PLEASE READ THIS MEMORANDUM OF UNDERSTANDING (MU) THOROUGHLY BY JANUARY 13TH, 2015 AND BE PREPARED TO DISCUSS THE ASSIGNED READING MATERIAL FOR THE FIRST CLASS SESSION

COURSE NUMBER: MBA 708-51
COURSE TITLE: OPERATIONS FOR COMPETITIVE ADVANTAGE
SEMESTER: SPRING 2016
MEMORANDUM OF UNDERSTANDING (MU)

PLACE

Class sessions will be held in Room 205, Joseph M. Bryan School of Business and Economics.

TIME

2:00 p.m. to 4:50 p.m. on Wednesdays.

FACULTY MEMBER

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APPOINTMENT TIME

5:00 p.m. to 6:00 p.m. on Wednesdays. You are encouraged to stop in during office hours to talk about any problems or suggestions you may have concerning the course, careers, benefits of advanced courses in operations management, or things in general. If you want to talk to the professor and find the appointment hours to be inconvenient, feel free to schedule any other appointment time.

CATALOG DESCRIPTION OF THE COURSE

The course examines design, operation, and control of organizations for gaining and maintaining competitive advantage in the market place. Strategic and tactical issues will be integrated with a systems approach.

DESCRIPTION OF THE COURSE

The course begins with an introduction to the managerial processes underlying operations in both service-providing and goods-producing organizations. In the initial phase of the course, specific topics to be covered include process design, capacity planning, facilities location and design, application of forecasting in operations, aggregate planning, inventory management, project management, and quality management. Later the course will focus on the development and implementation of production/operations strategy and the integration of this strategy with other functions of the organization. Topics in the latter half of the course include alternative production/operations strategies, choice of process, operations strategy selection and implementation, selection and adoption of new technologies (such as enterprise-wide resource planning systems), and the integration of information, quality, and productivity into the operations function. A global theme will run through the entire course. The course is fairly intensive and extensive with the integration of the strategic and tactical issues with case studies, an organization-based assignment, and an in-class interactive exam with a guest speaker presentation. To the extent relevant and feasible, the material to be presented will include the ethical issues, the influence of political, social, legal and regulatory, environmental, and technological issues, and the impact of demographic diversity with respect to the strategic role of operations.

READING MATERIALS

Text Book

Jacobs, F. R. and Chase, R. B. (2014). *Operations and Supply Chain Management* (14^{th} Edition). New York, NY: McGraw-Hill/Irwin, a business unit of The McGraw-Hill Companies, Inc. ISBN # 978-0-07-782593-5 (with the DVD). The same version of the text book (without the DVD) is also available at "on-line" retail outlets. The ISBN number for the text book without the DVD is ISBN # 978-0-07-802402-1. The ISBN number for the DVD (without the text book) is 978-0-07-732740-8. **The text book is required**. The DVD is optional. There is no need to worry if you are unable to get the DVD. The 15 videos in the DVD will be placed in Box and shared with students.

Cases

Klein, S and Wocke, A. (2009). *Netcare's International Expansion*. Richard Ivey School of Business (The University of Western Ontario) Case 909M05 Version (A) 2010-05-02.

MacCormack, A. and Sucher, S. J. (2002). *Le Petit Chef*. Harvard Business School Case 9-602-080.

The text book can be purchased at the UNCG Bookstore (at the Elliott University Center). The textbook (with or without the DVD) can be purchased from "on-line" retail stores. The cases can be purchased from www.hbr.org. In addition, a set of articles (posted in the Course Documents section on Blackboard) is required reading for the course. Students should read the required materials prior to attending each class session. Students should have the appropriate reading materials available for each class session.

PRE-REQUISITE AND CO-REQUISITE COURSES

MBA 701 (Quantitative Analysis for Decision Making) is the prerequisite course. For a student to do well in the MBA 708 course, it is not just adequate if the student has taken the MBA 701 course. It is more important that the student be thorough with the content (Probability, Normal Distribution, Optimization Techniques, Risk and Decision Analysis, etc.), be able to analyze, integrate, synthesize, and communicate well in written and oral form. It is the responsibility of the student to prepare himself/herself adequately in these areas. The concepts and principles covered as part of the MBA 701 course will not be covered in MBA 708 course. There will be quantitative applications (in the form of statistical analysis, optimization techniques, and risk and decision analysis) and qualitative analysis exercises (in the form of written case analysis and in-class discussions) in the MBA 708 course. The students will be expected to learn new vocabulary related to the operations (and on occasion in the areas of financial and managerial accounting marketing; financial management; technology and innovation; leadership and sustainable business) early on in the first nine weeks and then apply the concepts in the latter half of the course.

WITHDRAWAL DATE

The last date to drop the course without receiving academic penalty is March 4th, 2016 (Friday).

FACULTY STUDENT GUIDELINES

The faculty and students in the course are expected to adhere to the faculty student guidelines stated at the following web page: http://www.uncg.edu/bae/faculty_student_guidelines.pdf

UNIVERSITY OPERATIONS DURING ADVERSE WEATHER CONDITIONS

The University of North Carolina at Greensboro will remain open during adverse weather conditions unless an administrative decision on schedule changes is made by the Chancellor. If students have a question on whether classes are delayed, canceled, or if the university is closed, then they must call the **Inclement Weather Hotline** at (336) 334-4400 or the **UNCG Switchboard** at (336) 334-5000. A recorded message will give the most accurate information.

GRADING

The course grade is based on a mini-case analysis, an in-class written exam, an in-depth case analysis, a topic paper, an ACID Test (in-class interactive written exam), and class contribution. Grades are based on the following "absolute" scale (i.e., there will not be any "curving").

	Points	Date
First In-class Written Exam	50	February 10th, 2016 (75 minutes)
Mini-Case Analysis	50	March 2nd, 2016 (Due)
Second In-class Written Exam	50	March 23rd, 2016 (75 minutes)
Topic Paper	100	March 30th, 2016 (Due)
In-depth Case Analysis	100	April 13th, 2016 (Due)
ACID Test (In-class Interactive Written Case Exam)	100	May 4th, 2016 (at 12:00 noon)
Class Contribution	50	

TOTAL	500	

A $\geq$ 450; A- $\geq$ 433; B+ $\geq$ 416; B $\geq$ 400; B- $\geq$ 383; C+ $\geq$ 366; C $\geq$ 350; F < 350.

