

Technology Analysis and Strategy

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Office Hours: Monday 12:00-14:00; Wednesday 10:00-12:00

Class Hours: Tuesdays

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Objectives:

The development of modern technology has reshaped the way we do business and the way we live our lives. To gain competitive advantages, modern firms must constantly bring new innovations to the world and quickly adopt new technologies developed by others to survive. This course seeks to blend technology with business management from a system's perspective. It builds from the fact that technology has become the most important strategic weapon for firms in high-tech industries. Some scholars call the brave new world as the knowledge economy or information society to stress the importance of technology or knowledge for the next wave of economic growth. The traditional R&D management approach is not enough to describe the business function of developing, utilizing, commercializing, and replacing technological knowledge in this ever changing business world. Management of technology and innovation has become the core discipline for the professional managers of the next generation.

Therefore the focus of this course is the planning and development of technology for the growth and profits of technology-oriented enterprises. The students will gain a firm understanding and the competence in the area of management and technology. Term projects are required, which will further elaborate on particular aspects of the course according to the student's own objectives and background. Term projects also help to consolidate theories and best practices from the western countries to the context of Taiwan's high-tech industries. Interactive learning is emphasized throughout the course. Student's participation in class, including discussion, homework, and quizzes is a critical and integral part of the course.

Grades:

Class Participation: 60%

Research Proposal: 40%

Textbook:

Strategic Management of Technology and Innovation (5th edition)

By Robert A. Burgelman, Clayton M. Christensen, Steven C. Wheelwright
McGraw-Hill Irwin, Boston, 2009

Syllabus

2/19

Introduction

2/26

READING I-3 The Core Competence of the Corporation C.K. Prahalad and Gary Hamel Technological Innovation and Strategy

READING I-6 Assessing Your Organization's Capabilities: Resources, Processes, & Priorities Clayton M. Christensen & Stephen P. Kaufman

How innovators reframe resources in the strategy-making process to gain innovation adoption

Rangapriya (Priya) Kannan-Narasimhan; Lawrence, Barbara S. Strategic Management Journal; Chicago Vol. 39, Iss. 3, (Mar 2018): 720-758.

3/5

READING II-1 Patterns of Industrial Innovation William J. Abernathy and James M. Utterback

READING II-6 Disruption, Disintegration and the Dissipation of Differentiability Clayton M. Christensen, Matt Verlinden, and George Westerman Industry Context Capabilities, technologies, and firm exit during industry shakeout: Evidence from the global solar photovoltaic industry

Furr, Nathan; Kapoor, Rahul. Strategic Management Journal; Chicago Vol. 39, Iss. 1, (Jan 2018): 33-61.

3/12

READING II-2 Exploring the Limits of the Technology S-Curve. Part I: Component Technologies Clayton M. Christensen

READING II-3 Exploring the Limits of the Technology S-Curve. Part II: Architectural Technologies Clayton M. Christensen

The power and limits of modularity: A replication and reconciliation

Fang, Christina; Ji-hyun (Jason) Kim. Strategic Management Journal; Chicago Vol. 39, Iss. 9, (Sep 2018): 2547-2565.

3/19

READING II-7 Crossing the Chasm'and Beyond Geoffrey A. Moore

READING II-8 Competing Technologies: An Overview W. Brian Arthur

Competition–cooperation interplay during multifirm technology coordination: The effect of firm heterogeneity on conflict and consensus in a technology standards organization

Ranganathan, Ram; Ghosh, Anindya; Rosenkopf, Lori. Strategic Management Journal; Chicago Vol. 39, Iss. 12, (Dec 2018): 3193-3221.

3/26

READING II-12 Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms Rebecca M. Henderson and Kim B. Clark

READING II-13 Intraorganizational Ecology of Strategy Making and Organizational Adaptation: Theory and Field Research

Role of search for domain knowledge and architectural knowledge in alliance partner selection

Yayavaram, Sai; Srivastava, Manish K; Sarkar, M B. Strategic Management Journal; Chicago Vol. 39, Iss. 8, (Aug 2018): 2277-2302.

