

Preface

Is it possible to establish a sustainable society in which human economic activities coexist in harmony with the maintenance of the global environment? This is a topic that has attracted significant interest in the fields of natural science and social science in recent years. For sometime now, there have also been indications that the massive expansion of human economic activities is exceeding the limits that nature can tolerate. *Limits to Growth*, a report published in 1971 by the think-tank Club of Rome, shocked the world at the time by presenting a catastrophic scenario of a global environment in distress due to severe depletion of resources, widespread pollution, and overpopulation. Nearly half a century has already passed since then, and the predictions of the Club of Rome seem to be vindicated as the world indeed seems to be heading in the direction of the scenario it depicted. The world population has topped 7 billion, and the problem of the depletion of oil resources is becoming a real possibility. Initiatives to reduce carbon dioxide emissions that are the cause of global warming have made little headway, and emissions of the world as a whole continue to rise. Have our problems reached a state where we no longer have the means to solve them?

The answer to that question is that not everything on the horizon is bleak, and there are definite signs that give us hope for the future. One of these is the creation of innovation by the corporate world. Although in recent times more than a few companies have been severely chastised and named by environmental conservation groups as culprits of environmental pollution, at present innovations forthcoming from the corporate world are beginning to be viewed as the only means for resolving environmental problems. For example, car makers are focusing on the development of electric cars and cars powered by fuel cells to replace existing gasoline-powered cars. If these cars become widely used by general consumers, they will contribute considerably to the reduction of CO₂ emissions. The same can be said of the widespread generation of electricity using renewable energy such as photovoltaic power generation and wind power generation promoted by manufacturers of electrical appliances and equipment. The development of new technologies

and products by such companies has the power to significantly change today's society. A look at past changes in society makes this point clear.

This book examines case studies of smart cities that are currently attracting attention as promising initiatives in the establishment of a low-carbon society and attempts to verify the achievement of companies in these initiatives from the perspective of establishing competitive advantages. Smart cities are experiments in making entire communities "smart" by linking various products and services created to conserve the environment and represent an overall aggregate of innovative products and services achieved by various companies. Moreover, companies that are the main agents in the creation of smart cities are not individual companies of a single industrial sector but comprise companies hailing from diverse sectors. In other words, innovations created in a smart city setting are products of co-creation by companies of disparate sectors.

The case studies of smart cities taken up in this book are all projects that began in Japan around 2010. Participating in the three projects examined are major corporations representative of Japan such as Panasonic, Toshiba, Hitachi, and Nissan Motor, and all three projects are different in nature. The purpose of this book is to carefully examine the kind of competitive advantage the respective companies achieve through their participation in these projects. To do this, the book establishes a theoretical framework known as a "relationship-based strategy" and confirms the processes of co-creation among companies and the establishment of competitive advantage.

Existing theories for analyzing the competitive advantages of companies are all based on competition among companies. Essentially, the underlying theory is established on the basis of how one company can defeat its competitors in the market. Even in the so-called positioning view and resource-based view, which are representative existing theories concerning competitive advantage, despite differences in the focus of attention regarding the source of competitive advantage, there is a common understanding that a competitive environment with other companies creates competitive advantage. This book, on the other hand, adopts the view that it is not competition with other companies but co-creation with other companies that creates competitive advantage. During the process of co-creation with other companies, the technologies, know-how, and knowledge that companies have are exchanged and integrated, thereby creating new value. This book tells the story of how that value becomes a competitive advantage for companies. In this story, the smart city projects can be considered the stage where various diverse companies co-create and actually bring about new value.

In bringing this book to publication, as the author I have received the kindnesses of many people along the way. In particular, my colleague Professor Mitsuru Kodama, who is also faculty of Nihon University, has provided me with valuable advice in a wide range of areas including the establishment of theories, drawing of implications, and question items for the field survey. Being blessed with the opportunity of an intellectually stimulating workplace, environment afforded me the rare experience of writing this book. I would like to take this opportunity to express my heartfelt thanks to Professor Kodama. Moreover, during my field research, I had

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Looking forward to a better future.

Nobuyuki Tokoro

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