

CURRICULUM VITAE

Nathasit Gersri, Ph.D.

Educator, Researcher, Consultant, Technologist and Entrepreneur



Email: nathasit.ger@mahidol.ac.th

Website: www.insighttrm.com

Professional Profile

Eager to diffuse the knowledge and enhance the Body of Knowledge (BOK) in engineering, technology and innovation management helping educators and practitioners to appropriately exploit technologies by utilizing a unique combination of my academic and industry experience.

- Strong background in both technology management and engineering combining with work experience in high-tech industry
- Ability to apply analytical approach for research development and problem solving
- International experience in a multicultural environment and tight relationship with the research and consulting community

Education Background

- **Ph.D. in Systems Science/Engineering and Technology Management**
Portland State University, Portland OR, U.S.A
 - Dissertation Title: “An Analytical Approach to Building a Technology Development Envelope for Roadmapping of Emerging Technologies”
 - Brief Description: A new concept and methodology for identifying the optimum path in developing technology strategies by combining with business strategies and/or policy decisions
- **Dual Master Degrees in Engineering Management and Mechanical Engineering**
Portland State University, Portland OR, U.S.A
- **B.S. in Mechanical Engineering**
Chulalongkorn University, Bangkok, Thailand

Professional Development

- **Energy Literacy for Young Executive 2015 (วพม-1)**
Thailand Energy Academy (วิทยาลัยพลังงาน), Bangkok Thailand
- **Strategic Innovation for Businesses in Asia (SIBA 2014)**
MIT Sloan School of Management, MA U.S.A.
- **Executive Development Program (EDP 2012)**
Thai Listed Companies Association (TLCA), Bangkok Thailand

Academic Experience

College of Management, Mahidol University, Bangkok Thailand

- **Associate Professor of Technology and Innovation Management**
 - Offered a graduate course on Technology and innovation strategy, Management of innovation, Project Management
- **Deputy Dean for Academic Programs (January 2014-2017)**
 - AACSB accreditation with the focus on Assurance of Learning (AOL)
 - 4+1 program development (integrating undergraduate and graduate program)
 - Curriculum maintenance and update
- **Program Chair of New Technology Venture (January 2009 – 2013)**
- **Program Chair of Management and Strategy (December 2006 – 2013)**
- **Assistant Professor of Technology and Innovation Management (September 2005-December 2007)**

Europa Institute of MBA, Universität des Saarlandes, Saarland, Germany

- **Visiting Professor (May 2007 - 2012)**
 - Developed and offered a graduate course on MANAGEMENT OF STRATEGIC CHANGES

Department of Engineering and Technology Management, Portland State University, Portland, OR USA

- **Visiting Assistant Professor (June 2004 – 2006)**
 - Developed a new course on TECHNOLOGY ROADMAPPING (graduate level)
 - Offered a graduate course on DECISION MAKING and gave special lectures in various courses: INNOVATION MANAGEMENT, STRATEGIC TECHNOLOGY MANAGEMENT, TECHNOLOGY FORECASTING, INTERNATIONAL TECHNOLOGY MANAGEMENT
 - Engaged in the ETM research and Technology Management Research Center (TMRC) activities in the areas of technology planning, forecasting, evaluation, and assessment

Associate editor of International Journal of Innovation and Technology Management (IJITM) (2014 – current)

Editorial board member of IEEE Transaction on Engineering Management (2018-current)

Editorial board member of KMUTT R&D Journal in Thailand (2014–current)

Industry Experience

- **Managing Director and Founder of InsightTRM Corp. (2015-current)**
 - Coach and consult the management team of many organizations to effectively manage technologies to drive innovation for competitiveness of their organization
- **Assistant Research Program Coordinator (Graduate Intern): INTEL CORPORATION, Portland, OR (June – October 2001)**
 - Researched and developed the advanced technologies for the new interconnect platform architecture of enterprise computer products
 - Developed the analytical technological trend-forecasting model to detect the technological changes and capture the pace of emerging technology using patent and publication information

- **Technology Developer (Graduate Intern): INTEL CORPORATION, Portland, OR**
(June 2000 – January 2001)
 - Investigated and conducted the feasibility study on integrating advanced cooling technologies to advanced printed circuit boards
 - Owned six invention disclosures as known as Intel’s internal patents in “A design to enhance heat dissipating capacity of printed circuit boards (PCB) by using a primary integrated flat-plate heat pipe attached to the bottom surface of finished PCB or sandwiched between two finished PCBs.”
 - Developed the competitive analysis on interconnect components for the advanced printed circuit boards
- **Mechanical Project Engineer: CH. KARNCHAENG (Public) Co., Ltd., Bangkok, Thailand**
(April 1995 – September 1996)
Managed, in a team, the construction of \$400 million Second Stage Expressway Project in Bangkok. Supervised engineers and work crew of 15. Scheduled the construction plan as well as inspected and approved the installation of mechanical systems such as storm drainage, parapets and noise barriers. The project was completed two months ahead of schedule and on cost

Consulting/Training/Coaching/Facilitation Related Experience

Dr. Gerd Sri carried out his research works in several areas to business communities by providing academic training courses and project consultancies for leading organizations like APEC Center of Technology Foresight, PTT Public Company, PTTGC Public Company, Siam Cement Group, Siam Makro, Thailand National Science and Technology Development Agency, Thailand Science Technology and Innovation Policy Office, Thailand Automotive Institute, etc.

Area 1: Strategic Management of Technology and Innovation

- **SCG Building Materials, Thailand**
Consulted a group of technology management team to plan for developing new products and preparing technological capabilities
- **SCG-Middle Management Development Program, The Siam Cement Group, Thailand**
Trained a group of technology managers and management team on the issues related to *technology management*
- **PTT-Research Technology Center, PTT Public Company Limited, Thailand**
 - Gave a short course on “R&D project selection”, “Foresight” for technology-intensive organizations
 - Trained a group of researchers at PTT-Research Technology Institute on the issues related to management of technology and technology roadmapping
 - Reviewed the PTT-Research & Technology Institute’s roadmap

Area 2: Technology Planning and Roadmapping

- **APEC Center for Technology Foresight, Thailand**
 - Organized the series of special seminars and workshops on “*Using Roadmaps to Drive Your Organization’s Future*”, to educate the public and government research agencies in technology roadmap development during 2006-2008. The clients include *Thai Plastic, Siam Cement, Thai Polyethylene, Siam Research and Development, Premier Group, Betago, Electricity Generation Authority of Thailand (EGAT)*, etc.
 - Facilitated a group of international experts involving in the healthcare management and technology development for medical applications to craft a scenario used to portray the future development and develop a technology roadmap to combat emerging infectious diseases (The activities were organized in Taipei and Tokyo by National Taiwan University Hospital and National Institute of Science and Technology Policy - NISTEP, respectively during 2006-2007).