IN-CLASS WRITTEN EXAMS

Each in-class written exam (of 75 minutes duration) will include five short answer questions (i.e., multiple choice, true/false, and brief discussion questions) and two problems (which will involve computations). The exam content will be drawn from the text book, vignettes, video films, and class discussions using the objectives listed in the schedule of sessions as a general guideline. The in-class exams are closed-book, and closed-notes.

RE-EXAMINATION POLICY

As a rule, re-examinations will not be held. Absence from the in-class written examinations due to illness, summons to jury duty, or any other compelling reason should be backed by the appropriate documents (e.g., medical certificate, etc.) in order to qualify for a re-examination. If possible, meet/talk with the professor before missing the examination to discuss the circumstances.

HONOR POLICY

Students are expected to comply with the UNCG Honor Policy described at the following web page: http://academicintegrity.uncg.edu/complete/

MINI-CASE ANALYSIS

Each student is to submit a written analysis of one mini-case (on Designing Toshiba's Notebook Computer Assembly Line) provided on pages 195 through 198 in the text book. Unless otherwise instructed, the individual should take on the role of a manager who has been assigned to review the issue(s) of concern or interest to the firm which are presented within the case. The written analysis is his/her report and recommendations on that/those issue(s) paying particular attention to the questions that are posed at the end of the mini-case. Many of the marks beyond a "passing score" depend on the student's ability to go beyond the "average" solution/answer and provide innovative perspectives, approaches, or solutions. If you need to make assumptions to accomplish this, feel free to do so and appropriately incorporate them in your written analysis. Discuss the issues in detail.

Students should work on this written analysis on an individual basis (and not as a group). Individuals should neither seek nor receive help from friends and family in completing this written analysis. The paper should be typed (maximum 12 point size lettering), double-spaced on 8.5" by 11" paper, with 1" margins and appropriately paginated. No minimum or maximum length is specified, although the written analysis should not typically exceed 10 pages (excluding appendices) in length. Individuals are requested to refrain from repeating the details provided in the case (just to fill up space) in their written analysis. That is, individuals are requested to cover the topics thoroughly, but efficiently. Do not add verbiage for the sake of length. Feel free to include diagrams, or other types of illustrations in your written analysis. Oversized charts or drawings should be folded to fit the rest of the paper. Appendices should appropriately number and referred to the write-up. References should be appropriately cited in the written analysis using the following manual:

American Psychological Association (2009). *Publication Manual of the American Psychological Association*. Sixth edition. Washington, DC: American Psychological Association.

In preparing the written analysis, write from an objective view, in third person. Do not use the words "I", "We", or "You". Use subheadings to correspond with specific issues posed for the individual case. It should be noted that appropriate credit will be given for those individuals who are in a position to integrate their analysis with readings presented outside the case. The written analysis will be graded on organization, thoroughness (depth and breadth of coverage of material), insight of analysis, and written communication skill. The questions that need to be addressed are given at the end of the mini-case.

The individual mini-case analysis is to be submitted in class at 2:00 p.m. on March 2nd, 2016. Late submissions will not be accepted. Each student should attest to the statement that "I HAVE ABIDED BY THE ACADEMIC HONOR POLICY ON THIS ASSIGNMENT" on a separate cover page of the mini-case analysis assignment. The cover page should also include the course title, name of the student, and the title of the assignment.

TOPIC PAPER

The topic paper assignment will be carried out by the student as a member of a team of two students. Sample papers have been placed in the Files section of the course in Canvas. The names of students will be randomly chosen by the faculty member at 3:30 p.m. on January 13th, 2016. By the end of the first class session on January 13th, 2015, the student teams will be assigned one of the following topics to be related to the P&G Manufacturing Company in Greensboro, NC:

1) Plant Level Performance Measures
2) Managing Projects
3) Quality Management
4) Product Design and the Shop Floor
5) Demand Management and Forecasting
6) Strategic (Long Range) Capacity Planning
7) Facility Layout
8) Work Design (Machine and Human Interaction)
9) Supply Chain Management
10) Inventory Management
11) Aggregate (Medium Range Capacity) Planning
12) Materials Requirements Planning
13) Shop Floor Scheduling and Control
14) Lean (Just-in-Time) Systems

For facilitating a better understanding of the subject matter being studied, a plant tour to the P&G Manufacturing Company (P&G) facility (in Greensboro, North Carolina) is being arranged from 9:00 a.m. to 12:00 noon on February 26th, 2016 (Friday). The paper would entail a good review of the literature (at least 8 to 10 relevant articles and books) on that subject and an analysis of that aspect as it relates to that organization. The review of the literature could be based on articles published in Production and Inventory Management Journal, Journal of Operations Management, International Journal of Operations & Production Management, Quality Progress, Industrial Management & Data Systems, and other relevant journals. Articles should be from refereed journals with exact volume and issue number, year of publication, and page numbers provided in the list of references. Information/articles from websites (not connected to refereed journals) are not to be used. The refereed articles and books can be searched using www.scholar.google.com. A one-paragraph description of the proposed topic paper (which includes the title of the paper, importance of the specific topic, how the topic relates to P&G and a short list of references) should be submitted to the faculty member at the beginning of the class period on January 27th, 2016. The detailed listing of the references should be as per the following publication:

American Psychological Association (2009). *Publication Manual of the American Psychological Association*. Sixth edition. Washington, DC: American Psychological Association.

A list of questions/issues for the visit should be submitted to the professor at the beginning of the class period on February 17th , 2016. For preparing the set of issues/questions, feel free to obtain some information about P&G from the http://us.pg.com/ web site. The following outline should be used for the term paper: Abstract, Introduction, Review of the Literature (including a summary/framework based on the review of the literature on how you plan to relate the subject matter to P&G in the fifth section of the paper), Research Methodology (of a case study with a structured interview approach and the details of the organization), Findings (as they relate to the framework presented in the third section of the paper), Conclusions, and References. In addition to analyzing the topic as it exists in the organization, the paper should make recommendations for improvement in the concluding section. In general, the paper should be written for a reader who is not too familiar with the principles, concepts, decision/problem areas, and techniques of managing operations (at the level of MBA 708) but is comfortable in reading articles in the English language. The research method is used in the topic paper is as per the following reference:

Yin, R. K. (2003). *Case Study Research: Design and Methods*. Third edition. Thousand Oaks, CA: Sage Publications, Inc.

