

Preface

Why do research centers so often fail to commercialize discoveries? Chap. 1 of this book introduces the core challenge faced by research center managing directors: how to achieve economic sustainability while preserving academic quality. It is a challenging environment, with governments looking to cut costs on R & D, companies not recovering precrisis R & D budgets, investors unwilling to take on such long-term bids, and research centers closing due to the scarcity of resources. It is a paradox that is drawing the attention of leaders in research centers at the university, industry, and government level. It is a growing conversation among academics trying to address the question.

This book covers 28 mechanisms and 12 business models to drive growth in research centers through the examination of performance metrics, design thinking, business modeling, and innovation ecosystems. These mechanisms are followed by successful research centers at universities (e.g., Harvard, Oxford, and Tel Aviv), in industry (e.g., Roche, Apple, and J.P. Morgan), and in government (e.g., NASA, Fraunhofer, and the Chinese Academy of Science). The results are based on an analysis of 3,881 research centers in 107 countries; 54 on-site visits to centers; interviews with 61 leaders—managing directors or those

in other leadership roles; a review of 327 publications; and an examination of public data.

Promising to drive economic sustainability in research centers while preserving research quality, linked innovation is framed in Chap. 2 as the connected process between research and commercialization, a route in which the investigation done is transformed into economic value to make the process sustainable. It is a track that interconnects two aspects: the pull of market needs and the push of knowledge. Perceived demand will be met only if the appropriate knowledge is available, and innovation will happen only if there is a market for it. Eight symptoms are then described for identifying the gaps in the innovation process, called broken innovation.

Chapter 3 identifies the four causes behind the failure to select the appropriate research initiatives in early stages of the innovation process: choosing nonholistic performance metrics to decide among projects, a lack of knowledge sharing among agents of the research center, and a lack of either academic or business experience in senior roles. Then, the author examines four practical tools that leading institutions are implementing to solve those problems at research centers: prioritizing projects based on a collection of academic, economic, and social impact metrics, mapping each researcher's focus of study through a research map, and more.

Chapter 4 detects the four causes behind the failure to translate discoveries into inventions: ignorance regarding market need; researchers' lack of business knowledge and engagement with the industry; a scarcity of academic or executive profiles within a research team; and uncoachable researchers. Five hands-on mechanisms are then presented such as translating and mapping consumer needs through design thinking; and following lean research principles by maximizing learning speed and minimizing testing costs.

With regard to the failure to achieve industry collaborations, Chap. 5 uncovers seven causes: an unclear business model; a center's lack of brand; a lack of experience in the research team; an unclear value proposition; a disproportionate research team size; a center's internal bureaucracy or politics; and the unacceptance of research results by external stakeholders. Later, 12 business models being applied at

high-performing research centers are presented, including technology transfer through public funding, freemium, consultancy joint ventures, transfer pricing, spin-offs, and so on.

Finally, 10 practical mechanisms are provided for optimizing university-industry-government models and facing the aforementioned barriers: designing a collaborative business model that fits the center's orientation and age; reviewing the processes of your communication unit, ensuring a map of roles, processes in cascade and a CRM of specialized media; and doing periodic industry lectures to translate research results into impact.

Chapter 6 pinpoints the five causes behind not leveraging appropriately a research center's innovation ecosystem. These are a lack of understanding of the innovation ecosystem, internal gaps, no external proximity, a lack of internal resources or hooks to keep talent, and few interactions among the ecosystem's agents. Nine practical mechanisms being applied by recognized centers to confront these issues are then presented, comprising moving from academics to entrepreneurial academics, qualifying the stakeholders of your innovation ecosystem, capitalizing on aging, and so forth.

Answering the initial question of the book, Chap. 7 synthesizes the principles of how to become an economically sustainable research center while preserving research quality, advancing from broken to linked innovation.

Barcelona, Spain

Josemaria Siota

Linked Innovation

Commercializing Discoveries at Research Centers

Siota, J.

2018, XVIII, 162 p. 30 illus., Hardcover

ISBN: 978-3-319-60545-6