

Strategy and Innovation in an Age of Industry Convergence: Empirical Phenomena, Theories and Methods

Finnish Doctoral Program in Industrial Engineering and Management

Time: November 5-6, 2015, 8-16
Place: Tampereen teknillinen yliopisto, Main building, PA103, Tampere
Instructor: Dr. Fredrik Hacklin, ETH Zurich
Credits: 2 cr

Overview and Objectives

This course is intended for doctoral students with a general interest in technology and innovation management, entrepreneurship and strategy. The course will introduce participants with a theoretical foundation and methodological considerations for studying phenomena of industry convergence and interdisciplinary innovation. Specifically, the aim of this course is to:

- (1) introduce the background and context of convergence of knowledge, technologies, industries and markets,
- (2) discuss its relevance for research in innovation, entrepreneurship and strategy, as well as,
- (3) provide a theoretical and methodological basis for contributing to further research in this context.

Synopsis

“A question of more contemporary interest is whether similar technological convergences are occurring in twentieth-century conditions; whether, for example, the chemicals and electronics industries are playing the same roles of information production and transmittal that machine tools played at an earlier stage in our history.” (Rosenberg, 1963, p. 443)

More than ever, the phenomenon of *technological convergence* is creating wide-reaching implications for knowledge and learning in organizations, e.g., through rendering industry and discipline-specific knowledge bases obsolete and through posing new requirements for the integration of previously distant knowledge.¹ Specifically, as the convergence of technologies can lead to a fusion of entire industries², technological convergence is claimed to represent an important external force that shapes the business environment of many firms.³

¹ E.g., de Boer et al., 1999; Prahalad and Krishnan, 2008; Pennings and Puranam, 2000; Kodama, 1992; Harianto and Pennings, 1994; Patel and Pavitt, 1994; Borés et al., 2003; von Hippel, 1988

² E.g., Hacklin et al., 2010; Zhang and Li, 2010; D'Aveni et al., 2010

³ Ghoshal and Bartlett, 1994

For example, what may be currently in the making across the fields of biotechnology or nanotechnology, can be regarded as far more advanced in today's consolidated information and communication technology (ICT) industry.⁴

As a result, *industry convergence* alters the basis of competition by blurring the boundaries between previously separate industries. The phenomenon occurs “when two or more previously distinct industries become direct competitors or cooperators or create a new one”.⁵ It often disrupts traditional industry architectures and potentially undermines the competitive advantages of established firms, while providing novel opportunities for both diversifying entrants and startups.⁶ Industry convergence can be the source of ambiguities that make industry-specific knowledge, competencies, and skills obsolete, and create new competitive constellations requiring firms to adapt their strategies. Symmetrically, it opens new opportunity spaces for boundary-spanning innovation creating temporary competitive advantage for some firms. As an empirical phenomenon, industry convergence has become increasingly prevalent.⁷ Examples include industries such as telecom and entertainment, food and pharma, chemicals and crop seeds, forest and plastics, mobile handsets and digital cameras, automobiles and information technology, or servers and enterprise software. By some estimates, over 50% of the industries represented in the S&P500 index are affected by some form of convergence.⁸ Research aiming at unpacking the dynamics of IC thus seems topical and timely. Although the phenomenon is not new, it has become more prevalent in the last two decades, attracting the attention of scholars from various disciplines, including management. Yet, despite its prevalence, industry convergence as a phenomenon has been relatively little studied⁹ and thus remains poorly understood.

While broad consensus exists on the massive impact of convergence on knowledge, firms and entire industries, past work falls short in exploring the antecedents of technological convergence. There are two methodological reasons for this development. First, the convergence of technologies or entire industries is difficult to measure, because “any such boundary between technologies is fuzzy and can evolve with time” (Rosenkopf and Nerkar, 2001, p. 289). As a result, any such attempt necessitates methodological improvements and a theoretical grounding of the convergence phenomenon.¹⁰ Second, the need to first establish the phenomenon might render it difficult to make real-time observations as it evolves. Thus, important data on the antecedents of technological convergence may not have been available in ongoing developments.

Against this background, this course will shed light on opportunities for crafting novel theoretical and empirical contributions to this emerging field of research.

Enrollment

⁴ Gambardella and Torrisi, 1998; Lee, 2007; Hacklin et al., 2009

⁵ Lee et al., 2010, p. 221

⁶ Hacklin, Schmidt, Stieglitz & Tee, 2015

⁷ E.g., D'Aveni et al., 2010; Economist, 2006; Hacklin, 2008; Lee, 2007

⁸ Hsu & Prescott, 2012

⁹ Exceptions include Wirtz, 2001 or Malhotra & Gupta, 2001

¹⁰ Rafols and Meyer, 2009

Doctoral students should enroll in the course by October 29, 2015, by sending an e-mail to sari.sievanen@tut.fi. In this e-mail, students should include their name, student number, home university, research field and supervising professor.

Evaluation

The course requirements involve:

- (1) reading and preparing a discussion of an assigned article between day 1 and 2,
- (2) presenting and critically discussing the assigned article in class, and,
- (3) actively participating in class discussion.

Literature

Recommended pre-reading:

- F. Hacklin, B. Battistini, G. von Krogh (2013). Strategic choices in converging industries. *MIT Sloan Management Review*, Vol. 55, No. 1, pp. 65-73.
- F. Hacklin, M. Wallin (2013). Convergence and interdisciplinarity in innovation management: A review, critique, and future directions. *The Service Industries Journal*, Vol. 33, Nos. 7–8, pp. 774–788.

Discussion papers:

To be announced during course

If you have any working paper related to the topic, which you would like to discuss, you are very welcome to contact the instructor directly.