Each student team is encouraged to develop the paper as we progress through the course. The case method is tion for exams, but also distribute the work associated with the topic paper more evenly over the semester. Feel free to discuss your topic paper with the faculty member as it is being developed. The paper should be typed (maximum 12 point size lettering), double-spaced on 8.5" by 11" paper, with 1" margins, and appropriately paginated. No minimum or maximum length is specified, although the papers are typically 15 to 25 pages long. Cover the topics thoroughly, but efficiently. Do not add verbiage for the sake of length. Include diagrams, photos, sketches, or other types of illustrations that will clarify your presentation. Citations should appropriately referenced at the end of the paper, and pages, tables, figures should be appropriately numbered.

The topic paper will be graded on organization, thoroughness, insight of analysis/recommendations, and written communication skill. It is highly recommended that a project management approach be taken for ensuring the timely completion of the paper. The topic paper is to be submitted at the beginning of the session on March 30th, 2016. Late submissions will not be accepted. Each student/member of the group should attest to the statement that "I/WE HAVE ABIDED BY THE ACADEMIC HONOR POLICY ON THIS ASSIGNMENT" on a separate cover page of the topic project assignment. The cover page should also include the number and title of the course, title of the paper, and name(s) of student(s).

IN-DEPTH CASE ANALYSIS

Each student must carry out an in-depth analysis of the “Le Petit Chef” case. The individual should take on the role of a manager who has been assigned to review the issue(s) of concern or interest to the firm. The written analysis is his/her report and recommendations on that/those issue(s). The issues have been presented in the "schedule of sessions" section in this memorandum of understanding (MU). Much of the grade beyond a "passing score" depends on the student's ability to go beyond the "average" solution/answer, integrate the material from the course, and provide innovative perspectives, approaches, or solutions. Feel free to use the all the tools and the frameworks discussed in this course (and other courses) to substantiate the analysis. If you need to make assumptions to accomplish this, feel free to do so and appropriately incorporate them in your written analysis. Discuss the issues in detail.

The professor will facilitate the discussion for the case. There will not be any formal presentations of the case. Students should work on this written analysis on an individual basis (not in groups). Individuals should neither seek nor receive help from friends and family in completing this written analysis. The written analysis should be typed, and double-spaced on 8.5" by 11" paper. No minimum or maximum length is specified, although the written analysis (not counting the appendices) should not typically exceed 15 pages in length. Individuals are requested to refrain from repeating the details provided in the case (just to fill up space) in their written analysis. That is, individuals are requested to cover the topics thoroughly, but efficiently. Do not add verbiage for the sake of length. Feel free to include diagrams, or other types of illustrations in your written analysis. Oversized charts or drawings should be folded to the 8.5 " by 11" format. The paper should be typed (maximum 12 point size lettering), double-spaced on 8.5" by 11" paper, with 1" margins, and appropriately paginated. In preparing the written analysis, write from an objective view, in third person. Do not use the words "I", "We", or "You". Use subheadings to correspond with specific issues posed for the individual case. It should be noted that appropriate credit will be given for those individuals who are in a position to integrate their analysis with readings presented outside the case.

The written analysis will be graded on organization, thoroughness, insight of analysis, and written communication skill. While working on the numerical analysis, students must ensure the following: (1) identify all the uncertain aspects of the decision environment; (2) define decision alternatives and output measures; (3) Calculate possible outcomes of all decisions; (4) calculate statistical estimates (if applicable) of output measures of interest; (5) assess the statistical precision of all output measures (if applicable); and (6) incorporate risk into the decision making process. In writing the report, students must ensure the following: (1) communicate the conclusion clearly; (2) explain the logic behind the analysis and conclusion; (3) demonstrate effective organization; (4) employ proper spelling, punctuation, and grammar; (5) include an appropriate amount of information and discussion; and (6) support analysis with clearly identified tables and/or figures.

The individual written analysis is to be submitted at 2:00 p.m. on April 13th, 2016. Late submissions will not be accepted. Each student should attest (with a signature) that "I HAVE ABIDED BY THE ACADEMIC HONOR POLICY ON THIS ASSIGNMENT" on the cover page of the in-depth case analysis. The cover page should also include name of the student, title of the assignment, and course name and number.

ACID TEST (IN CLASS INTERACTIVE WRITTEN CASE EXAM)

The in-class written exam will be held on May 4th, 2016. This exam, popularly called the **ACID** Test (**ACID** is an acronym for **A**nalysis and **A**pplication, **C**ontent and **C**onceptualization**, I**ntegration and **I**mplementation, and **D**ecision making and **D**iscrimination), will be a "live"/interactive/guest speaker presentation/final examination on the operations for competitive advantage at P&G Manufacturing Company (P&G). A note on the "live" case (viz., P&G) will be handed out to the students on April 20th, 2016. At 12:00 noon on May 4th, 2016 a comprehensive (essay) question (or a set of questions) on that case will be given to the students. Then the guest speaker (Mr. John Brandberg, Group Manager Operational Insights, P&G) will present for about fifteen (15) minutes. The next forty five (45) minutes will be devoted to a question/answer session. Students should refrain from asking any questions while Mr. Brandberg is making his formal presentation. The guest speaker will leave the class room at 1:00 p.m. Then the students can begin writing the answer(s) to the final exam question(s) so as to finish by 2:50 p.m. The in-class written exam is "closed book and closed notes". The only items to be brought to the final exam are the case on P&G (with any comments that the students might have noted while reading the case or from the company web site), blank sheets of paper for writing the answer(s), and a calculator. Students may choose to type the answers on a lap top computer or using one of the computers (if the labs are open at that time) in the Bryan School of Business and Economics.

CLASS CONTRIBUTION

Each student should be prepared for an insightful discussion of all aspects of the material assigned for each class session, be it text/articles/supplementary material and/or cases. Students should be prepared to answer questions and raise issues when called upon to do so in the class. Students will be evaluated at each session on the quality (not quantity) of their participation/contribution. Class contribution points will be accumulated based on how perceptively a student analyzes the situation being studied, the usefulness of the observations and suggestions made by the student, and the student's ability to put across ideas with clarity and conviction. Class attendance alone will not directly count towards the points to be accumulated through class participation/contribution. However, poor attendance will dramatically reflect in a student's contribution grade. That is, a student cannot participate/contribute if absent from the class. As a further consideration, material obtained from class discussions could be used for answering question(s) for the assignments/exams.

