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## SUSTAINABLE SUPPLY CHAIN MANAGEMENT

**Dr Haritha Saranga**

Indian Institute of Management Bangalore, INDIA

([harithas@iimb.ernet.in](mailto:harithas@iimb.ernet.in))

### **Context of the course**

Increasingly the success of business is dictated by the degree of efficiency and quality of the business processes that lie beneath the core competencies of an organization. Successful organizations are constantly improving their processes to stay ahead taking advantage of latest technologies, while the followers are not far behind in catching up with the frontier firms. Organizations that are not in the race soon cease to exist in today's world of global competition. As a result, there is a greater need for managers and consultants to not only know how to design and analyze a business process but to be able to identify ways to improve the process and sustain the improvements in the long run to meet the organizational objectives more effectively.

### **Objectives of the Course**

This course focuses on analysis and improvement of processes used for production and delivery of products and services, with a performance orientation. The learning objectives of this course are (i) provide a clear understanding of various business processes, (ii) learn to identify scope for potential improvements, (iii) learn existing tools and techniques for performance enhancement in organizations and (iv) be able to design a framework to implement the process improvement strategies in a variety of contexts.

### **Content of the Course**

Concepts like Factory Physics, Product Process Matrix, Theory of cumulative capabilities and the Theory of performance frontiers will be used to create a greater understanding of inherent nature of operating processes. Various **case studies** from manufacturing and service operations will be used to further the understanding and scope for improvement. **Benchmarking tools** like Balanced Score Card, Pareto analysis, statistical process control and **quality improvement tools** like TQM, TPS, Lean Manufacturing and Six Sigma will be studied to analyze, evaluate and improve processes. Usefulness and challenges faced by IT enabled advanced manufacturing technologies and role of Flexible Manufacturing Systems (FMS) in improving business processes will be explored with the help of case

studies of organizations that embraced these systems and technologies across the globe. Learning from this course will enable a systematic method of asking questions, collecting data, and analyzing that data to learn how processes work, how to improve them and how to sustain the improvements in the longer run.

**Attendance**

Much of the learning happens both during your preparation and discussion in class involving mutual exchange of ideas. Hence, attendance and participation in all sessions is expected. Part of the class participation marks will be awarded through attendance. Each session will carry 0.5 marks weightage.

**Session Plan**

Session		TOPICS
<b>Module I: Business Process Fundamentals</b>		
1	28 <sup>th</sup> April	Operations as a Source of Competitive Advantage; Performance Measures for Analysing Operations, MTO & MTS <b>Reading:</b> Chapter 1 ( <i>MBPF</i> )
2	28 <sup>th</sup> April	Process analysis: Concept of Bottleneck, Cycle Time, Resource Interference; Factors affecting Operations Performance <b>Case:</b> Kristen’s cookie <b>Readings:</b> Chapter 3 ( <i>MBPF</i> )
3	3 <sup>rd</sup> May	<b>Topic:</b> A Dynamic approach to Operations Management <b>Readings:</b> Jaikumar and Bohn “A Dynamic approach to Operations Management: An alternative to Static optimisation” International Journal of Production Economics. 1992, 27, pp: 265-272.
4	3 <sup>rd</sup> May	<b>Topic:</b> Gaining Process Knowledge in a Process Industry <b>Case:</b> Solagen: Process Improvement in the Manufacture of Gelatine at Kodak <b>Reading:</b> Michael Hammer, “Deep Change – How Operational Innovation Can Transform Your Company”. HBR, April 2004.
5	4 <sup>th</sup> May	<b>Topic:</b> Understanding Process Flexibility <b>Case:</b> Stermon Mills Incorporated <b>Reading:</b> David M Upton, “The Management of Manufacturing Flexibility”, California Management Review. 1994, 36(2).
6	4 <sup>th</sup> May	<b>Topic:</b> Challenges in Process Transformation – The Product Process Matrix <b>Case:</b> Flow Line in a Job Shop – The story of Ace Designers <b>Readings:</b> Benchmarking: How to learn from Best-In-Class Practices, <i>National Productivity Review (1986-1998)</i> ; Summer 1992; 11(3); pg: 301-315.
7	5 <sup>th</sup> May	Supply Chain Coordination <b>Reading:</b> Beer Game hand out
8	5 <sup>th</sup> May	<i>Beer Game and Analysis</i> <b>Readings:</b> Chapter 10 ( <i>MBPF</i> ) pg: 315-321 (Sec # 10.5)
9	10 <sup>th</sup> May	<b>Topic:</b> Need for streamlining IT systems and internal organizational functions <b>Case:</b> Process Reengineering in Emerging markets – An Automker’s Experience

