

Foreword

Industry Convergence - as the coalescence of previously separated industry sectors – can be observed in various areas of economic activity and therefore is a phenomenon of growing relevance. Convergence can be induced by the application of technologies across industry sectors or by converging trends regarding the demand side of different industry sectors. However, it results in the development of products, which combine features of different industries. The area of functional foods and nutraceuticals for instance, is an expression of the increasingly blurring boundary between the nutrition and pharmaceutical sectors. In particular, the area of functional foods is a striking example of industry convergence, as it shows converging trends between a technology-driven and a market-driven industry sector. As the term nutraceutical indicates, innovation projects in the context of industry convergence do not seem to follow the conventional path of innovation, but require resources and competences of different industries. The reasoning is that firms in different industries have developed along certain learning paths which have lead to the creation of an idiosyncratic set of competencies. Such a path dependently developed competence base seems not sufficient in times of convergence, where hybrid innovations require competencies and resources rooted in different industries. Generally speaking, firms are confronted with new areas of knowledge which becomes increasingly relevant to their innovation system. Industry convergence, thus, presents a context for innovation management, which not only seems to be a very interesting area of research but also is of increasing importance from a business perspective.

Given the actual relevance and increasing importance of industry convergence, it is astonishing that this subject has not yet been addressed in the current research of technology and innovation management. Therefore, the present study addresses this research deficit and illuminates the, yet, little understood relationships between industry convergence, path dependencies and innovations. The emerging domain of industry convergence and hybrid products bears many, yet, unexplored research questions. However, from an innovation management point of view, the probably most suspenseful question is how these hybrid products happen to emerge. For this reason, the present study focuses on decision making at the front end of innovation in converging industries.

By taking a front end perspective on the innovation process the author provides an in-depth analysis of how different players with a different industry-specific resource profile conduct the steps of idea generation and selection to engage in the development of hybrid products. This has allowed for investigating front end decision making, in particular, the influences of existing path-dependent market and technological competencies versus external opportunities arising from the dynamic environment of industry convergence. A major outcome of this triangulation-based analysis is the insight that innovation projects in industry convergence differ regarding the degree to which they leave existing firm and industry specific innovation paths.

The present study constitutes an important contribution to the empirical research field of innovation and technology management. The theoretical relevance of the problem of front end of innovation in converging industries has been confirmed in various international conferences, where the present analysis has been considered for the best paper award (Finalist 25th McMaster Worldcongress: Intellectual Capital and Innovation). However, the study at hand is not only from a theoretical basis very stimulating, it also supplies important insights for practical innovation management in the field of convergence. This is due to the unique sample used in this study which comprises over 50 R&D cases in the area of nutraceuticals and functional foods of a cluster in North America.

I hope that this publication will see the broad dissemination and considerable recognition that it deserves, both in the scientific community as well as in business practise.

Jens Leker

Preface

Innovation can occur due to various reasons and in manifold contingencies. The drivers for innovation stretch from cost-reduction motivations to growth strategies. Research in Innovation and technology management has addressed many of these different internal and external context factors leading to the distinction of many different types of innovations. However, what has less been researched and understood so far, is the emergence of innovations in areas where two different industries are converging. Convergence by itself is a very dynamic process leading to the blurring of industry boundaries. From an innovation and technology management perspective convergence appears as a source for new combinations of resources leading to new product categories combining features of two different industries. But, industry sectors differ, so do competencies needed for successful innovations. As competencies are to some extent industry specific, the key question, this thesis seeks to answer, is: how can innovation projects requiring market and technological competences from another industry be successfully undertaken. In order to answer this research question, the front end of 54 innovation projects has been analysed by employing a mixed-method research approach. Thereby, this thesis provides insights in front end decision making processes and analyzes these by taking a resource-based perspective.

This study at hand is the product of my time at the Institute of Business Management in the Faculty of Chemistry and Pharmaceutical Sciences at the Westfälische Wilhelms-Universität Münster. My supervisor and head of the institute, Dr. Jens Leker, Professor of Business Management, has been the key person for this PhD-project. To him, I am thankful not only for the fact that he provided an ideal working environment for my PhD-project but also for his encouragement and trust in my research endeavours. I especially would like to thank him for the academic freedom he provided, which allowed me to break new grounds not only with respect to the thesis, but also regarding the opportunity of spending half a year as a visiting doctoral student in Canada. In addition, I am indebted to Dr. Gerhard Schewe, Prof. of Organisation and Innovation Management, for the kind willingness to furnish the second opinion on my thesis.

Furthermore, I owe thanks to many other people for their time, understanding and encouragement especially during the last month of my PhD-project. First of all, I would like to thank my friends for always encouraging me and keeping me going. Moreover, I thank all my fellow "businesschemists" at the Institute of business administration of Prof. Dr. Leker for creating such a friendly and inspiring working atmosphere and for taking over my duties so that I was able to concentrate on the dissertation during the last pressing month of finalizing it. I especially would like to thank my colleague Philipp Herzog for his availability to discuss my emerging ideas and his accuracy in proof reading this thesis in its whole length. I am also highly indebted to all our "Hiwis" for their support during all stages of this project. In particular, I would like to thank Stefanie Kristes for her inexhaustible persistence in formatting graphs and figures with power point. Special thanks also to my long-term study

companion Verena Vogel for her valuable comments on earlier versions of this thesis, as well as to my sister for managing all kinds of ranger tasks.

In order to empirically investigate the interesting field of industry convergence and the front end of innovation in particular, access to innovation projects that had been conducted in such an exiting field of convergence have been needed. This would not have been achievable without the great opportunity of working together with the Canadian Nutraceuticals and functional foods institute based at Université du Laval in Québec (Institute des nutraceutique et des aliments fonctionnels). I am very grateful having had the opportunity of meeting so many interview partners, who enabled me to conduct empirical research on the front end in the converging sector of nutraceuticals. All these contacts would

Management of Technology, University of Quebec at Montreal. Therefore, my special thanks go to him not only for giving me the unique opportunity of being a visiting doctoral student in Canada but also for his time to critically discuss my latest scientific ideas. At this point I also would like to express my thanks to the DAAD, e.V. who financially supported my research stay in Canada