A study was conducted in the ISE Department to compare National Quality Awards (NQA) from various countries. Countries from Africa, North America, Europe, Asia, Latin American, the Caribbean region, the Middle East, and the Oceanic Islands, were represented. A total of ten major evaluation criteria and 35 sub-criteria were used as the framework for the comparison. They include: (1) Leadership System; (2) Impact on Society; (3) Information and Analysis; (4) Strategy and Policy Planning; (5) Resources; (6) Customer Management and Satisfaction; (7) People Management; (8) Process Management; (9) Performance and Management of Suppliers/Partners; and (10) Business Results.

Possible factors that could have resulted in similarities and differences among the NQAs were identified to be: (1) economic and social development of the country, (2) cultural differences, (3) weaknesses of companies in addressing or implementing particular quality aspect, (4) adaptation of quality management models, and (5) global competitive factors.

Looking at the score weightages assigned to each evaluation criteria, Customer Management and Satisfaction (22.31%) was found to be the most emphasised. This was followed by People Management (17.10%) and then Process Management (13.62%). These criteria have and continue to be major factors in terms of an organization’s competitiveness. It is interesting to note also that Leadership System was assigned a relatively high weight of 11.59%, especially for countries where few companies are involved in Total Quality Management efforts.

There has been an increasing focus on the Impact on Society criterion (4.56%) with the realisation that it is an important factor for long-term competitiveness. Information and Analysis criterion (7.53%) stressed the importance of management by fact and not by instinct or feel. The Resources criterion continue to receive the lowest weightage (1.20%).

The importance of establishing long-term relationships with suppliers and partners to gain a competitive advantage is beginning to be reflected by some NQAs. The Performance and Management of

(Continued on page 3)

Staff
♦ A/P Ang Beng Wah has been appointed Deputy Head (Administration) of the ISE Department
♦ Dr Tang Loon Ching has been appointed Deputy Head (Research) of the ISE Department

New Appointments
We would like to welcome the following to our department:
♦ Dr Huang Huei Chuen, Senior Lecturer
♦ Miss Ow Lai Chun, Management Support Officer

Awards
Prize awarded to postgraduate students graduating in 1997/98 academic years:
1. Top graduating MSc (ISE) student
   NSTB Gold Medal Prize: Mr August Rusli
   Sponsored by National Science & Technology Board

2. Top graduating MSc (ISE) with Specialization in Quality & Reliability Engineering
   Motorola Prize: Mr Chia Sie Yong
   Sponsored by Motorola Electronics Pte Ltd

(Continued on page 3)
In a highly competitive world, excellence in quality is not a luxury but a fundamental requirement from the point of view of both the producer and consumer. Regardless of how quality is defined, it is ultimately reflected by a definite set of technical criteria: on-target performance, least variation, and of minimum cost. Generally speaking, scientists and engineers tend to be preoccupied with the first criterion, statisticians are often interested in the second, and business managers, the third. A successful product or process is one which meets all of the above criteria.

Factors that contribute to the attainment of superior quality are numerous and complex, but all of them can fit into three building blocks of a quality framework. The first component of this framework is a good quality management system. This relates to a wide spectrum of issues ranging from corporate philosophy, policies, plans, procedures (the "4P's"), staff structures, worker motivation and training, supplier management, customer relations, and so on. Standards such as the QS-9000 or ISO 9000 series, as well as various national quality award guidelines, reflect the range of issues and requirements to be dealt with in a quality management system.

The above quality management "software" must be backed up by the requisite "hardware", i.e. quality technology, which refers to both the equipment and know-how commensurate with the sophistication of the products and services to be generated. Many organizations are keenly aware of the need for quality software and hardware, but not all are familiar with the critical role played by what may be called "dataware", or the capability for information handling. The availability of and interplay between quality software, hardware, and dataware are essential to real and sustainable quality improvement. The possession of "dataware", i.e. expertise in statistical tools, is particularly important to meeting modern-day quality requirements.

Descriptions of various established statistical quality engineering tools abound in the literature. A seven-step approach, which can be conveniently referred to as the "Seven-S" strategy, is summarized in Figure 1. The relationship between x and y is depicted in Figure 2, where the process or product is a "blackbox" to the investigator.

![Figure 1 The "Seven-S" approach to quality excellence.](Continued on page 3)
the application of statistical quality engineering today.

