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AI Empowered Digital Business Innovation

Smart Innovation, Systems and Technologies

Volume 118

Series Editors

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 Springer

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ISSN 2190-3018 ISSN 2190-3026 (electronic)
Smart Innovation, Systems and Technologies
ISBN 978-981-96-5592-2 ISBN 978-981-96-5593-9 (eBook)
<https://doi.org/10.1007/978-981-96-5593-9>

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Dedicated to Mothers



Late Manisha Kulkarni



Late Renuka Chaudhuri

and

Late Lilly Rajasekera

Preface

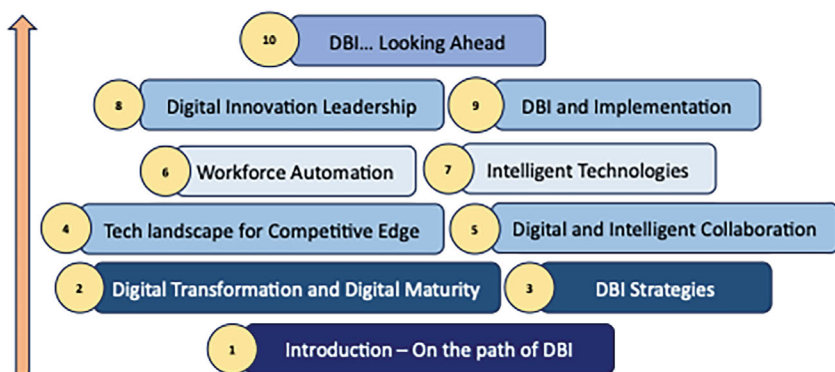
Digital innovation and AI revolution transformed almost every business. It changed the way the business had been done in the past. It created numerous new business opportunities and multitude of new avenues to do business. It has created various opportunities to strategize business by using and positioning existing and emerging technologies. While working with different companies from India, Japan, and USA, we have witnessed this transformation and even had opportunities to participate in the transformation at different organizations across all levels. We were also fortunate to get opportunity develop products for companies that have become vehicles for Digital Business Innovation (DBI). Additionally, we also got opportunity to shape up the DBI departments at a number of universities including our own Tokyo International University. We thought that this is the apt time to share our experiences and knowledge of digital business innovation with global audience. That's how this book started taking shape.

The well-known story of rabbit and tortoise where rabbit sleeps resulting in win for tortoise. Later someone transformed the story in which rabbit wins as it has learnt from past experience. Today, both rabbit and tortoise win as rabbit helps tortoise to win with its pace while tortoise helps rabbit with its strategies, vision, and persistence. It is exactly true in the business too—there was an era where people won simply with strategies, then in some cases, technologies overpowered to create various avenues for success. Digital business innovation is about strategies embedded with digital technologies to script your success. It is neither strategy nor technology in isolation—it is technology and strategy both come together to win. Additionally, in the modern era, it is rather “intelligent” business innovation with the golden touch of AI. Thus, businesses have become intelligent to replicate pace of rabbit and the wisdom of tortoise. Hence, today whether it is strategy or technology, it needs to be AI powered. It could be elections, agricultural reforms, water management, manufacturing, health care, social well-being, or whatever, AI empowered DBI has become an inherent part of the journey to accomplish business success.

Traditional businesses changed with the need to reach out to masses—it is pace, reachability, strategic positioning, and expansion of business boundaries. Business is a vision of perceived needs capitalized to create value for customers as well as providers. The value comes in different forms. This book attempts to deliver different aspects of DBI right from its role as a business enabler to one helping to redefine the business as a whole. It approaches digital business innovation as a holistic process and discusses the role of digital and intelligent technologies across the entire business life cycle. It is the “strategy enabler” that leads organizations to the position of strategic advantage. The book presents case studies of different organizations that transformed businesses with intelligent technologies. They have innovated the business and created new ways to do business using digital technologies. So, let us get ready to undertake the journey of digital business innovation. We are certain that professionals, managers, and entrepreneurs will find this book useful while taking their organizations on a strategic path of digital transformation. Students working in technology as well as business domain will find it useful as a reference book to nurture deeper understanding of digital transformation. It not only provides them theoretical aspects of DBI but also will provide proven directions to implement it successfully in order to create strategic advantage. We are certain that this book will also provide a futuristic perspective about digital business innovation to transform vigorously, but with a pinch of salt about ethical and human-centric aspects.

The organization of book is as follows:

The figure below depicts the book’s organization. The book opens up with an introduction. Chapters 2 and 3 deal with strategic aspects of digital business innovation/intelligent business innovation. Chapter 4 discusses technological landscapes and introduces different technology and thumb rules for technology selection. Chapter 5 discusses digital collaboration among different entities and human resources—which is followed by Chapter 6 which discusses work force automation. Some advanced technologies are covered in Chapter 7 along with their DBI pointers. Chapter 8 discusses about making DBI happen and leadership aspects of DBI. The detailed implementation aspects are covered in Chapter 9. Chapter 10 concludes with numerous potential future possibilities.



Book Organization

Tokyo, Japan
Tokyo, Japan
Kolkata, India

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Acknowledgements

This “book journey” would not have been possible without support from many individuals and organizations. We would also like to thank entrepreneurs Sanjay Katkar of Quick Heal, Yoichi Yamane, founder and CEO of Movic, Mr. Chitale of Chitale Dairies, Dr. Shaila Apte of Anubuti. They shared their experiences and hands-on case studies to enrich the contents of this book. We would also like to thank our students for interesting deliberations. We also take opportunity to thank all innovators and entrepreneurs we got the opportunities to interact who had transformed businesses with their insightful visions and unmatched technology strategies.

