

LAWRENCE TECHNOLOGICAL UNIVERSITY

EME 6583 Enterprise Productivity

Ahad Ali, Ph.D.

Assistant Professor and Director of MSIE Program

Course Information:

Course No.: EME 6583
Course Title: Enterprise Productivity
Lecture: Friday, 5:45 – 8:25 pm
Classroom: E202
Office hours: [Tuesday, and Friday, 3:30 – 5:30pm or by appointment](#)
Blackboard: my.ltu.edu

Textbook:

Total Productivity Management: A Systemic and Quantitative Approach to Compete in Quality, Price, and Time, David J. Sumanth, 1998, CRC Press, ISBN# 1-57444-057-8.

Faculty:

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Course Description:

Diagnosis and assessment of productivity loss, setting up productivity measurement program, productivity improvement methods, tools utilized in enterprise productivity enhancement, the lean enterprise, case studies of assessing and improving productivity programs.

Course Outline:

I. Introduction

- I.1 Misconceptions About Quality, Technology, and Productivity
- I.2 Problems with the “Partial Productivity Perspective”
- I.3 Managerial Techniques Commonly Used in Decision Making
- I.4 Organizational Goals for Managerial Decision Making
- I.5 Importance of Management’s Role in Increasing Productivity
- I.6 Proposed Approach to Management Decision Making
- I.7 Relationship Between Total Productivity and Other Management Goals

II. The Need For Total Productivity Management

- II.1 Unique Factors Affecting Enterprises
- II.2 Confused Emphasis of the 1970’s and 1980’s
- II.3 Continued Chaos of the 1990’s
- II.4 Challenges and Opportunities
- II.5 Bridging Technology Discontinuities
- II.6 Social Changes

- II.7 The Family Unit – An Endangered Species
 - II.8 Technology – The Uncontrollable Monster
 - II.9 Ecological Imbalance
 - II.10 The “One-World Syndrome”
- III. The Basic Concept and Management Philosophy of TPMGT**
- III.1 The Total Productivity Perspective
 - III.2 TPMGT: The Definition
 - III.3 TPMGT: The Concept and the Philosophy
 - III.4 TPMGT: The Three-Legged Stool Analogy
 - III.5 TPMGT: The Conceptual Framework
 - III.6 TPMGT: The Integration Mindset of Three Competitiveness Dimensions
- IV. The Systematic 10-Step Process for TPMGT**
- IV.1 Implementation of the Basic TPMGT
 - IV.2 Implementation of the Comprehensive TPMGT
 - Step 1: Mission Statement
 - Step 2: TPM and/or CTPM Analysis
 - Step 3: Management Goals
 - Step 4: Fishbone Analysis
 - Step 5: Action Plans
 - Step 6: Productivity Quality Team Training
 - Step 7: Implementation of Action Plans
 - Step 8: Management Goals Achieved?
 - Step 9 Total Productivity Gainsharing
 - Step 10: New Goals
 - IV.3 Important Note on the TPMgt Implementation
- V. Case Studies: Selected Applications**
- V.1 Electronics
 - V.2 Heavy Equipment
 - V.3 Machine Tools
- VI. Unique Features of TPMGT**
- VI.1 Interdisciplinary Emphasis in Managerial Decision Making
 - VI.2 “People-Building” Emphasis with a Behavioral Thrust
 - VI.3 Product/Service Unit Orientation
 - VI.4 “Customer Chain Thinking”
 - VI.5 Systemic Perspective for Integration
 - VI.6 Independence from Culture
 - VI.7 Ability to Understand the Technology-Total Productivity Synergy
 - VI.8 Ability to Understand and Affect the Quality-Total Productivity Linkage
 - VI.9 Ability to Interlink the Dimensions of Competitiveness
 - VI.10 Unique Features Compared to Other Management Philosophies
 - VI.11 Comprehensiveness of Problem Solving Approaches in Training
 - VI.12 Comprehensiveness of Productivity and Quality Improvement Techniques

- VI.13 Ability to Quantify the Impact on the Bottom Line
- VI.14 Reward Systems Based on Total Productivity Gainsharing
- VI.15 The Practice of “Management is a Moral Issue”

VII. Frontiers Beyond TQM and Engineering

- VII.1 The TQM Wave-Where Is It Headed?
- VII.2 The Reengineering Dynamite
- VII.3 The TP Management Total Package