At the ISE Department, the development of the framework has led to further research and development in a number of areas in Figure 1. Especially, new results are obtained in the area of Quality Function Deployment (QFD), statistical process control (SPC) and Design of Experiments (DOE). The current focus in our research is related to the use of statistical techniques in quality improvement which is important in today's rapidly changing and competitive environments.

Prof TN Goh (3rd from right) among the keynote speakers at the 2nd recent International Conference on Quality and Reliability.

ICM'98 The Third International Conference on Management: Management for the 21st century
July 25-28, 1998 Shanghai, China

ICM'98, the Third International Conference on Management, will be held July 25-28, 1998 in Shanghai, China. Papers from the ISE Departments have been accepted for the proceedings of the Conference.

Name of Student: Mr Zhang Fuqiang (MEng)
Paper to be Presented: Detecting Real Business Performance Changes Using Decomposition Methodology
(By Mr Zhang Fuqiang and A/P Ang Beng Wah)

Name of Student: Mr Mei Songlin (PhD)

Comparison (Continued from page 1)
Suppliers/ Partners criterion weighed (4.53%).

From the above analyses, recommendations can be made to organizations interested in or are already in the process of developing NQAs. The areas covered include: (1) the required commitment and support from government and private sector, (2) the adaptation and modification of Award model(s), (3) assessment process, (4) selection of examiners, (5) levels of Award recognition, (6) promotion of Award, and (7) evaluation of Award program.

By Dr Tan Kay Chuan

GOLD MEDAL FOR STUDENT RESEARCH PUBLICATIONS

Postgraduate students in the Department of Industrial and Systems Engineering received a significant encouragement recently to publish their research findings in reputable international journals. The NUS Senate has approved the award of a Gold Medal annually to the higher degree (MSc, MEng, PhD) graduate in the Department who has written the best research paper that has been accepted or published by an international journal. The award is made possible by an endowment fund from National Semiconductor Manufacturing Singapore Pte Ltd which has maintained close relations with the Department in teaching and research for many years. This is the first time in NUS a prestigious prize is launched not for good examination performance but for recognition of excellence in original research, as judged by international peers, by students.

ISE News congratulates Dr Sun Yesheng, Ph.D graduate from the Industrial and Systems Engineering Department for being one of the recipients of the 1998 National Productivity Award (individual category). The award was presented by BG Lee Hsien Loong (See photo) in recognition of Dr Sun's outstanding research that has led to significant productivity improvements. He is the first graduate from the NUS Faculty of Engineering to receive this national award.

Awards (Continued from page 1)

3. Best Research paper in an international journal in the area of Quality and Reliability Engineering
   National Semiconductor Gold Medal: Mr Than Su Ee
   Sponsored by National Semiconductor Mfr S’pore Pte Ltd

New MEng/PhD Students

We would like to welcome the following full-time postgraduates students to our department:

a. Mr Chan Soon Chee from National University of Singapore
b. Mr Goh Keng Huat from National University of Singapore
c. Mr Li Dahai from Huazhong University of Science & Technology
d. Mr Tan Mien Duan from National University of Singapore
e. Mr Yang Bo from Xi’an Jiaotong University

ISE News congratulates Dr Sun Yesheng, Ph.D graduate from the Industrial and Systems Engineering Department for being one of the recipients of the 1998 National Productivity Award (individual category). The award was presented by BG Lee Hsien Loong (See photo) in recognition of Dr Sun's outstanding research that has led to significant productivity improvements. He is the first graduate from the NUS Faculty of Engineering to receive this national award.

Awards (Continued from page 1)

3. Best Research paper in an international journal in the area of Quality and Reliability Engineering
   National Semiconductor Gold Medal: Mr Than Su Ee
   Sponsored by National Semiconductor Mfr S’pore Pte Ltd

New MEng/PhD Students

We would like to welcome the following full-time postgraduates students to our department:

a. Mr Chan Soon Chee from National University of Singapore
b. Mr Goh Keng Huat from National University of Singapore
c. Mr Li Dahai from Huazhong University of Science & Technology
d. Mr Tan Mien Duan from National University of Singapore
e. Mr Yang Bo from Xi’an Jiaotong University

By Dr Tan Kay Chuan
Selected Publications of ISE Staff in 1997/98


Goh, T.N., Xie, M., and Xie, W., “Prioritizing Processes in Initial Implementation of


NOTE FROM EDITOR

We welcome any suggestions, comments, opinions that you would like to share with other readers.