PEDAGOGIC APPROACH

Lectures, cases, a facility tour, video films, and situation vignettes will be used. The "lecture" sessions will rely on the “Socratic” method to the extent possible. All students are expected to attend each class session. If a student misses a specific class session, it is her/his responsibility to cover the topics so missed. Material covered in a previous class will not be repeated in a subsequent class. The schedule of sessions on the memorandum of understanding (MU) contains a listing of topics and assignments to be covered in the respective sessions. For a better understanding of the course content, each student should prepare for the topics and assignments (listed in the MU) prior to the appropriate class session. Each student should be prepared to discuss the assigned readings for each class session. On an individual basis, each student must work on the problems and questions. That would improve the effectiveness and efficiency of your learning process over the entire semester. This would also certainly assist you in preparing better for the course and exams. The assigned questions given in the MU are only representative of the content that can be expected on the exams. The list of questions is not an exhaustive one. The MU is a general plan for the course; deviations may be necessary.

TECHNOLOGY APPLICATIONS

There would be some coverage of technological advances relating to the operations function in the course.

ETHICAL PERSPECTIVES

There would be some coverage of the ethical issues as they relate to the course.

GLOBAL PERSPECTIVES

The global environment and its impact on operations is being felt more and more in the current economy. There would be a good amount of coverage of these global perspectives in this course.

POLITICAL, SOCIAL, LEGAL, ENVIRONMENTAL, AND REGULATORY ISSUES

Political, social, legal, environmental, and regulatory issues, to the extent applicable, will be covered in this course. It is anticipated that there would be some coverage of these issues in the course.

IMPACT OF DEMOGRAPHIC DIVERSITY

There would be minimal coverage of this issue in the course.

BIOGRAPHIC SKETCH OF FACULTY MEMBER

Vidyaranya B. Gargeya is a Professor in the Department of Information Systems and Supply Chain Management in the Joseph M. Bryan School of Business and Economics at The University of North Carolina at Greensboro. He holds a bachelor's degree in Chemical Engineering from Andhra University, Visakhapatnam (India), a Post Graduate Diploma in Management from the Indian Institute of Management, Bangalore, and a Ph.D. in Business Administration from Georgia State University. He has considerable work experience as an engineer and manager in the petroleum industry. Dr. Gargeya has taught at the University of Strathclyde (Glasgow, Scotland), Fachhochschule-Ludwigshafen (Germany), University of Hartford, Georgia State University, and the Jamnalal Bajaj Institute of Management Studies, University of Bombay (India). His teaching and research interests include Operations Management, Global Operations Strategy, Total Quality Management, Supply Chain Management, and Service Operations Management. He has published in journals such as *Journal of Operations Management*, *Technovation*, *Transportation Research (Part E)*, *The Journal of the Textile Institute*, *Business Process Management Journal*, *International Journal of Production Research*, *Omega*, *International Journal of Quality and Reliability Management*, *Case Research Journal*, *Decision Support Systems*, etc. He has co-authored a book titled "*Customer Relationship Mangement: A Global Perspective*". Dr. Gargeya served on the Board of Examiners of Malcolm Baldrige National Quality Award and the North Carolina Awards for Excellence and has also consulted with Fortune 500 companies.

COGNITIVE COURSE OBJECTIVES

Upon completing the course, the student should be able to:

1) <u>Differentiate</u> between productivity, effectiveness, efficiency, and other performance measures for operations management in manufacturing and service organizations.
2) <u>Use</u> project management techniques to execute a project.
3) <u>Develop</u> and <u>use</u> a process control chart for managing quality.
4) <u>Explain</u> the role played by total quality management (along with all its facets and tools) in enhancing the performance in organizations.
5) <u>Elaborate</u> on the financial implications of long range, intermediate range, and short range capacity planning in managing operations.
6) <u>Explain</u> the factors that influence the location of service and manufacturing facilities.
7) <u>Describe</u> the important aspects and issues related to facility design decisions in manufacturing and service organizations.
8) <u>Critique</u> the role of forecasting in the operations of an organization.
9) <u>Describe</u> the typical objectives and constraints in medium range (aggregate) planning related to both manufacturing and service organizations.
10) <u>Differentiate</u> the inventory management concerns between dependent demand items and independent demand items in manufacturing and service organizations.
11) <u>Compare</u> and <u>contrast</u> a Manufacturing Resource Planning ("MRP II" or "Push") system and a Just-In-Time/Total Quality Management ("JIT/TQM" or "Pull") system.

12) Critique the role of Enterprise-wide Resource Planning (ERP) Systems in organizations in general, and supply chain/network management in particular.
13) Differentiate and relate strategic and tactical decisions in operations for gaining and sustaining competitive advantage.
14) For a given service or manufacturing organization, differentiate between alternate methods of securing a competitive advantage with the operations function focusing on the appropriate order winner(s) and qualifiers.
15) Select appropriate production/operations systems for different types of product mixes (i.e., high volume standardized products vs. low volume specialty products) for different markets.
16) Elaborate on the role of product and process design as a “strategic weapon” for gaining a competitive advantage.
17) Critique the role of a "product profiling" exercise in achieving “focused” operations for both manufacturing and service organizations.
18) Elaborate on the strategic implications of "vertical integration", horizontal integration, and information technology in the value chain.
19) Evaluate the operations strategy of an organization.
20) Elaborate on and develop opportunities for sustainable operations in both services (logistics, banking, warehousing, transportation, retail, etc.) and manufacturing environments.
21) Demonstrate a thorough understanding of the tactical and strategic role of the operations function and its inter-relationship with other functional areas (such as marketing, finance, etc.) in order to effectively lead a multi- functional task force in building a global organization.