— Facilitated a group of international experts involving in the development of hydrogen energy applications to develop a technology roadmap representing the uses of future energy in different APEC economies. (The activities were organized in Vancouver, Canada with the collaboration of Industry Canada during 2005)

- **SCG Building Products Co., Ltd., The Siam Cement Group, Thailand**
Consulted and coached a group of managers to develop the company's product-technology roadmap
- **SCG Chemicals Co., Ltd., The Siam Cement Group, Thailand**
Trained a group of managers and engineers to understand the development process of technology roadmapping
- **Siam Pulp and Paper Public Company Limited, The Siam Cement Group, Thailand**
Trained a group of managers and engineers to understand the development process of technology roadmapping
- **Petroleum Institute of Thailand, Bangkok, Thailand**
Facilitated a technology roadmapping session as a part of the Technology Foresight Workshop for Oil/ Petrochemical Industry Managers around South East Asia region
- **Precise International Co., Ltd., Thailand**
Consulted and coached a group of managers and engineers to develop the company's product-technology roadmap
- **The Botanical Garden Organization, Ministry of Natural Resources and Environment, Thailand**
Consulted and coached a group of managers and botanical researchers to develop the organization's strategic roadmap guiding the organization to become the leading botanical gardens in the ASEAN.
- **PTT Global Chemical (PTTGC) Public Company Limited, Thailand**
Consulted and coached a group of managers, researchers, and business developers to develop the company's product-technology roadmap and link into the company's research roadmap
- **Siam Makro (MAKRO) Public Company Limited, Thailand**
Consulted a group of executives to develop the company's innovation roadmap and link with the corporate strategy
- **Syntec Construction (SYNTEC) Public Company Limited, Thailand**
Consulted and coached a group of executives and construction site managers to promote innovation and develop the roadmap guiding to an innovative organization

Area 3: Project Management

- **CiCom Thai-Japanese Management Development Program, Thailand**
Provided the project management training sessions to middle managers who work for Japanese firms in Thailand
- **Leading hospitals (including Siriraj Hospital, Ramathibodi Hospital, etc.)**
Organized a series of training and workshop sessions on Project Management for hospital staff engaging physicians, nurses, and administrative staff who play a major role in advancing medical services and research activities
- **MU-Advanced Management Program (AMP), Mahidol University**
Organized a series of training and workshop sessions on Project Management for the top management of Mahidol University including Deans, Directors and Senior Administrators who play a major role in advancing teaching, research, and service activities
- **National Science and Technology Development Agency, Thailand**
Trained a group of project managers and researchers across the four leading researcher units; NECTEC, MTEC, BIOTEC and NANOTEC, to effectively use project management approach in accomplishing research and development activities within limited time and resources
- **Industrial Technology Assistant Program (ITAP), NSTDA, Thailand**

Trained a group of project managers and engineers to effectively use project management approach in accomplishing the assignments within limited duration tasks

Research Related Experience

My research interests are in the area of technology roadmapping, strategic decision making, innovation and emerging technology management, technology forecasting and foresight, technology assessment and evaluation, technology transfer, R&D management, project management, international management related issues, techno-economics, and engineering economic analysis.

List of Research Projects with Supporting Funds

2018-9

- **Explore the policy mechanisms to promote and enhance the capabilities of Innovation Driven Enterprises (IDE) in Thailand by applying open innovation approach**
Funding agency: Thailand National Science Technology and Innovation Policy Office
Scope: Unveil the challenges and difficulties many enterprises (large, medium, and small) are facing in enhancing their innovation capabilities, Explore the possibilities to overcome those challenges, Identify potential policy mechanisms and recommendations
- **Development of TCELS's strategic technology roadmap on medical robotics and medical devices 2018-2022**
Funding agency: Thailand Center of Excellence for Life Sciences (TCELS)
Scope: Design the framework for a strategic technology roadmap on medical robotics and medical devices to guide and serve TCELS's strategic mission in 2020, Facilitate the analysis process to determine the strategic targets for R&D activities by working with TCELS researchers and TCELS's affiliated researchers.

2018

Development of Capability Assessment Model for Business Incubators in Thailand
Funding agency: Thai Business Incubators and Science Parks Association (ThaiBISPA)
Scope: Develop a framework for assessing capabilities of business incubators. Conduct a field study, Analyze the results and Make policy recommendations

2017

- **Monitoring the Development Status of National Innovation System (NIS)**
Funding agency: Thailand National Science Technology and Innovation Policy Office
Scope: Explore and analyze the development of National Innovation System, Identify the strategic gaps or missing linkages, Propose policy recommendations

2016

- **Assessment Framework on Capability Development for Innovative Organizations**
Funding agency: Thailand National Innovation Agency (NIA) and Stock Exchange of Thailand (SET)
Scope: Research key characteristics of being an innovative organization, Design the assessment framework, Conduct field studies, Facilitate the analysis process.

2016

- **Development of MTEC's Strategic Roadmap Guiding Mission-driven Research Activities**
Funding agency: Thailand National Metal and Materials Technology Center (MTEC)
Scope: Design the framework for a mission-driven roadmap, Facilitate the analysis process to determine the strategic targets for R&D activities by working with MTEC lead researchers.

2015 **Economic Evaluation of National Funded Research Projects (A Case Study of Mahidol University)**

Funding agency: Mahidol University

Scope: Assess the economic value of the research projects funded by the National Research University Program (NRU)

2014-5

- **Development of National Innovation System (NIS) for Materials Technologies**

Funding agency: Thailand National Science Technology and Innovation Policy Office

Scope: Analyze and propose the policy recommendations to strengthen the development of National Innovation System for key materials technologies including metal, ceramics, rubber, polymer, as well as composite materials.

