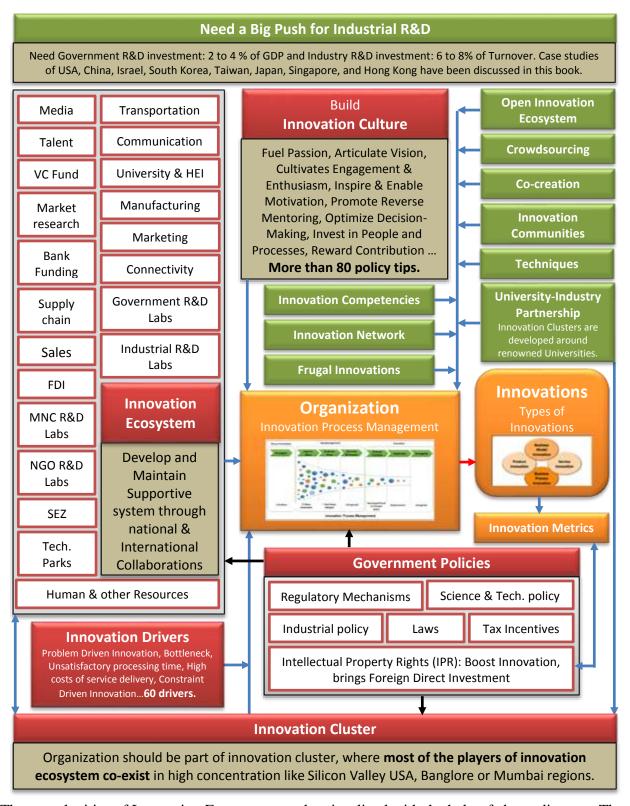
Preface

On one side, the world is appreciating India's spectacular growth in Space, Nuclear and Missile Technologies and many more fields. On other side, India slipped 10 ranks (76th position) in Global Innovation Index 2014. The Innovation is the Growth Engine for the Nation. The rate of Innovation depends upon National Innovation Ecosystem. Thus Innovation Ecosystem decides the rate of growth of economy of the nation. It is way to become developed nation. The nation can't afford to neglect this vital issue.

What is wrong with system? What is the reality? Where is the actual problem? We need to analyze **the Bigger Picture** "The Innovation Ecosystem", in which the University is just one of the players. In the series of 5 books on World Class Universities, I could focus only on one player but that is not sufficient to enhance the entire economy of the nation. In fact, the World Class University (WCU) Model must be tuned according to Innovation Ecosystem of the Nation. The **Bigger Picture** decides the role of each player with respect to the national framework. If we understand this phenomenon then it is very easy to find out root causes and remedies of many national issues. This is the reason, I have included this book in the series of books on world class universities. But remember that, here focus is not simply on university. I would like to cover **Bigger Picture**, which is based on concept of Innovation.

In most simplified way, this book explains the Inner Dynamics of the concept of Innovation from A to Z. I would like to answer many vital questions like: How to improve this situation? How to introduce the culture of Innovation in India? What are the root causes of poor Innovation Ecosystem in India? What is the importance of Innovation Clusters? What are the best practices all over the world? How to introduce innovation in industry and R&D labs? How to introduce innovation in Academia? How to enhance employability through Innovation Competencies? I have quoted hundreds of carefully selected small case studies to justify the stand.

India has many islands of excellence, Plenty of Innovative Brains but Lack of Well Developed and Organized Innovation Ecosystem. The Innovation Ecosystem is a complex phenomenon and contains dozens of players like Universities, Higher Education Institutes, National R&D Labs, Industrial R&D Labs, Multi National company's R&D Labs, Intellectual Property Rights (IPR) Culture, Venture Capital Funding Organizations, and many more. To nurture the Innovation requires Innovation Ecosystem, Innovation Clusters, Innovation Culture and Government Policies. The Government policies include IPR, S&T policies, Industrial Policies, Taxation policies, Laws etc. The development of the Innovation Culture is a specialized job and depends upon more than 80 parameters. In addition to this, Hundreds of factors drive innovation. When the Innovation Ecosystem concentrates in one region then it becomes Innovation Cluster and becomes major source of innovation. The innovation clusters generally grows around renowned Universities. In this context, the role of the university should be towards the development of innovative employable workforce for the industry, a knowledge hub which provides international talent, center for technology transfer, platform for international collaborations with academia, industry, research labs, government agencies etc. All these factors are important Drivers for Innovation. The Innovation happens mostly in Industry. The National R&D units and Universities should play mainly a supportive role.



The complexities of Innovation Ecosystem can be visualized with the help of above diagram. The inner dynamics of National Innovation Ecosystem can be understood in a better way, if we could

analyze the pattern of Innovation Ecosystem of other top most innovative nations like Japan, South Korea, Taiwan, US, China, Israel, Hong Kong and Singapore.