SCHEDULE OF SESSIONS

SESSION #	DATE	TOPICS AND ASSIGNMENTS
1	**1/13**	**DISCUSSION OF THE MEMORANDUM OF UNDERSTANDING**
		INTRODUCTION TO OPERATIONS FOR COMPETITIVE ADVANTAGE Chapter 1 (Introduction). Discussion Questions 5 and 10. Objective Questions 1 and 9. Chapter 7 (Manufacturing Processes): Discussion Questions 1, and 4. Objective Questions 8-10. Video: Product-Process Matrix (Video Number 12 in the DVD) Video: Louisville Slugger Aluminum Bat Plant Tour (Video Number 14 in the DVD)
		1) Describe the main elements of an "Operations Systems" model.
WORK ON YOUR OWN!		2) What are the primary differences between manufacturing and service operations?
WORK ON YOUR OWN!		3) Give examples of Engineering-to-Order, Make-to-Stock, Assemble-to-Stock, Make-to-Order, and Assemble-to-Order Operations.
		4) Compare and contrast the different conversion processes (i.e., project, job shop, mass production/assembly line, and continuous process).
WORK ON YOUR OWN!		5) Be prepared to calculate the break-even volume for a process.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
2	1/20	OPERATIONS FOR COMPETITIVE ADVANTAGE AND THE JOURNEY TO EXCELLENCE Chapter 2 (Strategy): Discussion Questions 1, 2, 5, and 9. Objective Questions 18-20.
		1) Identify the key elements (including order winners and qualifiers) in the operations for competitive advantage framework for understanding how operations plays a role in gaining a competitive advantage.
WORK ON YOUR OWN!		2) What is the most simple and general form of the "productivity" formula?
WORK ON YOUR OWN!		3) Differentiate between a partial measure of productivity and total factor productivity.
		4) Explain the difference between productivity, effectiveness, and efficiency.
		5) Briefly describe the “Journey to Excellence” Model.
WORK ON YOUR OWN!		6) How might one construct a productivity index for the Joseph M. Bryan School of Business and Economics?
		PROJECT MANAGEMENT Chapter 4 (Project Management): Discussion Questions 2 and 5. Objective Questions 5-7, 13 and 15. Analytics Exercise: Product Design Project. Video: Project Management at Six Flags, New Jersey (Video Number 1 in the DVD)
		1) Identify the three fundamental objectives in managing projects.
WORK ON YOUR OWN!		2) Differentiate between Gantt charts and networks.
		3) What is the difference between Activity-On-Node and Activity-On-Arrow networks.
		4) Given the requisite information, be prepared to develop an Activity on Node or Activity on Arrow network, identify the critical path(s) for a project, and discuss mechanisms for “crashing” a project.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
3	**1/27**	**SUBMISSION OF ABSTRACT OF TOPIC PAPER**

QUALITY MANAGEMENT
Chapter 12 (Six Sigma Quality): Discussion Questions 3, 6, and 9. Objective Questions 1, 2, and 4.
Video: Six Sigma at Caterpillar (Video Number 3 in the DVD)

WORK ON YOUR OWN! 1) How would you define the quality for a product and/or a service?
2) Describe the tenets/facets of Total Quality Management.
WORK ON YOUR OWN! 3) Discuss the elements of Cost of Quality (COQ).
WORK ON YOUR OWN! 4) Distinguish between the ISO 9000 certification process and the Malcolm Baldrige National Quality Award.
WORK ON YOUR OWN! 5) Discuss the roles of cause/effect diagrams, Pareto Charts, Process Flowcharts and other tools for continuous improvement.

CONTINUOUS IMPROVEMENT
Chapter 13 (Statistical Quality Control): Discussion Questions 4 and 6. Objective Questions 7, 10, and 11.

WORK ON YOUR OWN! 1) Describe acceptance sampling. Why is it used? Could it be used in services?
WORK ON YOUR OWN! 2) Describe Statistical Process Control. Why is it used? How can it be used in services?
3) Be prepared to develop process control charts for attributes and variable measurements and understand the situations under which further investigation is required.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
4	2/3	PRODUCT, SERVICE, AND PROCESS DESIGN Chapter 3 (Design of Products and Services): Discussion Question 2. Objective Question 11. Net present value is covered in the "Financial Management" (MBA 707) course. Chapter 9 (Service Processes): Discussion Questions 5 and 6. Chapter 11 (Process Design and Analysis, pp. 262-275). Video: Manufacturing Design at Burton Snowboards (Video Number 5 in the DVD) Video: Green Product Design and PHILL at Honda (Video Number 6 in the DVD)
WORK ON YOUR OWN!		1) Discuss the role of value analysis/value engineering.
WORK ON YOUR OWN!		2) Describe Design for Manufacturing and assembly (DFMA) Work. Is this applicable to service organizations? If not, why not? If so, why so?
WORK ON YOUR OWN!		3) Discuss the Service-System Design Matrix.
WORK ON YOUR OWN!		4) Draw the process flowchart for the advising/registration process for completing the MBA degree in the Bryan School.
		DEMAND MANAGEMENT AND FORECASTING Chapter 18 (Forecasting): Discussion Questions 1 and 3. Objective Questions 8, 12, and 15. Video: Service Processing at Buycostumes.com (Video Number 2 in the DVD)
WORK ON YOUR OWN!		1) Discuss the role of marketing and the sales function in developing a forecast.
WORK ON YOUR OWN!		2) Distinguish between short term, medium term, and long-term forecasting.
WORK ON YOUR OWN!		3) Describe simple moving average, weighted moving average, simple exponential smoothing, and regression analysis methods of forecasting.
		4) Be prepared to use simple moving average, weighted moving average, simple exponential smoothing, and regression analysis methods of forecasting and assess the effectiveness of each technique.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
5	**2/10**	**FIRST IN-CLASS WRITTEN EXAM (75 Minutes)** LONG RANGE CAPACITY PLANNING Chapter 5 (Strategic Capacity Management): Discussion Questions 2, 4, and 5. Objective Question 8.
WORK ON YOUR OWN!		1) What is the definition of capacity? Differentiate between output and capacity.
WORK ON YOUR OWN!		2) Distinguish between short range, medium range, and long range capacity planning.
WORK ON YOUR OWN!		3) Describe the concepts of a focused factory and a Plant within a Plant.
		4) Be prepared to solve a long-range capacity planning problem using the decision tree model.
6	**2/17**	**SUBMISSION OF A DETAILED LIST OF QUESTIONS FOR THE VISIT TO THE P&G MANUFACTURING COMPANY FOR THE TOPIC PAPER** FACILITY LOCATION Chapter 15 (Logistics, Distribution, and Transportation): Discussion Questions 1, 2, 5, and 6. Objective Questions 9 and 10.
		1) What are factors that would influence the facility location (macro level factors) and site selection (micro level factors) of a bank, and a paper mill?
WORK ON YOUR OWN!		2) Be prepared to solve facility location problem using the Transportation Method of Linear Programming. This method has been covered in the “Quantitative Analysis for Decision Making” (MBA 701) course.
		3) Be prepared to solve facility location problem using the Centroid Method. FACILITY LAYOUT Chapter 8 (Facility Layout): Discussion Questions 1, 2, 3, 5 and 8. Objective Questions 5-7, 9, and 10.
WORK ON YOUR OWN!		1) Differentiate between product (flow shop) and process (functional) layout.
WORK ON YOUR OWN!		2) What are the primary advantages and disadvantages of a cellular layout?
WORK ON YOUR OWN!		3) What is cycle time? What is its role in designing an assembly line?
WORK ON YOUR OWN!		4) Understand the relationship between the production rate and cycle time.
		5) Be prepared to develop a precedence diagram, balance a line, and compute its cycle time.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
7	2/24	AGGREGATE PLANNING Chapter 19 (Sales and Operations Planning): Discussion Questions 1-4. Objective Questions 3-6 and 7-9.
WORK ON YOUR OWN!		1) How are forecasting, aggregate planning, master scheduling, materials requirements planning, and operations control tied together?
WORK ON YOUR OWN!		2) What is the objective function in the aggregate planning problem? Why does the problem exist? What is the typical planning period and planning horizon used in the aggregate planning problem?
WORK ON YOUR OWN!		3) Is the aggregate planning problem long range, medium range, or short range in nature? Please give an explanation for your conclusion.
		3) What are the three typical strategies available for a manager in developing an aggregate production plan, i.e., what are the controllable variables?
		4) What are the typical costs affected by the aggregate production plan?
		5) What are the specific characteristics of industries where the three extreme strategies could be applied?
		6) Be prepared to develop an aggregate plan. Also, be prepared to compute the total cost using the three strategies for a given aggregate planning problem.
	2/26	**FACILITY TOUR OF P&G MANUFACTURING COMPANY**