2013

- **Strategic Roadmaps for Six Leading Industries in Thailand**

Funding agency: Thailand National Science Technology and Innovation Policy Office

Scope: Develop a framework and analyze to develop industry roadmaps for six leading industries specified by Thailand Management Association (TMA) including automotive, agricultural and food development, healthcare, tourism, and logistic.

2012

- **Assessment of Capability Building Supporting Research and Development of Vaccine in Thailand**

Funding agency: Thailand Center of Excellence for Life Sciences (TCELS)

Scope: Develop a framework for assessing capabilities supporting vaccine R&D activities. Assist with the team from Tropical Medicine and Public Health of Mahidol University to conduct a field study, analyze the results and make policy recommendations

2011-12

- **Innovation Capabilities and Linkages of the Thai-Leading Industries (Automotive, Agricultural/ Food, and Creative Services)**

Funding agency: Japan International Cooperation Agency (JICA)

Scope: Lead the research unit to explore how automotive firms develop their innovation capabilities and linkages with research institutes and universities.

2009-11

- **Sufficiency Economy Leadership Project-SELP (Phase II)**

Funding agency: Thailand Research Fund (TRF)

Scope: Lead one of sub-research unit to explore how the business approaches and operations at SCG Group, Co.,Ltd. are fitted into the context of sufficiency economy leadership.

2009-10

- **A Technology Roadmap Supporting the Future Development of Thai Automotive Industry 2010-2020**

Funding agency: Joint fund between Thailand Automotive Institute (TAI) and National Metal and Materials Technology Center (MTEC), National Science and Technology Development Agency (NSTDA), Thailand

Scope: Research and consult to build a roadmap supporting the future development of automotive industry in Thailand

2009-10

- **A R&D Blueprint for Biomedical Engineering in Thailand**

Funding agency: National Electronics and Computer Technology Center (NECTEC), National Science and Technology Development Agency (NSTDA), Thailand

Scope: Examine the opportunities and challenges in excelling the research and development capabilities in the area of biomedical engineering and develop a master plan to support

2008-9

- **Generating Technological Intelligence**

Funding agency: CMMU Internal Research Grant

Scope: Explore the use of Bibliometric analysis and text mining on publication and patent databases to generate a warning signal catching the emergence of new technologies so that a technology-driven company can consider them and effectively adjust their strategic technology plan in advance

2007-8

- **Sufficiency Economy Leadership Project-SELP (Phase I)**

Funding agency: Thailand Research Fund (TRF)

Scope: Lead one of sub-research unit to explore how the business approaches and operations at SCG Group, Co.,Ltd. are fitted into the context of sufficiency economy leadership.

2006-7

- **Technological Capability Assessment of Thai Automotive Industry**

Funding agency: National Science and Technology Development Agency (NSTDA), Thailand

Scope: Develop a framework for assessing technological capability of automotive industry, conduct a field study, analyze the results and make policy recommendations

- **A Roadmap of Electronics, Computer, Telecommunication and Information Technology (ECTI) for Prevention and Management Emerging Infectious Diseases (EIDs)**

Funding agency: National Electronics and Computer Technology Center (NECTEC), National Science and Technology Development Agency (NSTDA), Thailand

Scope: Research and consult to build a roadmap for the development of electronics, telecommunication, computer, and information technologies to combat emerging infectious diseases in Thailand

2005-7

- **Approach and Process for the Implementation of Technology Roadmapping**

Funding agency: partly using the fund from the technology roadmapping project with the Cementhai Building Products Co.,Ltd.

Scope: Determine an effective TRM implementation process and approach as well as research to develop an analysis tools for construct and maintain a roadmap

Other projects

- Development of a decision model helping one company to select the most strategic-fitted IT network technology for the company
- Case Study for the selection of RFID implementation strategy for one of the retail company in U.S.
- Study on the evaluation of IT search engine for one of the e-commerce company

Selected Tutorials, Scholarly Presentations, and Keynote Speakers

- Invited to give a talk at Asia-Pacific Roadmapping Meeting, March 2019, Tokyo, Japan
- Invited to join the “Meet the Editor” to represent the International journal of Innovation and Technology Management at the 2018 Asia-Pacific Decision Science Institute International Conference (APDSI), Bangkok, Thailand
- Joined the expert panel discussing the issues on how technology and innovation drive to sustainable development at the 8th International Conference on Sustainable Collaboration in Business, Technology, Information and Innovation (SCBTII) in Indonesia, July 2017.
- Joined the panel of journal editors addressing the issue of “Publication in technology management”, at 2016 Int’l Conference on Management of Innovation and Technology (ICMIT), Bangkok Thailand
- Invited for a special lecture on the topic of “Technology Roadmapping” to a group of industrial managers and entrepreneurs. The event was sponsored by Dept of Industry Promotion, Thailand under the project of Sustainable Innovative Management - SIM on June 27, 08 as well as to a group of Thai-entrepreneurs on December 14, 2007, Bangkok, Thailand.
- Invited to give a talk on “Introduction to the Concept of Technology Roadmap” at *APEC-Technology Roadmap Workshop on Converging Technologies to Combat Emerging Infectious Diseases*, National Taiwan University Hospital, October 24, 2007, Taipei, Taiwan.
- Delivered a tutorial on “Measuring a Strategic Value of Technologies”, presented at Portland International Conference on Management of Engineering and Technology (PICMET), August 2007, Portland, OR USA
- Invited to give a talk on “Linking Scenario Planning to Technology Roadmapping”, *APEC-Converging Technologies to Combat Emerging Infectious Diseases (EID): Scenario Workshop*, February 2007, Phang-Nga, Thailand
- Delivered a tutorial on “Keeping a Roadmap Alive”, presented at Portland International Conference on Management of Engineering and Technology (PICMET), August 2005, Portland, OR USA
- Delivered the presentation on a technology roadmap of emerging electronic cooling technologies presented at the 2005 annual IAPG Mechanical Working Group meeting at Air Force Research Lab, Wright-Patterson, Dayton, Ohio during May 24-25, 2005. The IAPG is a federal membership organization that seeks to facilitate the exchange and transfer of information to increase the effectiveness of the interagency advanced power program. The IAPG is sponsored by the U.S. Air Force, Army, Navy, Department of Energy and NASA.
- Invited to give a talk on “Technology Roadmapping”, *APEC Center for Technology Foresight and Thailand National Science and Technology Development Agency (NSTDA)*, August 2004, Bangkok, Thailand.