I have divided the book in to 4 parts. The **1**st **part** covers the various concepts related to Innovation and related case studies. In the initial 3 chapters, I have introduced almost every element mentioned in above diagram. These concepts are essential to understand the rest of the book.

The **2nd part** is dedicated for "**How to inject innovation in to any organization?**" The 4th chapter gives broad idea for developing Innovation Culture in any organization. In chapter 5, I have tried to highlight the difference between Research and Innovation. The chapter 6 highlights the role of university with respect to innovation. In chapter 7, various techniques for enhancing Innovation Competencies have been discussed. The way to introduce the innovation in to University environment has been discussed in chapter 8.

In the **3rd part**, I have highlighted the status of Innovation in India. I have also tried to present the detailed analysis of our National Innovation Ecosystem along with vital components. In chapter 15, I have explained the Frugal Innovation, which is secret weapon of Emerging Markets.

In **4**th **part** of this book, I have discussed the complex issues like GDP, Stages of Economy, Approaches of Developed Nations, Role of WCU, National Policies and International Scenario. In chapter 16, I have discussed the relationship between developed nation and WCU along with Innovation. In chapters 17, 18, and 19, I have discussed the Innovation Ecosystem of South Korea, Japan, Taiwan, USA, China, Israel, Hong Kong and Singapore, which gives the clues to develop strong Innovation ecosystem suitable to Indian culture and environment.

In the last chapter "Final Word", I have correlated all the concepts and presented the inner dynamics based on the fact and figures.

I would like to ignite human brain for innovation through this venture. I am sure once you read the few pages of this book, you will be in love with this book. It's for everybody; from industry to academia; from government authorities to office staff; from parents to students; from faculty of medicine or engineering to faculty of Arts; from Stock Exchange to Venture Capital funding agencies; from Defense to Pharmaceutical business; from small scale businessman to corporate house. I have written this book in such way that everybody should be benefited and start thinking creatively.

I have gone thorough half million pages while writing the series of 6 books on World Class Universities and found that the academicians are overstretching the role of World Class Universities with respect to Research and Innovations. No doubt that for the building of nation the University plays a crucial role but the role of industry is more prominent. Remember that major source of Innovation is Industrial R&D centers and not the Universities. The industrial R&D can enhance the industrial sector and in turn build the national economy and pave the way to become Developed Nation. To justify this stand I have considered the example of **South Korea**, which has become developed nation without focusing many aspects of universities like

- Research
- Patent and Technology Transfer

Internationalization

For many years the South Korean Universities only focused on employability of the students. They focused on WCU when they were very close to Developed Nations.

I have compiled this information in the form of book for national interest. How to improve the university or higher education institute is always a major challenge faced by all the academicians. For helping them to find this information at one place, I have put these efforts and published series of six books. The credit of each point mentioned here goes to respective authors mentioned in the references. I am amazed to see their enormous contribution in the field of higher education. I could refer only few articles written by them and could include very few points in this book. For detailed information regarding any issue, please refer their original articles and if needed search their other articles on the Internet. This is not just 600 pages compiled work but pointers to articles of thousands of pages, contributed by authors, who have spent their lives for the cause of education of mankind. I am thankful to them.

I had introduced hundreds of problems, suggestions, remedies and best practices through my series of 6 books on World Class Universities, with more than **2300** pages and **2400** references. I have referred thousands of documents from around 40 countries and gone through beyond **5 Lakh pages**. With GOD's grace, I could reach to more than 5 Lakh academicians across the world and could ignite the minds of young faculty, researchers and students across the nation. In this pretty long journey, I was not alone. Thousands of academicians were constantly encouraging me to compete this gigantic task. I am thankful to them. The valuable comments of high profile readers are available at http://dharaskar.com/world-class-university-book-5.html

I have taken maximum care to give the authentic information but in case at some place, if you find some discrepancies then forgive me and help me to correct it in the next edition of this book. I am sure; the readers will like and welcome my sincere efforts to enhance the Indian Innovation Ecosystem and standards of higher education system. I hope this book will act as catalyst and will help in improving the overall Indian Innovation Ecosystem, which can compete with the rest of the world.

Dr. Rajiv V. Dharaskar

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- "Funding Techniques of World Renowned Universities", Shroff Publication
- "Strategy to Develop the World Class Universities", Shroff Publication
- "Technology-Storms Redefining World Class Universities", Shroff Publication
- "113 Difficulties in Developing World Class Universities", Shroff Publication
- "Washington Accord & Multi-Objective Integrated Model for Developing WCU", Shroff Publication

He has more than 300 research papers to his credit. He has guided 4 PhD scholars, 35 MTech scholars and more than 10 PhD research scholars are working on various subjects like Digital Forensics / Cyber Security, Software / Usability Engineering, HCI, Mobile Computing, E-Commerce, E-Learning etc. He has delivered numerous Keynote addresses at international conferences and serves on several International advisory boards. He is on editorial or review board of prestigious International Journals and worked as a Reviewer for dozens of International Conferences and journals. His details are available at http://www.dharaskar.com

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