SESSION #	DATE	TOPICS AND ASSIGNMENTS
8	**3/2**	**SUBMISSION OF MINI-CASE ANALYSIS**

INVENTORY MANAGEMENT SYSTEMS FOR INDEPENDENT DEMAND
Chapter 20 (Inventory Management): Questions 1, 4, 5, 6, 9, and 10. Objective Questions 12 and 24.

WORK ON YOUR OWN!

1) What are the two fundamental questions in developing an inventory policy?
2) What are safety stock and service level? How are they related?
3) What are cycle counting and physical inventory? What purpose do they serve?
4) Given the required data, be prepared to compute the Economic Order Quantity, the Reorder Point, and Total Cost in a perpetual ordering system.
5) Given the required data, be prepared to compute the Economic Order Interval (i.e., the time between orders), and the quantity to be ordered at a given point in time in a periodic ordering system.
6) Under what assumptions would a fixed order quantity system be chosen over a fixed order interval system, i.e., what practical considerations would encourage the use of a fixed order quantity system over the use of a fixed order interval system?

SESSION #	DATE	TOPICS AND ASSIGNMENTS
9	3/16	INVENTORY MANAGEMENT SYSTEMS FOR DEPENDENT DEMAND (MATERIAL REQUIREMENTS PLANNING --- MRP) Chapter 21 (Material Requirements Planning): Discussion Questions 1, 2, 4, 5, 7, and 8. Objective Questions 12 and 13.
WORK ON YOUR OWN!		1) Differentiate between independent and dependent demand inventory.
WORK ON YOUR OWN!		2) What is a Material Requirements Planning (MRP) system?
WORK ON YOUR OWN!		3) What are the primary inputs and outputs in a MRP analysis? What are the objectives of a MRP system? 4) Discuss the role of Master Production Scheduling in developing the MRP. 5) What is the significance of low level coding in developing an MRP. 6) Be prepared to develop a Material Requirements Plan.
		SCHEDULING Chapter 22 (Workcenter Scheduling): Discussion 1 and 3. Objective Questions 8 and 9. Video: Queuing at Disney (Video Number 13 in the DVD)
WORK ON YOUR OWN!		1) Describe any four priority rules that can be used for scheduling jobs at a work center.
WORK ON YOUR OWN!		2) What would be a good scheduling rule to use for a waiting line for teller services at a bank? Substantiate your response with a detailed explanation. 3) Elaborate on four performance measures that can be used for a work/service center.
10	**3/23**	**SECOND IN-CLASS WRITTEN EXAM (75 MINUTES)** GLOBAL SOURCING, LEAN SYSTEMS, AND SUPPLY CHAIN MANAGEMENT Chapter 16 (Global Sourcing and Procurement): Discussion Questions 1 & 4. Chapter 14 (Lean Supply Chains): Discussion Questions 1, 2, and 16. Video: Ford Supply Chain Management (Video Number 8 in the DVD) Video: Ford Supply Organization (Video Number 9 in DVD) Video: Styro, Inc. (will be shown in the classroom)
WORK ON YOUR OWN!		1) Compare and contrast Manufacturing Resource Planning (MRP II) Systems and Lean (Just-in-Time) Systems.
WORK ON YOUR OWN!		2) Discuss the challenges in managing global supply chains.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
11	**3/30**	**SUBMISSION OF TOPIC PAPER**

OPERATIONS FOR COMPETITIVE ADVANTAGE (Continued)
Video Films: GM Plant Closings (8 minutes), and Japanese Cars: Really Better? (8 minutes).
Article: Berry W. L. and Hill, T. (1992). Linking systems to strategy. *International Journal of Operations Production Management*, 12(10): 3-15.
Parable: A Tale of Two Countries (attached to this MU).

1) Identify the two countries described in "A tale of two countries"?
2) Discuss the linkages between operations strategy, marketing strategy, and order winning criteria/qualifiers, in meeting corporate objectives.
3) Making use of the facts presented in the video films, identify the primary causes for the GM plant closings and the success of the Japanese manufacturers.

ENTERPRISE-WIDE RESOURCE PLANNING SYSTEMS IN GLOBAL OPERATIONS STRATEGY
Chapter 17 (Enterprise Resource Planning Systems): Discuss Questions 1-4.
Article: Gargeya, V. B. and Salam, A. F. (2001). E-business and supply chain management in a high growth environment. *Proceedings of the 2001 E&R Foundation Summer Academic/Practitioner Workshop*: 56-63.
Article: Eatman, J. L. and Gargeya, V. B. (2002). Operations control: Merging global operations via an ERP system. Paper presented at the 15th World Congress of the International Federation of Automatic Control held in Barcelona, Spain, July 21-26, 2002 and published in the proceedings.