Licenses & Professional Affiliations

- Ownership of six invention disclosures with INTEL Corporation
- Engineer-In-Training, registered Oregon license since 1999
- Thai Professional Engineers, registered license since 1995
- Member of IEEE – Technology Management Section (Thailand Chapter) since 2010
- Member of Institute for Operations Research and the Management Sciences (INFORMS), American Society of Mechanical Engineers (ASME), and American Society of Heating and Air-Conditioning Engineers (ASHREA)

Public Services

- Served as the member of working group on risk management appointed by Thailand Professional Qualification Institute during June 2017-current. (คณะกรรมการติดตามและกำกับการบริหารจัดการความเสี่ยงของสถาบันคุณวุฒิวิชาชีพ)
- Served as the member of working group to setup the national framework guiding the future development of materials technology appointed by Thailand National Science Technology and Innovation Policy Office during 2013-6. (คณะกรรมการจัดทำกรอบนโยบายการพัฒนาเทคโนโลยีวัสดุของประเทศไทย 2557-2566)
- Served as the member of subcommittee on the development of technology platforms for automotive industry in Thailand appointed by the Prime Minister Office during 2007-9.

Awards and Honors

- **Mahidol University - Outstanding Research Award 2017**
- **CMMU Teaching Award-07**, College of Management, Mahidol University, January 2007
- **PICMET'05 - Outstanding Student Paper Award**, granted by Portland International Center in Management of Engineering and Technology, Portland, Oregon
- Member of Honor Society of **Phi Kappa Phi**, 2003
- Certificate of **Excellent Teaching Assistance** granted by School of Engineering and Computer Science, Portland State University, May 2002 (nominated by Engineering and Technology Management Department).
- **Certificate of Excellence** for demonstrating results oriented and perfecting the technology trend analysis presentation from Intel Corporation, August 2001.
- Member of **Omega Rho** International Honor Society, 2000
- **Portland State University Commendations Award**, 1999 (nominated by Mechanical Engineering Department as a representative from School of Engineering and Computer Science)
- Scholarship from ASHRAE Oregon Chapter, 1999
- **King Bhumibol's Scholarship** for Academic Excellence and Achievement, 1985

Selected Publications

Books/Book Chapters

Gerdsri, N. and Suebsin, C., Chapter 13: IT Adoption in Healthcare Organizations. In: Daim and Brem, editors. *Managing Medical Technological Innovations Exploring Multiple Perspectives*: pp. 399-434. World Scientific Publishing Company; 2020. (ISBN: 978-981-120-468-5)

Gerdsri, N., การวิเคราะห์จัดทำแผนที่นำทางการพัฒนาเทคโนโลยีและนวัตกรรมในองค์กร (Technology Roadmapping). pp. 240. Se-Ed Publisher; 2018. (ISBN: 978-616-08-3159-3)

Manotungvorapun, N. and Gerdsri, N., Chapter 3: An Analytical Approach to Assess the Matching Quality of Academic Partners for Open Innovation in the Form of University-Industry Collaboration. In: Marcus Tynnhammar, editor. *New Waves in Innovation Management Research (ISPIM Insights)*: pp. 37-54. Vernon Press; 2018. (ISBN: 978-1-62273-434-4)

Gerdsri, N. and Kongthon, A., Chapter 10: Bibliometrics and Social Network Analysis Supporting the Research Development of Emerging Areas: Case Studies from Thailand. In: Daim and Pilkington, editors. *Innovation Discovery: Network Analysis of Research and Invention Activity for Technology Management*: pp. 251-275. World Scientific Publishing Company; 2018. (ISBN: 978-1-78634-405-2)

Vatananan, R. and Gerdsri, N., Chapter 16: Current State of Technology Roadmapping (TRM) Research and Practice, In: Daim, Oliver, and Phaal, editors. *Technology Roadmapping*: pp.553-584. World Scientific Publishing Company; 2018. (ISBN: 978-981-3235-33-5)

Gerdsri, N., Chapter 5: Strategic Planning: A Quantitative Model for the Strategic Evaluation of Emerging Technologies. In: Tugrul U. Daim, editor. *Hierarchical Decision Model (HDM) in different sectors of engineering and technology management*. pp. 97-119. Springer Publisher; 2015. (ISBN 978-3-319-18557-6)

Gerdsri, N., Chapter 6: Strategic Planning: An Analytical Approach to Building a Technology Development Envelope (TDE) for Roadmapping of Emerging Technologies. In: Tugrul U. Daim, editor. *Hierarchical Decision Model (HDM) in different sectors of engineering and technology management*. pp. 121-145. Springer Publisher; 2015. (ISBN 978-3-319-18557-6)

Gerdsri, N., Implementing Technology Roadmapping in an Organization. In: Martin G. Moehrle, Ralf Isenmann and Robert Phaal, editor. *Technology Roadmapping for Strategy and Innovation: Charting the Route to Success*. Springer Publisher; 2013. (ISBN 978-3-642-33922-6)

Daim TU, Gerdsri N., Basoglu N, *Technology Assessment: Forecasting Future Adoption of Emerging Technologies*. ESV Publishing, Berlin Germany; 2010. (ISBN: 978-3-503-12675-0)

Daim TU, Basoglu N., Gerdsri N., Tran T., Chapter 11: Forecasting Technology Diffusion. In: Tidd, J., editor. *Gaining Momentum: Measuring the Diffusion of Innovations*. Imperial College Press, London UK; 2010. (ISBN: 184-8-163-541)

Satangput, P. and Gerdsri, N., Chapter 2: Planning, Technology & Life Cycle Framework, *Roadmapping Converging Technologies to Combat Emerging Infectious Diseases*, APEC Center for Technology Foresight; 2008, pp. 21-28. (ISBN: 978-981-08-1886-9)

Satangput, P. and Gerdsri, N., Chapter 3: Technology Roadmapping, *Roadmapping Converging Technologies to Combat Emerging Infectious Diseases*, APEC Center for Technology Foresight; 2008, pp.29-36. (ISBN: 978-981-08-1886-9)

Gerdsri N. and D. F. Kocaoglu, "An Analytical Approach to building a Technology Development Envelope (TDE) for Roadmapping of Emerging Technologies", *Technology Management: A Unifying Discipline for Melting the Boundaries*, IEEE catalog number 05CH37666, pp. 123-135. ****Awarded for the Best Student Paper at Portland International Conference on Management of Engineering and Technology (PICMET), August 2005.**