VIII. Benefits of TPMGT

- VIII.1 Customer Responsiveness
- VIII.2 Quality Competitiveness
- VIII.3 Total Cost Competitiveness
- VIII.4 Team Building and Accountability
- VIII.5 Technology Planning
- VIII.6 Investment Analysis
- VIII.7 Acquisition and Merger Planning
- VIII.8 Resource Budgeting and Allocation
- VIII.9 Automatic Profit Targeting
- VIII.10 Compatibility with Well-Established Data Collection Formats

IX. Universality of TPMGT

- IX.1 Fundamental Similarities in Manufacturing and Service Enterprises
- IX.2 Principles of TPMGT
- IX.3 Rules for Maximum Success with TPMGT

X. Where to Go From Here?

- X.1 Blueprint for Action
- X.2 Need for Formal Education and Training in TPMGT
- X.3 Expert System Tools for TPGT

Grading Policy:

Homework, Research Paper and Case Study Presentations: 30%

Midterm: 30%

Final Project: 40% (Presentation - 40 points and Report - 60 points)

A: 91–100; **A-:** 87–90; **B+:** 83–86; **B:** 80–82; **B-:** 74–79; **C+:** 67–73; **C:** 60–66; **F** < 60

Test:

Test will be open books and open notes. There will be no make-up tests except in case of exceptional circumstances. The course instructor must be notified as soon as possible and normally prior to the exam.

Homework:

Homework is due at the beginning of class. **Late Homework will not be graded and will receive NO CREDIT.** Extensions to turn in homework due to exceptional circumstances will require appropriate documentation or prior permission. There will be no makeup class assignments.

Research Paper and Case Study Review:

Students will have to review research papers and case studies and present in the class for the specific topics assigned in the class.

Course Project:

A project is required from all students and should be related on real life applications where the course materials could be used for the project. However, the project should be beyond class material. The main purpose of the project is to show enterprise level productivity improvement related to real-life applications.

There will be an oral presentation of the project and the written documentation of the study in a clearly, concisely written report form. This report should follow “normal business practice” e.g. it should have: abstract, introduction, literature review, problem description, data analysis, critical findings and analysis, take away, conclusion, recommendations, references and appendix (in any). The report must follow the paper guidelines of the International Journal of Productivity and Performance Management. The page limit is between fifteen (15) to twenty (20) pages. (Presentation – 40% and Report – 60%)

Academic Honor Code:

Academic integrity and honesty are basic core values of Lawrence Technological University. Lawrence Technological University is committed to creating an academic community that values both individual and collaborative efforts that promote learning and discovery. Such a community expects honesty and integrity in the work of all its members.

Cheating will not be tolerated! LTU’s Academic Honor Code is in effect. Students caught is cheating will receive an F in the course without the chance of recomputation for GPA purposes. A note to this effect will be placed in the student’s file. A second offence will result in expulsion from the university. For details about Academic Honor Code see: http://www.ltu.edu/currentstudents/honor_code.asp

Recommended Refernces:

37 Quick and Effective Productivity Techniques: Simple, Practical Methods for Mastering Time Management, Overcoming Procrastination, and Getting Things Done, Sean Phillips, 2009.

Manufacturing Handbook of Best Practices: An Innovation, Productivity, and Quality Focus, St. Lucie Press/APICS Series on Resource Management, Jack B. ReVelle, 2001.

Measuring, Managing, and Maximizing Performance: What Every Manager Needs to Know about Quality and Productivity to Make Real Improvements in Perform, Will Kaydos, Productivity Press, 1994.

Operational Performance Measurement: Increasing Total Productivity, Will Kaydos, CRC Press, 1998.

Productivity and Reliability-Based Maintenance Management, Matthew P. Stephens, 2003.

Public Productivity through Quality and Strategic Management, International Institute of Administrative Science Monographs, Arie Halachmi and Geert Bouckaert, Vol. 1, 1995.

Service Productivity Management: Improving Service Performance using Data Envelopment Analysis (DEA), H. David Sherman and Joe Zhu, 2006.

The Impacts of Research and Development Expenditures: The Relationship between Total Factor Productivity and U.S. Gross Domestic Product Performance, Innovation, Technology, and Knowledge Management, John J. Wetter, 2010.

The Productivity Race: British Manufacturing in International Perspective, 1850-1990, S. N. Broadberry, 2005.

