

Mayberry Newsletter

The W. E. Mayberry Center for Quality and Performance Excellence

Tennessee Technological University • College of Business • Fall 2004



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Economic Development: Performance Management Challenges

by Dr. Curt Reimann

In the 2003 Mayberry Newsletter article entitled **Perspectives On Performance Management Evolution**, we expressed the view that major challenges in performance management are in areas such as R & D, product development, and innovation and in applications such as state/regional economic development.

In a related article in that Newsletter, emphasizing the importance of innovation to the U.S. economy, Mayberry Professor Natarajan pointed out that "For U.S. firms competing on innovation is one of the remaining avenues to success in the global market place." Bearing in mind that economic development organizations seek to create, expand, and attract businesses within and to their regions, success depends not only upon much better understanding of the changing bases for business viability and regional attachment, but also upon gaining cooperation across organizational lines to achieve diverse objectives. Organizational barriers include lack of leadership, competing goals, unclear regional definitions, lack of systems views, and often, a short-term outlook. In this article we focus on major aspects of rural economic development, including performance indicators, and outline some increasingly important roles of universities to such development.

Challenges in economic development are especially acute in rural areas. Stauber [1] summarizes a variety of key problems, including policy, past focus, and resources. In a recent series of articles in *The Main Street Economist* (a publication

of the Center for the Study of Rural America), the authors take a systems view of rural development. In the lead article entitled "Racing Toward New Frontiers: Helping Regions Compete in the Global Marketplace," author Stephan Weiler [2] emphasizes that "the foundations of rural America's economy are changing" and that "each region is effectively in a race, not with other regions, but with the quickly evolving frontier of the global market itself." Weiler argues that "a scorecard by which a region can understand its strengths in this race would be welcomed by all rural communities. A good starting point would be to find a way of evaluating the competitive capacities of a particular region." Weiler further argues the importance of "forward-looking measures" of regional competitiveness. He summarizes five broad categories for developing measures and indicators. These are:

- (1) workforce
- (2) lifestyle
- (3) innovation
- (4) financial, and
- (5) informational

Although Weiler's article does not stress the many challenges associated with marshaling regional cooperation, it makes a compelling case for the utility of performance management concepts in development. Also, in its 2003 Annual Report, the Center for the Study of Rural America highlights some promising innovations in rural governance.

Of the five broad areas outlined

(cont'd on page 2)

above, universities could play especially important roles in (1), (2), (3), and (5). Key examples include:

- workforce development and continuing education
- cultural awareness and development
- innovation source
- innovation conduit, channeling R&D results from outside its region
- information technology

In addition to these centrally important areas, universities might also serve other significant roles, such as:

- leadership, convening, and network creation
- business analysis, assistance, and strategy
- needs assessment
- source of best practices and relevant measures
- competitiveness assessment
- regional economic modeling
- market analysis
- education standards

Although the innovation, technology, and research foundations of universities are most often emphasized in economic development, business school expertise is also vital and perhaps even more likely to be broadly applied to all forms of enterprises. Involvement in regional economic development might also provide numerous avenues for experiential learning for students and faculty. Overall, universities should be regarded as important pillars in the infrastructure for economic development and regional well-being—now more important than ever.

[1] Based on K.N. Stauber's presentation at Exploring Policy Options for a New Rural America, sponsored by the Center for the Study of Rural America, April 30-May 1, 2001

[2] Stephan Weiler, *The Main Street Economist*, March, 2004.

Activities and Accomplishments 2003-2004

The Mayberry Center's purpose is to increase awareness and enhance development of performance excellence related practices in business and education on a local, state, and national level. This is achieved by conducting and disseminating research, implementing projects and activities, conducting workshops for practitioners, and instructing students in undergraduate and graduate classes. The Mayberry team, consisting of Chairholder **Curt W. Reimann**, President **Robert Bell**, Dean **Bob Niebuhr**, Mayberry Professor of Management **R. Nat Natarajan**, and Mayberry Graduate Assistants **Brad Leimer** and **Matt Roberts** have contributed to this mission during the past year. Activities carried out in 2003-2004 include:

- **Dr. Curt Reimann** was awarded the Distinguished Service Medal of the American Society for Quality (ASQ).
- **Mr. Victor Tang** (formerly of IBM and now in the Ph.D. Program at MIT) delivered the Mayberry Lecture on October 23, 2003. His talk was titled "Key Enabling Factors of Successful Product Development." See the highlights of his talk elsewhere in this newsletter.
- The Mayberry Advisory Board met on October 27,

2003. Board members visited classes as guest speakers. They also participated in a panel discussion organized by the MBA students. Earlier they visited the Institute for Technological Scholarship and interacted with students during the reception and dinner on October 26.