1) Discuss the salient features of the Enterprise-wide Resource Planning (ERP) systems for global operations at VF Corporation, Inc.
2) Discuss the features of Enterprise-wide Resource Planning Systems in global operations. Elaborate on the functionality of vendor information in light of order winners and qualifiers.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
12	4/6	INTERNATIONAL EXPANSION AND OPERATIONS STRATEGY Case: Klein, S and Wocke, A. (2009). *Netcare's International Expansion*. Richard Ivey School of Business (The University of Western Ontario) Case 909M05 Version (A) 2010-05-02. 1) Using the "Netcare's International Expansion" case, be prepared to detail the following: a) Draw up a time table of the major events described in the case study. b) Analyze the success of Netcare in the United Kingdom. Be as specific as possible. c) What can the firm do internationally in the future? Substantiate your answer with detailed explanations. FOCUS REGRESSION AND FOCUS PROGRESSION Article: Hill, T. J., Menda, R., and Dilts, D. M. (1998). Using product profiling to illustrate manufacturing-marketing misalignment. *Interfaces*, 28: 47-63. Article:Hill, T. J., and Duke-Woolley, R. M. G. (1993). Progression or regression in facilities focus. *Strategic Management Journal*, 4: 109-121. Reading: Clark, G., Johnston, R., and Shulver, M. (2000). Exploiting the Service Concept for Service Design and Development. In J. A. Fitzsimmons and M. J. Fitzsimmons (Eds.) *New Service Development* (pp. 71-91). Thousand Oaks, CA: Sage Publications. Inc. 1) "Mass customization could lead to regression in facilities focus". Comment on this statement. 2) Discuss product profiling and its strategic implications. 3) Elaborate how product profiling aids in the process of developing operations for competitive advantage.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
13	**4/13**	**SUBMISSION OF IN-DEPTH CASE ANALYSIS** EVALUATION OF OPERATIONS FOR COMPETITIVE ADVANTAGE Case: MacCormack, A. and Sucher, S. J. (2002). *Le Petit Chef*. Harvard Business School Case 9-602-080. 1) Based on the "Le Petit Chef" case, be prepared to discuss the following issues: a) Evaluate the operations strategy of Le Petit Chef. Discuss in as much detail as possible. b) What should Brigitte Gagné do? Specifically, which projects should she fund and why? How should she handle the executive meeting? Substantiate your answers with detailed analyses. c) What factors explain Le Petit Chef's poor performance? What actions would you recommend to remedy the situation? Substantiate your response with detailed explanations.
14	4/20	CONNECTING THE DOTS AND "CHEWING THE CUD"! Video: Motorola (10 minutes; will be shown in the classroom) Video: Federal Express (12 minutes; will be shown in the classroom) 1) Discuss the mechanisms by which operations can enhance competitiveness. 2) Based on the "Motorola" and "Federal Express" videos, discuss how the firms' operations lead the way to competitive advantage. **"ACID TEST" COMMENCES WITH THE HANDING OF NOTE ON THE P&G MANUFACTURING COMPANY**
15	**5/4** **(12:00 Noon to 2:50 p.m.)**	**ACID TEST (IN-CLASS INTERACTIVE WRITTEN CASE EXAM)** **OPERATIONS FOR COMPETITIVE ADVANTAGE AT THE P&G MANUFACTURING COMPANY** Guest Speaker: Mr. John Brandberg Group Manager Operational Insights The P&G Manufacturing Company

STUDYING AND LEARNING FROM CASES
(Adapted from Christopher H. Lovelock and Charles B. Weinberg, 1988 and 1991).

The cases featured in this course are representative of real-world problems that managers in different organizations have to face and resolve. Although designed principally for use in classroom discussions, many of these cases can offer valuable insights to the individual reader.

The comments that follow are directed primarily at participants in courses and seminars who have been assigned one or more of these cases to prepare for subsequent class discussion. Unlike methods of instruction that use lectures and textbooks, the case method of instruction does not present students with a body of tried and true knowledge about how to be a successful manager. Instead, it provides an opportunity for students to learn by doing.

As a student, you may find that dealing with cases is very much like working with the actual problems that people encounter in their jobs as managers. In most instances, you'll be identifying and clarifying problems facing the management of a company or non-business organization, analyzing qualitative information and quantitative data, evaluating alternative courses of action, and then making decisions about what strategy to pursue for the future. You may enjoy the process more—and will probably learn more—if you accept the role of an involved participant rather than that of a disinterested observer who has no stake, or interest, in resolving the problems in question.

The goal of case analysis is not to develop a set of "correct" facts but to learn to reason well with available data. Cases mirror the uncertainty of the real-world managerial environment in that the information they present is often imprecise and ambiguous. You may perhaps be frustrated that there is no one right answer or correct solution to any given case. Instead, there may be a number of feasible strategies management might adopt, each with somewhat different implications for the future of the organization, and each involving different trade-offs.

In this course, you'll be exposed to a wide range of different management situations within a relatively short time. As a result, the cases presented in this course will collectively provide a much broader exposure to global operations strategy issues than most managers experience in many years on the job.

CASES AND THE REAL WORLD

Recognizing that managerial problems are not unique to a particular institution (or even to a specific industry) forms a basis for developing a professional approach to management.

It's important to recognize that even though case writers try to build realism into their cases, these cases differ from real-world management situations in several important respects. First, the information is prepackaged in written form. By contrast, managers accumulate their information through memoranda, meetings, chance conversations, research studies, observations, news reports, and other externally published materials—and, of course, by rumor.

Second, cases tend to be selective in their reporting because most of them are designed with specific teaching objectives in mind. Each must fit a relatively short class period and focus attention on a defined category of management problem within a given subject area. To provide such a focus—and to keep the length and complexity of the case within reasonable bounds—the writers may need to omit information on problems, data, or personnel that are peripheral to the central issue in the case.

In the real world, management problems are usually dynamic in nature. They call for some immediate action, with future analysis and major decisions being delayed until some later time. Managers are rarely able to wrap up their problems, put them away, and go on to the next "case." In contrast, discussing a case in class or writing an analysis of a case is more like examining a snapshot taken at a particular point in time—although sometimes a sequel case provides a sense of continuity and poses the need for future decisions within the same organization.

A third, and final, contrast between case analyses and real-world management is that participants in case discussions and authors of written case reports aren't responsible for implementing their decisions, nor do they have to live with the consequences. However, this doesn't mean you can be frivolous when making recommendations. Professors and students are likely to be critical of contributions that aren't based on careful analysis and interpretation of the facts.

PREPARING A CASE

Just as there is no one right solution to a case, there is also no single correct way of preparing a case. However, the broad guidelines outlined in "Preparing a Case" may help familiarize you with the job of case preparation. With practice, you should be able to establish a working style with which you feel comfortable. The guidelines on initial analysis and on developing recommendations should also serve you well for preparing written case reports or case-based exams.

First, it's important to gain a feel for the overall situation by skimming quickly through the case. Ask yourself:

- What sort of organization does the case concern?
- What problems does management appear to be facing?