Journals

Pora, U., Gerdsri, N., Thawesaengskulthai, N., and Triukose, S., Data-driven Roadmapping Approach and Case Demonstration, *IEEE Transactions on Engineering Management* (upcoming)

Manotungvorapun, N. and Gerdsri, N. (2020), Positioning academic partners to align with proper modes of university-industry collaboration", *Int. J. of Business Innovation and Research*; [DOI: 10.1504/IJBIR.2020.10025398](https://doi.org/10.1504/IJBIR.2020.10025398)

Chutivongse, N. and Gerdsri, N., (2019). Creating an innovative organization: Analytical approach to develop a strategic roadmap guiding organizational development, *Journal of Modelling in Management*, [DOI: 10.1108/JM2-05-2018-0067](https://doi.org/10.1108/JM2-05-2018-0067)

Manotungvorapun, N. and Gerdsri N. (2019). University-Industry Collaboration: Assessing the Matching Quality between Companies and Academic Partners, *IEEE Transactions on Engineering Management*, [DOI: 10.1109/TEM.2019.2910154](https://doi.org/10.1109/TEM.2019.2910154)

Gerdsri, N., Puengrusme, S. Vatananan, R. and Tansurat, P., (2019). Conceptual Framework to Assess the Impacts of Changes on the Status of a Roadmap, *Journal of Engineering and Technology*

Management, 52, pp. 16-31.

Chuawatcharin, R. and Gerdri, N. (2019). Factors Influencing the Attitudes and Behavioural Intentions to Use Just Walk Out Technology (JWOT) Among Bangkok Consumers, *International Journal of Public Sector Performance Management*, 5(2), pp. 146-163.

Gerdri, N., Kongthon, A. (2018). Identify Potential Opportunity for Research Collaboration: Using Bibliometrics, *International Journal of Business*, 23(3), pp. 248-260.

Gerdri, N., Kongthon, A., and Puengrusme, S. (2017). Profiling the Research Landscape in Emerging Areas Using Bibliometrics and Text Mining: A Case Study of Biomedical Engineering (BME) in Thailand, *Int'l Journal of Innovation and Technology Management*, Vol. 14, No. 02, pp.1740011 (1-15)

Manotungvorapun, N. and Gerdri N. (2016). Complementarity vs. Compatibility: What is really matter for Open Innovation partner selection?, *Int'l Journal of Transitions and Innovation System*, Vol. 5, No. 2, pp.122-139.

Tansurat, P. and Gerdri, N. (2016). Forecasting of Diffusion Pattern: A Case Study of OLED Technology, *KMUTT R&D Journal*, 39(4), pp. 586-597. (in Thai)

Dararuang A., Lersmethasakul, T., and Gerdri, N. (2016). Technology Roadmapping for and Emerging Small Software Business, *KMUTT R&D Journal*, 39(4), pp. 662-670. (in Thai)

Pollawan, T., Kulkaew, S., and Gerdri, N. (2014). Factors Affecting QR Code Technology Acceptance (Empirical Study in Bangkok Area), *Kasetsart Engineering Journal*, Vol. 88, pp.29-40. (in Thai)

Intarakumnerd, P. and Gerdri, N. (2014). Implications of Technology Management and Policy on the Development of a Sectoral Innovation System: Lessons Learned Through the Evolution of Thai Automotive Sector, *Int'l Journal of Innovation and Technology Management*, Vol. 11, No. 3, pp.1440009(1-19).

Sukasiriwat, N. and Gerdri, N. (2014). Challenges and Limitations of Driving Innovation in Thai SMEs, *KMUTT R&D Journal*, 37(1), pp. 119-131. (in Thai)

Gerdri, N., Kongthon, A., and R. Vatananan (2013). Mapping the Knowledge Evolution and Professional Network in the Field of Technology Roadmapping (TRM): A Bibliometric Analysis, *Journal of Technology Analysis & Strategic Management*, Vol. 25, No. 4, pp. 403-422.

Vatananan, R. and N. Gerdri (2012). Current State of Technology Roadmapping (TRM): Research and Practice, *Int'l Journal of Innovation and Technology Management*, Vol. 9, No. 4, pp.1250032(1-20).

Intarakumnerd, P., Gerdri, N., and P. Teekasap (2012). The Roles of External Knowledge Sources in Thailand's Automotive Industry, *Asian Journal of Technology Innovation*, Vol. 20, No. S1, pp. 85-97.

Daim, T., Gerdri, N., Kockan, I. and D.F. Kocaoglu (2011), Technology Development Envelope Approach for the Adoption of future Powertrain Technologies: A Case Study of Ford Otosan Roadmapping Model, *Journal of Transportation Systems Engineering and Information Technology*, 11(2), pp. 58-69