Related Journals:

- International Journal of Productivity and Performance Management
- International Journal of Productivity and Quality Management
- Journal of Productivity Analysis
- Productivity Management
- Productivity: A Quarterly Journal of the National Productivity Council
- Quality and Productivity Journal

Related Articles:

A cross-country comparison of productivity growth using the generalised metafrontier Malmquist productivity index: With application to banking industries in Taiwan and China, Chen, K.-H., and Yang, H.-Y., *Journal of Productivity Analysis*, vol. 35, no. 3, pp. 197-212, 2011.

Bottom-up approach for productivity measurement in large public organizations, Jääskeläinen, A., and Uusi-Rauva, E., *International Journal of Productivity and Performance Management*, vol. 60, no. 3, pp. 252-267, 2011.

Efficiency and productivity change in Ukrainian health care, Pilyavsky, A., and Staat, M., *Journal of Productivity Analysis*, vol. 29, no. 2, pp. 143-154. 2008.

Fast moving consumer goods - A productivity perspective on supply chains, Helo, P., Phusavat, K., and Anussornnitisarn, P., *International Journal of Productivity and Quality Management*, vol. 5, no. 3, pp. 269-285, 2010.

Improving productivity and profitability through Six Sigma: Experience of a small-scale jobbing industry, and Desai, D.A., *International Journal of Productivity and Quality Management*, vol. 3, no. 3, pp. 290-310, 2008.

Increasing productivity through application of the SMED method in process industries, Volland, S., *Productivity Management*, vol. 16, no. 3, pp. 18-20, 2011.

Innovation and enterprise: The foundations of developing productivity, Heap, J., *International Journal of Productivity and Performance Management*, vol. 57, no. 6, pp. 434-439, 2008.

- Lean principles and techniques for improving the quality and productivity of software development projects: A case study, Middleton, P., Taylor, P.S., Flaxel, A., and Cookson, A., *International Journal of Productivity and Quality Management*, vol. 2, no. 4, pp. 387-403, 2007.
- Liberalisation and productivity growth: A case of Indian cement industry, Sharma, S., *International Journal of Productivity and Quality Management*, vol. 2, no. 3, pp. 307-321, 2007.
- Motivational aspects of corporate productivity maximisation: A field study, Monat, J.P., *International Journal of Productivity and Quality Management*, vol. 2, no. 2, pp. 177-192, 2007.
- Multifactor productivity and its determinants: An empirical analysis for Mexican manufacturing, Banda, H.S., and Verdugo, L.E.B., *Journal of Productivity Analysis*, vol. 36, no. 3, pp. 293-308, 2011.
- Productivity and efficiency of state-owned enterprises in China, Fu, F.-C., Vijverberg, C.-P.C., and Chen, Y.-S., *Journal of Productivity Analysis*, vol. 29, no. 3, pp. 249-259, 2008.
- Productivity growth in SMEs by decentralisation of fine planning, Askri, M.A., and Nickel, R., *Productivity Management*, vol. 14, no. 4, pp. 43-46, 2009.
- Quality and productivity improvement of executive decisions in maintenance engineering: An ESS-based approach, Elangovan, K., Selladurai, V., Devadasan, S.R., Goyal, S.K., and Muthu, S., *International Journal of Productivity and Quality Management*, vol. 2, no. 1, pp. 112-139, 2007.
- Railroad productivity analysis: Case of the American Class I railroads, Shi, F.X., Lim, S.H., and Chi, J., *International Journal of Productivity and Performance Management*, vol. 60, no. 4, pp. 372-386, 2011.
- The dynamics of efficiency and productivity growth in U.S. electric utilities, Rungsuriyawiboon, S., and Stefanou, S.E., *Journal of Productivity Analysis*, vol. 30, no. 3, pp. 177-190, 2008.
- The productivity of private and social farms: multilateral malmquist indices for slovene dairying enterprises, Thirtle, C., Piesse, J., and Turk, J., *Journal of Productivity Analysis*, vol. 7, no. 4, pp. 447-460, 1996.
- The relationship between quality improvement and firms' productivity in Malaysia, Zailani, S., Wahid, N.A., Premkumar, R., and Sathasivam, M., *International Journal of Productivity and Quality Management*, vol. 2, no. 3, pp. 347-364, 2007.
- The Residual: On monitoring and benchmarking firms, industries, and economies with respect to productivity, Balk, B.M., *Journal of Productivity Analysis*, vol. 20, no. 1, pp. 5-47, 2003.
- The UK productivity gap in the service sector: Do management practices matter? Battisti, G., and Iona, A., *International Journal of Productivity and Performance Management*, vol. 58, no. 8, pp. 727-747, 2009.