Preparing a Case: A Brief Outline

I. Initial fast reading
  * No notes
  * Get a feel for what's going on
    * Think about major problems and forces present

II. A second careful reading
  *Make notes identifying:
    Organizational objectives
    Nature of problem(s)
    Key facts
    Key decisions
  * Evaluate and analyze case data

III. Development of specific issues
    Identify alternative courses of action to meet objectives
    Consider implications of each action
    Provide recommendations, supported by analysis

An initial fast reading, without making notes or underlining, should provide a sense for what is going on and what information is being presented for analysis. Then you'll be ready to make a very careful second reading of the case. This time, seek to identify key facts so that you can develop a situation analysis and clarify the nature of the problems facing management. As you go along, try to make notes in response to such questions as:

- What decisions need to be made, and who will be responsible for making them?
- What are the objectives of the organization itself and of each of the key players in the case? Are these objectives compatible? If not, can the problem be reconciled, or will it be necessary to redefine the objectives?
- What resources and constraints are present that may help or hinder attempts by the organization to meet its objectives?

You should make a particular effort to establish the significance of any quantitative date presented in the text of the case or, more often, in the exhibits. See if new insights may be gained by combining and manipulating data presented in different parts of the case. But don't accept the data blindly. In the cases, as in real life, not all information is equally reliable or equally relevant. On the other hand, case writers won't deliberately misrepresent data or facts to trick you.

Developing courses of action on specific issues

At this point in the analysis, you should be in a position to summarize your evaluation of the situation and to develop some recommendations for management. First, identify the alternative courses of action that the organization might have. Next, consider the implications of each alternative, including possible undesirable outcomes, such as provoking responses from stronger competitors. Ask yourself how short-term tactics fit with longer-term strategies. Relate each alternative to the objectives of the organization (as defined or implied in the case, or as redefined by you). Then, develop a set of recommendations for future action, making sure that these recommendations are supported by your analysis of the case data. Specific issues to be considered for each case are provided under the appropriate class session in the "schedule of sessions" section in the memorandum of understanding.

Your recommendations won't be complete unless you give some thought to how the proposed strategy should be implemented:

* What resources—human, financial, or other—will be required?

* Who should be responsible for implementation?

* What time frame should be established for the various actions proposed?

* How should subsequent performance be measured?

CLASS DISCUSSION

Courses taught by the case method emphasize inductive learning, with conceptual frameworks and strategic guidelines developed from the analysis of a variety of real-world situations. This approach contrasts sharply with the deductive approach to learning used in lectures where the concepts are presented first and must then be applied to actual situations.

Role of the Professor

In class, you may find that the role played by a professor using the case method usually differs significantly from that of a lecturer. The professor's role in case discussions is often similar to that of a moderator—calling on students, guiding the discussion, asking questions, and periodically synthesizing previous comments. Teaching styles vary, of course, from one case professor to another.

Many professors like to begin the class by asking a student to "lay out" the case, which may involve your being asked to identify key problems and opportunities, to present some preliminary data analysis, and perhaps to outline a possible plan of action.

Some professors, as in the current course, assign study questions in advance to help students with their case preparation; but others feel it is more realistic (albeit more demanding) to let students define for themselves how they should approach each new case.

Responsibilities of Participants

Instead of being a passive note-taker, as in lecture classes, you'll be expected to become and active participant in class discussions. Indeed, it's essential that you participate, for if nobody participates, there can be no discussion! If you never join in the debate, you'll be denying other participants the insights that you may have to offer. Moreover, there's significant learning involved in presenting your own analysis and recommendations and debating them with your classmates—who may hold differing views or else seek to build on your presentation. But don't be so eager to participate that you ignore what others have to say. Learning to be a good listener is also an important element in developing managerial skills.

Occasionally, it may happen that you are personally familiar with the organization depicted in a case. Perhaps you are privy to additional information not contained in the case, or perhaps you know what has happened since the time of the case decision point. If so, keep this information to yourself unless, and until, the professor requests it. (This advice also holds true for written reports and case exams.) There are no prizes for 20/20 hindsight; injecting extra information that nobody else has is more likely to spoil a class discussion than to enhance it.

Learning comes through discussion and controversy. In the case method of instruction, participants must assume responsibility not only for their own learning but also for that of others in the class. Thus, it's important for students to be well prepared, willing to commit themselves to a well-reasoned set of analyses and recommendations, and receptive to constructive criticism. Students unwilling to accept this challenge are likely to find the case method aimless and confusing. On the other hand, if you do accept it, you'll experience in the classroom that sense of excitement, challenge, and even, exasperation that comes with being a manager in the real-world situation.

A TALE OF TWO COUNTRIES[@]

There once was an economic power that dominated the world's industrial production. This country was the world's leading manufacturer and its predominant exporter of goods. Much of its success was based on its basic research, its ability to invent, and it unparalleled technological leadership. A time came, however, when it began to decline relative to its international competitors and was challenged by another country whose ships, filled with new products, arrived with increasing frequency.

Several decades earlier, the two nations had been engaged in a bitter war, but they had become allies. Some time after the war, the upstart country focused on its manufacturing prowess, eventually gaining renown for its new and unique production processes that turned out goods of high quality.

At first the dominant country had no fear of its lowly ally, which focused only on low-end products with small profit margins. It was not known for its quality, and all its products were basically limitations; inventiveness or creativity was not its strong suit. But the upstart country kept plugging away, improving its manufacturing processes, quality, exports, and market share in a number of industries.

As the number of industries in which the upstart country challenged the dominant one grew, people began to examine how and why this was happening. Articles were written, reports were commissioned and books were published to explain the new and powerful manufacturing process of the upstart country and to recommend how it could best be emulated. Many factors were identified to explain its success, including:

- A focused, orderly, and systematic manufacturing process that depended on the combination of highly skilled workers, automated machinery, and a new way for moving materials and goods through the factory.
- Strong and continual gains in productivity and quality, thanks to the involvement of workers in improving the process.
- Highly skilled and well-educated workers who maintained clean work environments and had high marks for attendance.
- Continual, incremental technological innovations.
- A high level of cooperation among national competitors, which helped the rapid diffusion of process innovations.
- A high degree of reliance on subcontractors for innovations and production skills.
- A strong education system.
- A culture that was unique and relatively homogeneous.

Thoughtful individuals in the dominant country warned of dire consequences if the nation as a whole did not change its ways and rise to the challenge. But the nation's business leaders did not know quite how to respond. As the upstart country continued its march toward larger and larger market share, fears arose that it would eventually overwhelm its bigger ally and the rest of the world with its exports, putting domestic firms and even entire industries out of business. The dominant country was faced with the prospect of losing the economic superiority it had held for so long. Time appeared to be running out.

[@] Pine II, B.J. (1993). *Mass customization: The new frontier in business competition*. Boston, MA: Harvard Business School Press.