- Wongnitipat, S. and N. Gerdri (2011). Supplier Evaluation and Selection: A Case Example of Motorcycle Manufacturing Company, *KMUTT R&D Journal*, 34(1), pp. 60-75 (in Thai)
- Chutivongse, N. and N. Gerdri (2011). Factors Affecting Thai Organizations to Become an Innovative Organization, *Thamasart Business Journal*, 34(130), pp. 47-58 (in Thai)
- Gerdri, N., Assakul, P. and R. Vatananan (2010), An Activity Guideline for Technology Roadmapping Implementation, *Journal of Technology Analysis & Strategic Management*, 22(2), pp. 229-242
- Kockan, I., Daim, T.U., and N. Gerdri (2010), Roadmapping future powertrain technologies: a case study of Ford Otosan, *Int'l Journal of Technology, Policy and Management*, 10(1-2), pp. 157 – 184
- Gerdri, N. and T. Virasa (2010), Technology and Innovation Capability Assessment Tool and its Application to Thai Automotive Parts Makers, *Chulalongkorn Review*, Jan-Mar, pp. 68-79 (in Thai)
- Choumwong, S. and N. Gerdri (2009), a decision support model for machine evaluation and selection. A case example of slider fabrication for hard disk drive (HDD) manufacturing, *Research and Development Journal of the Engineering Institute of Thailand*, Issue 20 (4), pp. 92-102 (in Thai)
- Daim T. and N. Gerdri (2009), Research and Development Progress Assessment through Technological and Scientific Intelligence, *Int'l Journal of Technology Intelligence and Planning*, 5(4), pp. 341-356
- Fenwick, D., Daim, T., and N. Gerdri (2009), Value-Driven Technology Road Map (VTRM): Google Checkout Security Technology, *Journal of Technology Forecasting and Social Change*, 76(9), pp. 1155-1177
- Ieam-ulia, P. and N. Gerdri (2009). Technology Capability Assessment of Technical Skills and Expertise Driven Industry, *KMUTT R&D Journal*, 32(2-3), pp. 268-284 (in Thai)
- Sangkunchai, C. and N. Gerdri (2009). Technological Capability Assessment in Technology Driven Industry: The Case Study of Automotive Electronic Industry, *NIDA Development Journal*, 49(1), pp. 107-122 (in Thai)
- Gerdri, N. and A. Kongton (2009), Foresight on ETCI Technologies for Combating Emerging Infectious Diseases in Thailand, *NECTEC Journal*, 8(19), pp. 294-305 (in Thai)
- Gerdri, N., Vatananan, R., and S. Dansamasatid (2009). Dealing with the Dynamics of Technology Roadmapping Implementation: A Case Example, *Journal of Technology Forecasting and Social Change*, 76(1), pp. 50-60
- Gerdri, N. (2008), The Feasibility study in building a product/technology platform to support the future development of multi-purpose trucks used in agricultural sector, *Chulalongkorn Review*, Jul-Sep, pp. 32-52 (in Thai)
- Gerdri, N. and K. Chuviratana (2008). Creating Work Environment to Support the Execution of Innovation and Technology Strategy: A Case Example of KTC (Public) Co., Ltd., *Thailand Engineering Journal*, Jul-Aug, pp. 67-79 (in Thai)
- Gerdri, N. and S. Dansamasatid (2008). Applying Technology Roadmapping to Drive the Corporate's Strategic Medium-term Plan into Action: Lessons from the SCG Building Materials Co., *Sasin Journal of Management*, Vol. 14 (1): 41-53

Gerdsri, N., et. al. (2007). Technological Disruption: A Case Example of Digital vs. Film Camera, *Thailand Engineering Journal*, Nov-Dec, pp. 58-66 (in Thai)

Gerdsri, N. (2007). An Analytical Approach to Building a Technology Development Envelope (TDE) for Roadmapping of Emerging Technologies, *Int'l Journal of Innovation and Technology Management*, Vol. 4 (2): 121-135

Gerdsri, N. and D. F. Kocaoglu (2007). Applying the Analytic Hierarchy Process (AHP) to Build a Strategic Framework for Technology Roadmapping, *Journal of Mathematical and Computer Modeling*, Vol. 46 (7-8): 1071-1080

Gerdsri, N. (2007). Roadmapping – A New Management Tool for Technology-driven Organizations, *Chulalongkorn Review*, Apr-Jun, pp. 24-38 (in Thai)

Refereed Conferences

Tansurat, P. and Gerdsri, N., Incorporating Dynamics into Technology Roadmapping: Research Opportunities and Challenges, Portland International Center for the Management of Engineering and Technology (PICMET) Conference, August 2019, Portland, Oregon, USA.

Pichonsatcha, T., Gerdsri, N., Pentrakoon, D., Kanjana-Opas, A., Introducing Indigenous Knowledge into Foresight, Portland International Center for the Management of Engineering and Technology (PICMET) Conference, August 2019, Portland, Oregon, USA.

Tannirandon, A. and Gerdsri, N., Integration of Community Preference in Energy Planning: A Way for Sustainability, Portland International Center for the Management of Engineering and Technology (PICMET) Conference, August 2018, Honolulu, Hawaii, USA.

Pora, U., Thawesaengskulthai, N., Gerdsri, N. and Triukose, S., Data-driven Roadmapping Turning Challenges into Opportunities, Portland International Center for the Management of Engineering and Technology (PICMET) Conference, August 2018, Honolulu, Hawaii, USA.

Chutivongse, N. and Gerdsri, N., Diagnosing the ability and capability of an organization toward being an innovative organization: Use of an assessment model with a case example, Asia-Pacific Decision Science Institute International Conference (APDSI), July 2018, Bangkok, Thailand

Chutivongse, N. and Gerdsri, N., An analytical approach to develop a strategic roadmap guiding a firm to become an innovative organization, International Society for Professional Innovation Management (ISPIM) Conference, June 2017, Vienna, Austria.

Apinantasap, W. and Gerdsri, N., Technology Acceptance of Digital Bag Tags for Airline Passengers, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2017, Bangkok, Thailand

Weeraphong, S., Sevetpanuvong, P., Thamsatitdej, P., and Gerdsri, N., Factors Hindering Financial Institutes When Reforming IT Units to Become Innovative Organization: A Case Study, ThaiTIMA National Annual Conference on Technology and Innovation Management, July 2017, Bangkok, Thailand

Chuawatcharin, R. and Gerdsri, N., Factors influencing the attitudes and behavioral intentions to use just walk out technology among Bangkok consumers, Technology Innovation Management and Engineering Science international conference (TIMES-iCON2017), November 2017, Bangkok, Thailand

Manotungvorapun, N. and Gerdsri, N., From Literature to Practice: Selection Criteria for Industry-University Partners, Portland International Conference on Management of Engineering and Technology (PICMET), Sep 2016, Hawaii, USA

Puengrusme, S. and Gerdsri, N., Conceptual Framework to Assess the Impacts of Changes on the Current Status of a Technology Roadmap, R&D Management Conference, July 2016, Cambridge, UK.

Tannirandon, A. and Gerdsri, N., Energy Planning for Sustainable Development - Challenge and Experience Sharing from Thailand, IEEE-International Conference on Management of Innovation and Technology (ICMIT), Sep 2016, Bangkok Thailand

Manotungvorapun, N. and Gerdri, N., Matching Partners for Open Innovation Practice, Portland International Conference on Management of Engineering and Technology (PICMET), July 2015, Portland OR, USA

Chutivongse, N. and Gerdri, N., Proposed Steps to Analyze Organizational Characteristics and Develop a Roadmap for Being an Innovative Organization, Portland International Conference on Management of Engineering and Technology (PICMET), July 2015, Portland OR, USA

Tansurat, P., and Gerdri, N., Forecasting of Diffusion Pattern: A Case Example of OLED Technology, IEEE International Conference on Industrial Engineering (IEEM), December 2014, Malaysia.