- **Dr. Nat Natarajan**, the Mayberry Professor of Management, chaired a session at the case studies track of the national meeting of the Decision Sciences Institute, November 24, 2003, in Washington D.C. He presented the case "Quality at the Crossroads."

- In April 2004, the center hosted the visit of **Dr. Andy Czuchry** (the holder of the AFG Industries Chair of Excellence in Business and Technology at East Tennessee State University) and **Dr. Tom Peisl** (of Munich University of Applied Sciences). They had meetings with faculty regarding collaboration with the School of Business at ETSU and Munich University of Applied Sciences. Dr. Czuchry gave a talk on "Marketing Technical Innovations" to the MBA students.

- **Dr. Reimann** serves on the Technical Committee for the Juran Center for Leadership in Quality, Carlson School of Management, University of Minnesota.

(cont'd on page 3)

Activities and Accomplishments (cont'd)

- The Center continued its partnership with the TTU School of Interdisciplinary Studies and Extended Education (ISEE). **Dr. Reimann** serves as an advisor on planning to ISEE.
- **Dr. Reimann** wrote an invited spotlight “Promoting Quality With a Body of Knowledge That Connects Process and Results,” for the *Production and Operations Management Text*, Martin K. Starr, author.

Presentations by Dr. Reimann:

- Annual meeting of Decision Sciences Institute in Washington, D.C. “15 Years of Baldrige: Pre-History, Design, Perspectives” with **Dr. Harry S. Hertz**, November 23, 2003.
- NY State Quality Award Keynote Speaker “Evolution of Quality Management,” May 5, 2004.
- NY State Quality Award Wrap-up Speaker “Excellence Characteristics,” May 5, 2004.
- Baldrige Award Conference (QEXVI) “Conference Themes.”
- Baldrige Salute to **Dr. Joseph M. Juran** on his 100th birthday, May 6, 2004.
- “Balancing Organizational Perspectives Seen From Different Compass Points,” with TTU President **Robert R. Bell** and ISEE Dean **Dr. Susan A. Elkins**, Tennessee Center for Performance Excellence Conference.
- “Perspectives on the Quality Movement: Academic Perspective,” The Summit, Carlson School of Management, University of Minnesota, June 15, 2004.
- **Dr. Nat Natarajan** attended the meeting of the Global Manufacturing Research Group in Istanbul, Turkey, July 7-9, 2004, and presented the paper “How Competitive is U.S. Manufacturing?” In July 2004, he visited the College of Business and Economics in Doha, Qatar, the Administrative Staff College of India in

Hyderabad, India, and The Indian Institute of Management in Bangalore, India.

- Mayberry Graduate Assistant **Brad Leimer** served on the 2003 Board of Examiners of the Tennessee Center for Performance Excellence (TNCPE). He also attended the Quest for Excellence Conference in April 2004 in Washington, D.C.
- **Matt Roberts**, Mayberry Graduate Assistant, is serving on the 2004 Board of Examiners of the TNCPE.

New Advisory Board Members

David M. Jones and **Jean Kinney** joined the Mayberry Advisory Board in 2004.

David is Operational Excellence Manager for Siemens EMC in Johnson City, TN. During the past 22 years he has held individual contributor and leadership positions as an engineer, supervisor, and manager in Design, Manufacturing, Applications Engineering, Product Safety, and Quality/Reliability Assurance in the industrial electronics field. He served on the Tennessee Center for Performance Excellence (TQA/TNCPE) Board of Examiners from 1994 to 1998 and the Panel of Judges from 2002 to the present. He is also currently in his seventh year with the Malcolm Baldrige National Quality Award where he serves as an alumni examiner.

Jean is Associate Director, Corporate Purchases, Procter & Gamble. Jean has worked for P&G for 26 years. She has eleven years of experience in leading a number of P&G organizations responsible for sourcing and supply chain management for P&G's global operations. In addition, Jean has fifteen years of experience in Total Quality Management, strategic planning, engineering, and manufacturing. Currently Jean has responsibility for a number of governance and legal systems for P&G's worldwide Purchases organization and leads P & G's Contract Manufacturing Center of Excellence. Jean has served as a judge for the Malcolm Baldrige National Quality Award.

Welcome on board!

Successful Product Development

Dr. R. Nat Natarajan

The Fall 2003 Mayberry Lecture was delivered by Victor Tang. At the time of the lecture he was a researcher at the Center for Innovation in Product Development (CIPD) and a Ph.D. candidate in MIT's Engineering Systems Division. Prior to MIT, Vic was an executive in IBM. His work included some of IBM's most strategically important initiatives. Vic led the strategy formulation for IBM Global Services, a \$35 billion organization. He was VP of IBM China and was the director of strategy, market development, and technology development for the IBM AS/400. He led the initial Baldrige application that ultimately won for the AS/400 that coveted national quality award. His talk was titled "Key Enabling Factors of Product Development." Here are some of the highlights of his presentation.