4/2

Spring Break

4/9

READING II-15 Strategic Intent Gary Hamel and C.K. Prahalad

READING II-17 Managing the Strategic Dynamics of Acquisition Integration Robert A. Burgelman and Webb McKinney

Incubation of an industry: Heterogeneous knowledge bases and modes of value capture

Moeen, Mahka; Agarwal, Rajshree. Strategic Management Journal; Chicago Vol. 38, Iss. 3, (Mar 2017): 566-587.

4/16

Part Three Enactment of Technology Strategy-Developing a Firm's Innovative Capabilities Internal and External Sources of Technology

READING III-1 Capturing the Returns From Research Clayton M. Christensen, Christopher Musso, and Scott Anthony

READING III-2 The Lab That Ran Away from Xerox Bro Uttal

The decline of science in corporate R&D

Arora, Ashish; Belenzon, Sharon; Pataconi, Andrea. Strategic Management Journal; Chicago Vol. 39, Iss. 1, (Jan 2018): 3-32.

4/23

READING III-3 Transforming Invention into Innovation: The Conceptualization Stage Robert A. Burgelman and Leonard R. Sayles

READING III-4 The Transfer of Technology from Research to Development H. Cohen, S. Keller, and D. Streeter

Towards a theory of ecosystems

Jacobides, Michael G; Cennamo, Carmelo; Gawer, Annabelle. Strategic Management Journal; Chicago Vol. 39, Iss. 8, (Aug 2018): 2255-2276.

4/30

Mid-term Proposal

5/7

READING III-5 Adsorptive Capacity: A New Perspective on Learning and Innovation Wesley M. Cohen and Daniel A. Levinthal

READING III-6 Making Sense of Corporate Venture Capital Henry W. Chesbrough Linking New Technology and Novel Customer Needs

Knowledge diversity and coordination: The effect of intrafirm inventor task networks on absorption speed

Moreira, Solon; Markus, Arjan; Laursen, Keld. Strategic Management Journal; Chicago Vol. 39, Iss. 9, (Sep 2018): 2517-2546.

5/14

READING III-7 Note on Lead User Research Stefan Thomke and Ashok Nimgade

READING III-9 Misleading Methods of Financial Analysis Clayton M. Christensen, Stephen P. Kaufman, & Willy Shih

Experience matters: The role of academic scientist mobility for industrial innovation
Kaiser, Ulrich; Kongsted, Hans C; Laursen, Keld; Ann-Kathrine Ejsing. Strategic Management Journal; Chicago Vol. 39, Iss. 7, (Jul 2018): 1935-1958.

5/21

READING III-11 Managing the Internal Corporate Venturing Process: Some Recommendations for Practice Robert A. Burgelman

READING III-12 Managing Internal Corporate Venturing Cycles Robert A. Burgelman and Liisa Valikangas

Knowledge sharing and safeguarding in R&D collaborations: The role of steering committees in biotechnology alliances

Devarakonda, Shivaram V; Reuer, Jeffrey J. Strategic Management Journal; Chicago Vol. 39, Iss. 7, (Jul 2018): 1912-1934.

5/28

READING III-13 Ambidextrous Organizations: Managing Evolutionary and Revolutionary Change Michael L. Tushman and Charles A. O'Reilly III

READING IV-3 Organizing and Leading 'Heavyweight' Development Teams Kim B. Clark and Steven C. Wheelwright

R&D team diversity and performance in hypercompetitive environments

Hoisl, Karin; Gruber, Marc; Conti, Annamaria. Strategic Management Journal; Chicago Vol. 38, Iss. 7, (Jul 2017): 1455-1477.

6/4

READING IV-6 The New Product Development Map Steven C. Wheelwright and W. Earl Sasser, Jr.

READING IV-7 Accelerating the Design-Build-Test Cycle for Effective New Product Development Steven C. Wheelwright and Kim B. Clark

Scope versus speed: Team diversity, leader experience, and patenting outcomes for firms

Choudhury, Prithwiraj; Haas, Martine R. Strategic Management Journal; Chicago Vol. 39, Iss. 4, (Apr 2018): 977-1002.

6/11

READING V-1 Building a Learning Organization David A. Garvin

READING V-2 The Power of Strategic Integration Robert A. Burgelman and Yves L. Doz

Toward an integrated theory of strategy

Zollo, Maurizio; Minoja, Mario; Coda, Vittorio. Strategic Management Journal; Chicago Vol. 39, Iss. 6, (Jun 2018): 1753-1778.

6/18

Final Reports Due