High Performance Manufacturing (HPM) Project Summary

Introduction (by Professor Roger G. Schroeder and Professor Barbara B. Flynn)

This project will comprehensively examine the so-called phenomena of "high performance manufacturing", from a theoretical, as well as an empirical point of view. The theoretical component of the project will synthesize the support for high performance manufacturing from the literature bases of operations management, strategic management, organization behavior, organization theory, human resources management and international business. The empirical component will develop a database of information about high performance manufacturers in the United States, Europe and Asia, as well as traditional firms, for comparison. This database will be used to test propositions concerning high performance manufacturing and its relationship to performance.

The data will be gathered using a set of questionnaires that were developed using reliable and valid measures of the traits that characterize the management practices of high performance manufacturing, as well as a series of objective measures of plant performance. The data in the database will be the basis for a series of papers relating various management practices to performance, for high performance manufacturers' and traditional plants. The data will be supplemented by qualitative information gathered during a series of plant visits that will include structured interviews, as well as plant tours.

Thus, this project will combine theory with quantitative and qualitative research, in order to comprehensively examine the phenomenon of high performance manufacturing. It will provide the foundation for an examination of manufacturing management, as well as answering a number of questions about the relationship of various management practices to plant performance. It is a major examination of high performance manufacturing and its findings should be of great interest to both academics and practitioners.

History of the HPM Project

- Round 1 (started in 1988): 45 plants in U.S.A.
- Round 2 (started in 1993): 169 plants in Germany, Italy, Japan, U.K., and U.S.A.
- Round 3 (started in 2002): 266 plants in 9 countries of Austria, Finland, Germany, Italy, Japan, South Korea, Spain, Sweden, and U.S.A.
- Round 4 (starting 2012/2013): more than 500 plants in about 18 countries.

Participating Countries in Round 4:
The participating countries in Round 4 are as follows:
- U.S.A., Canada, Brazil, Japan, South Korea, India, China, Taiwan, Germany, France, Spain, Italy, Sweden, Finland, Switzerland, Turkey, Israel, and Southeast Asia (Singapore, Malaysia, Thailand, and Indonesia)

The country manager in each country is responsible for collecting at least 30 samples. Therefore, we will have more than 500 samples in total.

Project Members in Southeast Asia:
- Singapore: Professor James Ang (leader), Professor Sum CheeChuong, and Professor Thompson Teo in National University of Singapore.
- Japan: Professor Tomoaki Shimada in Kobe University and four other professors.

The Japan team has an experience in the data collection/analysis of the HPM Project, and therefore, they work together to collect/analyze data in Southeast Asia.
What We Do in the Project:
- Our target is to collect at least 30 samples for Round 4 in Southeast Asia (Singapore, Malaysia, Thailand, and Indonesia) to make a comparison and produce a meaningful benchmarking report.
- The breakdown of the 30 plants should be 10 machinery manufacturers, 10 vehicle component manufacturers, and 10 electronics manufacturers in Southeast Asia.
  - 10 machinery manufacturers (e.g., manufacturers of precision machine, manufacturers of assembly equipment, manufacturers of process equipment, manufacturers of metal cutting tools, manufacturers of measuring instruments, etc.)
  - 10 vehicle component manufacturers (e.g., automobile manufacturers, manufacturers of automobile components such as screws, connectors, batteries, and car audio, train manufacturers, manufacturers of train components, airplane manufacturers, manufacturers of airplane components, etc.)
  - 10 electronics manufacturers (e.g., audio/visual equipment manufacturers, manufacturers of audio/visual equipment components, IT equipment manufacturers, manufacturers of IT equipment components, electrical parts manufacturers, electronics parts components, contract manufacturers, etc.)
- Among the 10 manufacturers in each industry, ideally, 5 should be world-class and multi-national manufacturers with "high performance reputation", and the other 5 should be traditional and local manufacturers as "general industry plants". The definition of "high performance reputation" is not very rigorous. If the company is doing well in terms of profitability, productivity, operations (e.g., quality, speed, flexibility, etc.), or innovativeness, then it is considered to be a "high performance manufacturer".
- In each company, 12 people will be involved for 12 different questionnaires.
  - Plant Account Manager
  - Downstream Supply Chain Manager
  - Environment Affairs Manager
  - Human Resource Manager
  - Information Systems Manager
  - Plant Manager
  - Process Engineer
  - Product Development Manager
  - Production Control Manager
  - Quality Manager
  - Supervisor
  - Upstream Supply Chain Manager
If the company does not have anyone in each of the management positions, an individual who is the most qualified on that topic should complete the form. However, ideally, no individual should fill in more than one questionnaire. In addition, ideally, two different managers (if available) should fill in the same form separately so that we can average out two different scores/opinions.

Benchmarking Report:
- We will issue a benchmarking report of each company against all the other companies participating in the HPM Project. Therefore, each participating manufacturer can obtain feedback on what items are better/worse than other companies in the same industry in the world. Therefore, the management can assess the company's performance (e.g., productivity), and improve weaknesses or enhance strengths.

Any Questions?:
If you have any questions, please feel free to contact Tomoaki Shimada at shimada@b.kobe-u.ac.jp or James Ang at bizangsk@nus.edu.sg.