Product development (PD) has fundamental implications for economic well-being and job creation. Product development is important because of the amount of funds expended on it in the U.S economy. In 1998, about \$230 billion dollars were spent on R&D and product development. The new products that are developed contribute to exports. Although we spend a lot of money and generate a lot of exports what is not comforting is that the percentage of patents given to U.S. inventors is declining. This means a lot of innovation is going overseas. The "green cars" have been invented by Toyota and Honda and not by Ford and GM who have been the market leaders.

Studies show that only about 10% of the new product ideas succeed. Forty-six percent of resources allocated to product development and commercialization in the U.S. are spent on products that are canceled or fail to produce an adequate financial return. We need to do a much better job of product development.

Product development is a process that begins with the recognition of a need in the market. Somebody has an idea or concept to satisfy that need. From that concept you proceed to design, engineering and

manufacturing of an artifact to satisfy that need.

Traditionally, we tend to think of the product development cycle ending when the product is released to manufacturing. That is no longer good thinking. In fact, product development extends from "womb to tomb." Product development does not end when your part of engineering ends with manufacturing. I consider product development ending when the product is retired and the product has to be maintained by the company that produced it or by some other company. And unless you are successful that way, you really cannot be very successful in satisfying the customer.

The question is to what factors in PD should we pay attention to make product development successful. A factor is defined here as a capability that enables an organization to improve a specific project outcome. In search of such factors, we reviewed the key literature from the authorities in the field. We identified 1106 factors that contributed to successful product development. After removing redundancies we came up with 352 factors. No wonder product development success is so hard! But what can we do with 352 factors? What we really had to do is to target each of these factors to specific outcomes. If we identify outcomes with more clarity then we can identify the factors that contribute to them. We need to find enabling factors that are the most *significant* predictors of specific PD performance outcome metrics. Profit, market share, product quality, customer satisfaction and organizational effectiveness are the five outcomes.

At MIT, on our journey to enhance organizational capabilities and project outcomes we: 1) surveyed PD organizations to identify the most significant predictors of successful PD outcomes; 2) developed a PD capabilities assessment tool to help direct improvements to specific outcomes; 3) initiated test and validations for program level activities; and 4) planned to continue to refine the assessment tool and enhance its predictive power.

One of the reasons why companies are having trouble in determining end of the product life cycle is

that managers and executives own “stone age” products and their careers depend on them. While they are maintaining these antiquated products they have not developed new skills which position them for better jobs. They feel threatened and therefore they will find ten thousand reasons why that product has to keep going. A number of things can be done to do better. One is you have to develop new skills constantly. This applies to you (students) particularly. I believe the half-life of what you learn in college is two years.

Management nowadays is quite ruthless and if

they do not have any use for you it is good-bye! I do not think that is a good policy because 70% of the system level knowledge walks out with you. Companies have to create an environment and ways to train people for better positions. Companies and people have to recognize that moving somebody laterally so they can learn new skills—maybe even with a pay cut—is not a bad thing. Because there is a body of knowledge and experience that goes with those people and what they learn and the meaning to them is deeper than it would be to people who do not have that experience.



Left to Right: Dr. Curt Reimann,
President Robert Bell,
Mayberry Lecture
Speaker - Mr. Victor Tang,
Dr. Nat Natarajan, and
Dean Bob Niebuhr.

Where Are They Now? An Update From Nick Brown!

Recently, we heard from Nick Brown, a former Mayberry Graduate Assistant. Here are some excerpts from his note:

“Upon graduation in December 2002, I obtained a position with Dell, Inc. I was a Small-Medium Business Sales Representative in Nashville, TN. While working for Dell, Inc., I became involved with many BPI projects, and Efficiency Training opportunities. Even though I was extremely successful in the sales arena, I continued to pursue a career utilizing my education in engineering. Late 2003, I received an opportunity to work for the Murfreesboro Electric Department as Planning Engineer. I am responsible for the entire city mapping operations for the electric department, many commercial and residential developments, as well as day-to-day maintenance and operation of the electrical distribution

grid. I am currently working on new outsourcing opportunities and process improvement areas that will help improve overall efficiency of the organization. Also, I am working on a few different certifications in the Power Distribution area for my personal improvement. I became engaged in early March. Mary Leigh, my fiancée, graduated from TTU in May. We are planning to reside in Murfreesboro, TN. I volunteer time to my college fraternity by being the Assistant Alumni Advisor for the Middle Tennessee State University (MTSU) chapter, along with returning to the Cookeville chapter as much as possible. I enjoy the continuing relationship with my Tennessee Tech friends and colleagues. I cherish the memories, education, and experiences of the Mayberry Center, Colleges of Business and Engineering, and TTU.”