10	10 <sup>th</sup> May	<b>Topic:</b> Just-in-Time Systems; Lean Management <b>Readings:</b> Chapter 10 ( <i>MBPF</i> ) pg: 298-315; 321-327
<b>Module II: Process Measures and Improvement methodologies</b>		
11	11 <sup>th</sup> May	<b>Topic:</b> Need for Metrics and measurement techniques – The Balanced Scorecard <b>Reading:</b> Robert S Kaplan and David P Norton “The Balanced Scorecard: Measures That Drive Performance” HBR Classic, July 2005
12	11 <sup>th</sup> May	<b>Topic:</b> Role of Quality in Process Improvement <b>Case:</b> Hank Kolb, Director of Quality Assurance <b>Readings:</b> David A Garvin, “A Note on Quality: The views of Deming, Juran and Crosby” HBR, February 1990.
13	12 <sup>th</sup> May	<b>Topic:</b> How to use Statistical Process Control (SPC) in a Service Context? <b>Case:</b> Deutsche Allgemeinversicherung <b>Read:</b> Chapter 9 ( <i>MBPF</i> )
14	12 <sup>th</sup> May	<b>Topic:</b> How exactly does Six-Sigma Capability help? <b>Case:</b> Six Sigma Quality at Flyrock Tires <b>Reading:</b> Chapter 9 ( <i>MBPF</i> )
15	17 <sup>th</sup> May	<b>Topic:</b> Role of Six Sigma in Improving Customer Experience <b>Case:</b> Apollo Hospitals: Differentiation through Hospitality <b>Reading:</b> Govindarajan, V, and Ramamurthi, R. “Delivering World-Class Healthcare, Affordably”, HBR November, 2013.
<b>Module III – Sustainable Processes to improve Operations</b>		
16	17 <sup>th</sup> May	<b>Topic:</b> Process Designs that exploit Economies of Scope <b>Case:</b> Polyface: The Farm of Many Faces <b>Reading:</b> Kleindorfer, Singhal, Van Wassenhove “Sustainable Operations Management”, Production and Operations Management, 14(4), 2005.
17	18 <sup>th</sup> May	<b>Topic:</b> Environmental sustainability and its implications <b>Case:</b> Cradle to cradle design and Herman Miller: Moving towards environmental sustainability <b>Reading:</b> Unruh, Gregory C. The Biosphere rules, Harvard Business Review, February 2008; pp. 1-8
18	18 <sup>th</sup> May	<b>Topic:</b> Balancing environmental and social objectives with shareholder objectives <b>Case:</b> Amanco - Developing Sustainability Scorecard <b>Reading:</b> Robert S Kaplan and David P Norton “Scorecard from Performance Measurement to Strategic Management: Part I,” Accounting Horizons (March 2001): 87–104.
19	19 <sup>th</sup> May	<b>Topic:</b> Achieving sustainability in Service Processes <b>Case:</b> ITC Hotels: Designing Responsible Luxury
<b>Module IV – Designing and implementing operations improvement strategies</b>		
20	19 <sup>th</sup> May	<b>Topic:</b> Framework for implementation of process improvement strategies <b>Readings:</b> Michael Hammer, “The Process Audit”, HBR, April 2007.

21	24 <sup>th</sup> May	<b>Topic:</b> Pitfalls in Process Improvement without Ownership <b>Case:</b> Micom Caribe (A)
22	24 <sup>th</sup> May	<b>Topic:</b> Course Review & Wrap-up <b>Readings:</b> Nelson P. Repenning and John D. Stermon, “Nobody Ever Gets Credit for Fixing Problems that Never Happened: Creating and Sustaining Process Improvement”, CMR, 2001, 43(4).
23&24	26 <sup>th</sup> May	<b>Project Presentations</b>

### **Course material**

Text book (MBPF): Anupindi, Chopra, Deshmukh, Van Mieghem and Zemel, (2013), Managing Business Process Flows, Prentice Hall. 3<sup>rd</sup> Edition.

Course pack: Rest of the course contents (other than MBPF) that are listed in the session plan will be provided in a course pack.

### **Pedagogy**

The course predominantly is case-based. Each session is of 90 minute duration. The students have to form groups of size four each. Each group has to submit two case analyses. The groups have to turn-in the case analyses (soft copy) before the respective class begins. Also each group has to take up a project for the term, submit the report and make a presentation at the end of the term.

### **Instructions regarding timelines for group formation and project work**

It is required to form groups of four and inform by e-mail at the end of first week. The schedule of case submissions by the groups would then be announced. All the groups are required to decide and submit their project proposal by the end of 2<sup>nd</sup> week, which will be taken up for discussion in the subsequent week. The final project reports and presentations (soft copy) have to be submitted by the end of 5<sup>th</sup> week.

### **Evaluation:**

Case Analyses (2)	20%
In class Quizzes	10%
Class Participation	20%
Project	25%
End Term Examination	25%