Jirasavetakul, S. and Gerdri, N., Mapping Characteristics between agile and innovative organization, International Society for Professional Innovation Management (ISPIM), December 2014, Singapore.

Lersmethasakul, T. and Gerdri, N., Web-based Design for the Status Evaluation of a Technology Roadmap, International Society for Professional Innovation Management (ISPIM), December 2014, Singapore.

Sukasiriwat, N. and Gerdri, N., Challenges and Limitations of Driving Innovation in Thai SMEs, 2nd ASEAN Plus Three Graduate Research Congress (AGRC), February 2014, Bangkok, Thailand

Vatananan, R. and Gerdri, N., Assessing the Status of Roadmap-When is the Time to Review?. Portland International Conference on Management of Engineering and Technology (PICMET), July 2013, San Jose CA, USA

Suzuki, C. and Gerdri, N., Challenges in Managing R&D Projects in Thailand from Japanese Perspectives, ThaiTIMA National Annual Conference on Technology and Innovation Management, July 2012, Bangkok, Thailand

Manotungvorapun, N. and Gerdri, N., The Gestalt of Open Innovation, ThaiTIMA National Annual Conference on Technology and Innovation Management, July 2012, Bangkok, Thailand

Pollawan, T., Kulkaew, S. and Gerdri, N., Behavior of QR Code Technology Adoption for Population in Bangkok, ThaiTIMA National Annual Conference on Technology and Innovation Management, July 2012, Bangkok, Thailand

Gerdri, N., Kongthon, A. and Puengrusme S. Discovering the Professional Communities and Social Networks for Emerging Research Areas: Use of Technology Intelligence from Bibliometric and Text Mining Analysis, Portland International Conference on Management of Engineering and Technology (PICMET), July 2012, Vancouver, Canada

Suebsin, C. and Gerdri, N., The Analysis of Key Factors Affecting the Success of Technology Adoption in Healthcare Organizations in Thailand, Portland International Conference on Management of Engineering and Technology (PICMET), July 2012, Vancouver, Canada

Vasunirachorn, M. and Gerdri, N. Virtual project management in globalization: Managerial challenges, ThaiTIMA National Annual Conference on Technology and Innovation Management, July 2012, Bangkok, Thailand

Puengrusme, S. and Gerdri, N. Technology intelligence for organizations, ThaiTIMA National Annual Conference on Technology and Innovation Management, July 2012, Bangkok, Thailand

Tansurat, P. and Gerdri, N. Effectiveness of using TDE Technology forecasting: Case of portable LCD vs OLED. ThaiTIMA National Annual Conference on Technology and Innovation Management, July 2012, Bangkok, Thailand

Gerdri, N., Teekasap, P., and T. Virasa, Technological Capability Gap Assessment: A Study of Automotive Industry in Thailand, IEEE-International Conference on Management of Innovation and Technology (ICMIT), June 2012, Bali Indonesia.

Suebsin, C. and Gerdri, N., Lessons Learned from IT Adoption in Healthcare Organizations: A Comparative Study, Portland International Conference on Management of Engineering and Technology (PICMET), July 2011, Portland OR, USA

Vatananan, R. and Gerdri, N., An Analytical Approach to Assess the Current State of a Roadmap, Portland International Conference on Management of Engineering and Technology (PICMET), July 2011, July 2011, Portland OR, USA

Chutivongse, N. and Gerdri, N., Key Factors Influencing the Development of Innovative Organizations: An Exploratory Study, Portland International Conference on Management of Engineering and Technology (PICMET), July 2011, July 2011, Portland OR, USA

Tansurat, P. and Gerdri, N. Strategic importance of technological substitution. ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2011, Bangkok, Thailand, pp.16-23

Wongnitipat, S. and Gerdri, N. Supplier evaluation and selection: A case example of motorcycle manufacturing company. ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2011, Bangkok, Thailand, pp. 96-110 (in Thai)

Srichot, C., Thongla, N., Kanentrasai and Gerdri, N. Technology adoption and diffusion of innovation: Examining e-Newspaper in Bangkok, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2011, Bangkok, Thailand, pp.182-187 (in Thai)

Suebsin, C. and Gerdri, N., Technology Adoption: A Case Study of ERP Implementation in One of Healthcare Organizations in Thailand, Portland International Conference on Management of Engineering and Technology (PICMET), July 2010, Phuket, Thailand

Vatananan, R. and Gerdri, N., "The Current State of Technology Roadmapping (TRM) Research and Practice", Portland International Conference on Management of Engineering and Technology (PICMET), July 2010, Phuket, Thailand

Satangput, P., Gerdri, N., and Damrongchai, N., Scenario Analysis for Identifying the Development Area of Future Technologies to Combat Emerging Infectious Diseases: APEC Efforts, IEEE-the 5th International Conference on Management of Innovation and Technology (ICMIT), June 2010, Singapore

Chuvitratana, K., Tansurat, P., Punnakitikashem, P., and N. Gerdri, Managing R&D Activities with the Aim for Commercialization: A Case Study of Tropical Disease Diagnostic Kit Research and Development in Thailand, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2010, Bangkok, Thailand (in Thai)

Apiwattanapong, C., Thaikaew, T., Punnakitikashem, P., and N. Gerdri, Creating New Business Opportunities from Emerging Technological Disciplines: A Case Study of Biomedical Engineering in Thailand, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2010, Bangkok, Thailand (in Thai)

Chutivongse, N. and N. Gerdri, Exploring the Factors Affecting an Innovative Organization in Thailand, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2010, Bangkok, Thailand (in Thai)

Suebsin, C. and Gerdri, N., Key Factors Driving the Success of Technology Adoption: Case Examples of ERP Adoption, Portland International Conference on Management of Engineering and Technology (PICMET), August 2009, Portland, Oregon

Kockan, I., Yidirim, A. M., Daim, T., Ergeneman, M., and Gerdri, N., Application of Technology Development Envelope (TDE) Approach for Future Powertrain Technologies: A Case Study of Ford Otosan, Portland International Conference on Management of Engineering and Technology (PICMET), August 2009, Portland, Oregon