It has always been great support from our family members and friends. We also take opportunity to thank them. Technology created many more avenues; and innovators transformed these avenues to utilities and innovative products. Business visionaries created new possibilities and expanded business horizons. Researchers, entrepreneurs, and innovators directly or indirectly contributed to make this world a better place to live in. They are continuously striving to address perceived risks of advanced technologies. We thank all those change makers for their unprecedented efforts and courage that created unlimited new possibilities. They questioned the paradigms; they questioned the best performing options for the betterment of humanity. Digital business innovation is the culmination of such efforts that expanded horizons by challenging the boundaries.

Parag Kulkarni
Jay Rajasekera
Bidyut Baran Chaudhuri

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About the Authors

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Prof. Bidyut Baran Chaudhuri retired from Indian Statistical Institute, Kolkata, India as INAE Distinguished Professor and J. C. Bose Fellow in 2018 and acted as Pro VC of Techno India University for five years. Currently, he is a distinguished Emeritus Professor at Techno India University and visiting professor of several other Universities. His research areas of interest are AI and machine learning in computer sciences, especially in pattern recognition, computer vision, natural language processing and their applications in various fields. He published more than 450 papers, authored or edited 10 books in these domains. He also authored several patents and acted as chief investigator of externally funded projects like UNDP, Indo-European, Indo-German and Indo-France and many domestic projects. He is a life fellow of IEEE and fellow of IAPR, AAIA, TWAS, INSA, INAE, INASc, IETE, etc.

Chapter 1

Introduction: On the Path of DBI



A new company started by two technocrats wanted to enter into a tourism space. As any other company, it began with a market survey. The detailed market survey revealed that tourism industry was highly saturated and there were many financial and political barriers to enter this space. Small players were struggling for survival while the industry was dominated by big players like SOTC, Kesari Tours, and Veena World. There was need of deep pockets and strong political contacts to take on these players. The CEO was already of the opinion that adding simply a few new tours, enhancing certain existing features, or providing some discount was not a way to go for this new company. Margins were shrinking and customer segment though increasing but were highly biased to services provided by big players. These big players were focused on providing luxurious hotels, accommodating more and more customers and taking guest to number of tourist places. There were a number of expensive add-ons provided by these players simply made survival of small and new players exceedingly difficult. When Manoj began to think about this problem, he was just concerned of what can be that innovation or change that could help their company to survive or even progress further to create history in this crowded and particularly biased market space. The first very interesting question he had in his mind—that why he never used these package tours in his entire life? What is that he wanted out of the tour that these companies were not offering? He tried to answer this question again and again. While trying to answer this question, he realized that he has many wishes to fulfill when he goes on vacation. Those were ranging from some adventurous trails in some remote mountain to some focused interactive activities with natives in a particular region. These very personal and specific wishes those always forced him to avoid group tours and go separately for exploration. That has made him to arrange customized tours himself or with the help of travel agents. He definitely is of the opinion that planning a tour is the most enjoyable part and most of the package travelers are missing on that fun part. But going alone or with just a couple of friends have their own issues. There are seniors who wish to have this fun but in the controlled manner. Are they looking for the half-cooked tours and want their involvement in giving them a final shape? These observations led to some interesting ideas. First of all, this led to a thought of interactive package tour where

participants plan and create tours as per their preferences. But on top of that, it should be a group tour with association of like-minded people. The experience is created by participants. In this way, individuals were provided with a dashboard to create tours and they can keep on adding stuff—once they are happy with their tour, they can post it on the tour platforms. Similar tours are clustered to make a few representative tours and slowly customers with common interests select these tours and a group is formed. The groups interactively refine the tours. This helped the company to create a new market segment of travelers who were not choosing travel companies. This also attracted other travelers who refrain from traveling due to missing element of adventure in such tours. The digital technologies, intelligent technologies, and strategies to address altogether a new market segment fueled the intelligent business innovation in the company.

1.1 AI Role: DBI Contributions to Digital Strategic Revolution

Technologies changed the way business could be done. It is not simply advent of modern technologies and use of technologies but also about evolution, uses and strategies those contributed to this change. While some businesses excelled to create history, some of the well-established businesses gone through very tough times. New businesses emerged and existing businesses graduated to all together a new digitized level. Banks transformed into IT companies, malls transformed to online super shops and universities transformed to digital interactive virtual classrooms. While this digital transformation is happening, intelligent technologies offered a completely new landscape expanding thinking boundaries for overall evolution. Digital business innovation encompasses these business transformation and innovation empowered digitization along with innovations empowered by digitization. Thus, it definitely needs to consider different technology trends and their impact on business strategies. But on the top of that, it also needs to consider learning opportunities with reference to existing products and business processes. It is required to understand association across businesses, domains, and technologies. A new model for selection and elimination to create better value is the foundation to it. It is not simply driven by machines but evolves with the platforms where humans and machines collaborate. There is augmentation of intelligence; there is substitutive and collaborative intelligence competing for absolute market dominance. At times, it may merge with human actions to become inherent part of business. This further takes you to intriguing questions regarding learning efficiency, ethical concerns, explainability, data scarcity, and data policy issues. Thus, digital business innovation is much more than business and technology evolution—it is rather about technologies, machines, and strategies coming together to define new routes with unlimited possibilities for business and redefining the business. Technology is rather a vehicle. On the other hand, you cannot simply say that machine intelligence and advanced technologies