

DOCTORAL PROGRAMME

EMERGENCE OF ELECTRIC VEHICLE ECOSYSTEM IN INDIA:
A LONGITUDINAL STUDY

By

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INDIAN INSTITUTE OF MANAGEMENT
BANGALORE

2020

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A LONGITUDINAL STUDY**

By

(Ravi Shankar Pandey)

A Dissertation submitted in Partial Fulfillment of the Requirements for the
Doctoral Programme of the

INDIAN INSTITUTE OF MANAGEMENT BANGALORE

2020

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ACKNOWLEDGEMENT

I feel a deep sense of gratitude as I write this acknowledgment. It is a satisfying end to my fulfilling and transformational journey as a doctoral student. Many people, through their generosity, support, and blessings, made this journey possible.

First, I would like to extend my heartfelt thanks to my dissertation advisory committee. Prof. Raghunath introduced me to the phenomenon and allowed me to explore it widely; Prof. Ganesh Prabhu, through his deep interest and knowledge, kept my interest in the phenomenon burning, Prof. Dalhia Mani pitched right-in-time to help me think more deeply about "what is going on" in the phenomenon and also helped me tie things together. I sincerely thank them for their constant support and encouragement throughout this journey.

I want to thank various faculty members who contributed to this journey in different capacities. I was interviewed by Prof. Sai Yayavaram, Prof. Pranav Garg, and Prof. Chirantan Chatterjee, which was a learning experience in its own right. And if it were not for them, I would not have had the opportunity to experience the joy and pain of undertaking this journey. I developed a keen interest in research during Prof. Pranav's course and identified Organization Theory as my research identity through Prof. Abhoy Ojha's course. My interactions with several other faculty members, including Prof. J Ramachandran, Prof. Suresh Bhagavatula, Prof. Rejie George, Prof. R Srinivasan, and Prof. Arnab Mukherjee, helped me develop an understanding of teaching and research and prepared me for various aspects of academic life. I would also like to thank Prof. Saras Sarasvathy, Prof. Ram Mudambi, Prof. Ajay Bhaskarbatla, and Prof. Rajiv Kozhikode, who took an interest in my early research work and encouraged me to move forward. I want to thank Prof. Sai Yayavaram again, who shared with us the opportunity to work with Prof. Quy; it was a wonderful learning experience and helped me develop a portfolio of research projects.

Next, the thanks are due to my amazing colleagues and friends. Even before I started my journey as a doctoral student, my seniors in the Strategy area, Pavan Soni and Kshitij Awasthi shared their wisdom about a doctoral student's demanding but fulfilling journey. I feel blessed to have Sachidanand (Sachi) as a peer. He always motivated me to push further and cross milestones, one at a time. I met Ravi Prakash Ranjan during our prep program, and we hit it off right away. He has been there with me in every twist and turns. My batchmate Parvathy lend her ear every time I needed someone to listen to various challenges that I was facing. I found many others, including my wise seniors Shobha, Diptiprakash, Anurag, Ankur, and Jay; my understanding batchmates Srikanth and Jothsna; and my bright juniors Soni, Abu Rehan, Anupama, Bibek, Vikas, and Himanshu; always by my side, when I needed them. Special thanks are due to Srikanth, Abu Rehan, Anupama, Ravi, Sachi, Shobha, and Diptiprakash as they patiently listened to my multiple trial presentations and shared their feedback. I would like to thank Prof. Natasa Thoudam, Soni, and Abu for going through my thesis drafts and share their exceptional feedback that helped me improve it a lot.

I must thank Prof. Haritha, Ashoka madam, and Shilpa madam in the doctoral programme office, who extended their support throughout the journey. I am grateful to my thesis examiners, Prof. Elizabeth Rose and Prof. Arijit Sikdar, who gave their insightful feedback at lightning speed. I would like to express my gratitude to my interviewees, who accommodated my requests in their busy schedules and shared their views generously. I thank every individual whom I met during my journey as a doctoral student. I cherish every moment that I spent in

this great institution which allowed me to meet many exceptional individuals who helped me in this fulfilling journey.

Most importantly, I would like to thank my parents, who always believed in me and let me explore life as I wanted. My wife Minu and my lovely daughter Arya are a constant source of inspiration and joy; they waited patiently as I took this sojourn. I want to thank my siblings Kavita, Sudha, and Jay, as they were always generous with their love. My friend Himanshu needs a special mention as he was the one who encouraged me to apply to the doctoral programme at IIM Bangalore and has always been there for me through thick and thin.

So, thank you to everyone who touched my life and made me who I am.

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ABSTRACT

The growing threat of pollution and climate change cannot be overemphasized. The human and economic costs of pollution and climate change are especially high for emerging markets; thus, the need to shift to sustainable technologies is essential and urgent. However, the development and commercialization of any new product that supports the shift to sustainable technologies requires an ecosystem consisting of resource providers such as investors, suppliers, complementors, regulators, and certifying agencies, and more importantly, a market for these products. Recent developments in the ecosystem literature inform us that technology substitution involves competition between the ecosystems of new and old technology. How does such an ecosystem for sustainable technology emerge, especially in an emerging market context where there are institutional gaps and “normal” entrepreneurship is difficult to seed and sustain? While there has been much interest in research on ecosystems, the emergence of ecosystem has not received adequate attention. It is critical to understand how ecosystems emerge by studying ecosystems in their early stage as various independent actors need to align their activities in an uncertain and evolving context. This study focuses on the question of ecosystem emergence in the context of the Indian electric vehicle industry, using 40 years of archival data, 54 semi-structured interviews, and ethnographic field notes from eight industry conferences to build a longitudinal case (of the Indian electric vehicle ecosystem) with multiple embedded cases (of electric scooter, electric rickshaw, and electric car product categories). A process approach using temporal bracketing has been adopted. The study identifies four phases common across the three product categories and focuses on themes around entrepreneurial actions that emerge from the data. The findings suggest that institutional entrepreneurship is more complicated than previously imagined and involves multiple eras characterized by a

distinct combination of technology, supplier and complementors, market and competition, capital, and regulation. Each era gives rise to a distinct type of entrepreneur (the visionary, the imitator–opportunist, the aesthete, and the pragmatist), and the actors in each era, often accidentally and unintentionally, create the conditions for the next, culminating overtime in an electric vehicle ecosystem that can support viable businesses. This study contributes to the literature on ecosystems by taking a longitudinal perspective and showing how ecosystems involving various actors emerge across multiple stages. Finally, this also adds to the literature on industry emergence by investigating an emerging market context where the chief source of uncertainty is not just technology but the interdependent and evolving uncertainty of market, regulation, and businesses.

Keywords: Ecosystem, emergence, electric vehicles, process study, emerging market