Choumwong, S., and Gerdri, N., Machine Evaluation: A Case Example of Slider Fabrication for Hard Disk Drive (HDD) Manufacturing, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2009, Bangkok, Thailand (in Thai)

Gerdri, N. and Virasa, T., Technology and Innovation Capability Assessment Tool and its Application to Thai Automotive Parts makers, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2009, Bangkok, Thailand (in Thai)

Sangkunchai, C. and Gerdri, N., Determination Of Mechanisms To Support Technology Transfer Between Organizations At The Different Level Of Technology Capabilities, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2009, Bangkok, Thailand (in Thai)

Chuviratana, K. and Gerdri, N., Creating Work Environment for Innovative Organizations, ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2009, Bangkok, Thailand (in Thai)

Punnakitikashem, P., Gerdri, N., Chuvitratana, K., and Apiwattanapong, C., "R&D Management in Biomedical Engineering Industry: A Case study of European Union", ThaiTIMA National Annual Conference on Technology and Innovation Management, June 2009, Bangkok, Thailand (in Thai)

Satangput, P., Gerdri, N., Udomsopakij, S., and Dumrongchai, N., Roadmap of Converging Technologies to Combating Emerging Infectious Diseases, ThaiTIMA National Annual Conference on Technology and Innovation Management,

June 2009, Bangkok, Thailand (in Thai)

Gerdri, N. et al., "Roadmapping the Future Development of Converging Technologies to Combating Emerging Infectious Diseases", International Society for Professional Innovation Management (ISPIM) Innovation Symposium, December 2008, Singapore.

Gerdri, N. and T. Daim, Generating Intelligence on the Research and Development Progress of Emerging Technologies Using Patent and Publication Information, IEEE-the 4th International Conference on Management of Innovation and Technology (ICMIT), September 2008, Bangkok, Thailand

Ieam-ulia, P. and Gerdri, N., A Framework for Technological Capability Assessment of Technical Skills and Expertise-driven Industries, 10th National Graduate Research Conference, Sep 2008, Bangkok, Thailand (in Thai)

Sangkunchai, C. and Gerdri, N., Technological Capability Assessment in Technology Driven Industry: The Case Study of Automotive Electronic Industry, 10th National Graduate Research Conference, Sep 2008, Bangkok, Thailand (in Thai)

Gerdri, N., Assakul, A., Vatananan, R., Using Change Management Approach to Guide the Implementation of Technology Roadmapping (TRM), Portland International Conference in Management of Engineering and Technology (PICMET), August 2008, Cape Town, South Africa

Ieam-ulia, P. and Gerdri, N., Assessment of Technological Capability and Technical Skills/Expertise of Auto Seat Manufacturing and Assembly Industry in Thailand, the 4th National Conference on Automotive Engineering, April 2008, Bangkok, Thailand (in Thai)

Sangkunchai, C. and Gerdri, N., Technological Capability Assessment of Automotive Electronic Industry in Thailand, the 4th National Conference on Automotive Engineering, April 2008, Bangkok, Thailand (in Thai)

Gerdri, N. and R. Vatananan, "Dynamics of Technology Roadmapping (TRM) Implementation", Portland International Conference on Management of Engineering and Technology (PICMET), August 2007, Portland, OR U.S.A.

Gerdri, N. and A. Kongton, A Study on the Development of a Technology Roadmap for Guiding Research and Technological Development Direction in Combating Emerging Infectious Diseases, The 5th National Conference on Biomedical Engineering (NCBME), July 2007, Bangkok, Thailand (in Thai)

Gerdri, N. and P. Assakul, "Key Success Factors in Initiating Technology Roadmapping (TRM) Process in a Company: A Case Study of a Leading Thai Firm", Asia Pacific Academy of Management and Business Conference (APAMB), March 2007, Singapore

Gerdri, N. and D. F. Kocaoglu, Hierarchical Decision Modeling for Quantifying the Value of Technologies, INFORMS, November 2006, Pittsburgh, PA

Gerdri, N., "Operationalizable Approach for Roadmapping of Emerging Technologies", International Association on Management of Technology (IAMOT), May 2006, Beijing, China.

Daim, T. and N. Gerdri, "Detecting Technological Changes and Capturing Potential Emerging Alternatives: A Case Study of I/O Technologies", INFORMS, November 2005, San Francisco, CA.

Gerdri, N., Zawada, J. and R. Lonsdale, "Quantifying Technology Value: An Application of Digital Imaging Development in Health Care", Portland International Conference on Management of Engineering and Technology (PICMET), August 2005, Portland, OR.

Gerdri, N., Attavavuthichai, V., Ficek, G., Leesirikun, W., Waraich, S., and N. Wathanachinda, "Applying Technology Value (TV) Model to Replicate NASA's Decision on Selecting the 2nd Generation of Reusable Launch Vehicle (RLV) Technology, Portland International Conference on Management of Engineering and Technology (PICMET), August 2005, Portland, OR.

Gerdri, N. and D. F. Kocaoglu, "Applying the Analytical Hierarchy Process (AHP) to Build a strategic Framework for Technology Roadmapping", International Symposium in Analytical Hierarchy Process (ISAHP), July 2005, Hawaii

Gerdri, N. and D. F. Kocaoglu, Quantifying Strategic Value of Emerging Technologies, INFORMS, October 2004, Denver, CO.

Gerdri, N. and D. F. Kocaoglu, "A Quantitative Model for the Strategic Evaluation of Emerging Technologies" PICMET symposium, August 2004, Seoul, S. Korea.

Daim, T. and N. Gerdri, "Technology Forecasting with Bibliometrics and Growth Curves", PICMET symposium,

August 2004, Seoul, S. Korea.

Gedsri, N., “Building a Technology Development Envelope (TDE) for Roadmapping of Emerging Electronic Cooling Technologies” ECI Conference on Accelerating the Radical Innovation Process for NanoEnterprise, May 2004, Charleston, South Carolina.

Rinne M., and N. Gedsri, “Unlocked Technology Roadmapping”, Portland International Conference on Management of Engineering and Technology (PICMET), July 2003, Portland, OR.

Gedsri N. and P. Gedsri, “Techno-Economics: Can Thailand Find a New Technological and Sustainable Way to Competitively Reenter the Global Market?” Portland International Conference on Management of Engineering and Technology (PICMET), July 2003, Portland, OR.