Congratulations, Nick, on all that you have accomplished!

2004 Baldrige National Quality Program Quest for Excellence XVI

by Brad Leimer *

The Malcolm Baldrige National Quality Program's Quest for Excellence XVI was held at the Marriott Wardman Park Hotel March 28 – 31, 2004, in Washington, D.C. Seven organizations were recognized for their accomplishments. They are:

- **Medrad, Inc.** (Indianola, PA, manufacturing)
- **Boeing Aerospace Support** (St. Louis, MO, service)
- **Caterpillar Financial Services Corporation U.S.** (Nashville, TN, service)
- **Stoner, Inc.** (Quarryville, PA, small business)
- **Community Consolidated School District 15** (Palatine, IL, education)
- **Baptist Hospital Inc.** (Pensacola, FL, health care)
- **Saint Luke's Hospital of Kansas City** (Kansas City, MO, health care)

I had the chance to follow Stoner, Inc., in the breakout sessions, and I was extremely impressed. Stoner has 43 full- and five part-time employees. It is the smallest business ever to receive the Malcolm Baldrige National Quality Award. The company's core values include exceeding customer expectations, fostering and developing a motivated team, being safety/health/environment responsible, innovating new and better solutions, and improving continuously. The company's three-step continuous improvement system revolves around the simple approach of leadership,

strategy, and process. It was interesting to see how ingrained this process was with everyone in the company.

The leadership team uses a scorecard called "Stoner 60" to set goals and measure business initiatives. The scorecard identifies 60 key operational measurements, linked goals and strategic milestones for each of the next five years. To manage data and increase customer satisfaction, Stoner implemented an enterprise resource planning system that has helped ensure that 100 percent of orders are shipped on the same day that they are received.

New team members receive a two-week orientation before starting their jobs. In addition to ethics and safety training, new team members spend one day shadowing every job in the company and have a personal meeting with the company president. This helps to explain why Stoner's overall favorable percentage of satisfied team members has increased from 72.8 percent in January 2002 to 79.5 percent in July 2003 – exceeding the benchmark of 64.8 percent.

Overall the conference was a great experience. I had the opportunity to speak with **Jim Beard** who is the President of Caterpillar Financial Services Corporation and **David Spong** who was the President of Boeing Aerospace Support. I was able to spend a significant amount of time with **Marie Williams** and **Dr. Curt Reimann**. It was good to meet **David Jones** who will soon be an Advisory Board Member for the Mayberry Chair of Excellence and it was great to see over 1000 people who shared my enthusiasm about improving organizations here in the U.S. and abroad. This experience has me excited about serving a second year as a Tennessee Quality Award examiner and I plan to apply to become a Baldrige examiner next year.

The conference ended with Dr. Curt Reimann receiving the ASQ Distinguished Service Medal. During his acceptance speech, Dr. Reimann recited the lyrics to his self-written song the "Baldrige Blues." The next time you see Dr. Reimann, ask him to sing it for you!



From left to right: Anna LaBar Lueker, TTU Alumna; Brad Leimer; Dr. David Spong, CEO, and President of Boeing Aerospace Support; and Dr. Curt Reimann.

Innovation Transfer in a University Setting: A Research Foundation at East Tennessee State University

*In connection with the economic development theme of the 2004 edition of the Mayberry Newsletter we received information from **Dr. Andy Czuchry** regarding the creation of a research foundation at East Tennessee State University (ETSU). ETSU is a sister university of TTU in the Tennessee Board of Regents (TBR) system. Below are excerpts from an ETSU Report*.*

In the beginning, concerns were focused on two areas:

(1) without the protection of the sovereign immunity afforded to State entities, the University Research Foundation (URF) would be exposed to additional liability; and

(2) the financial base from which the URF would operate was uncertain.

The main issues raised by the campus community were discussed and a consensus favoring establishment of the URF was achieved. A proposal for the URF was presented to the Tennessee Board of Regents.

By-Laws, a Charter for incorporation within the State of Tennessee, and a Letter of Agreement between ETSU and ETSURF were approved by the TBR and ETSURF was incorporated on July 10, 2002. TBR approved the Agreement between ETSU and the ETSURF on September 30, 2002. This is significant because ETSURF became the first URF in the TBR system.

The mission of ETSURF is to support research, scholarly and artistic activities at ETSU. ETSURF is the administrative and fiduciary entity for the ETSU Innovation Laboratory, manages ETSU intellectual property, and accepts and administers selected contracts and grants from private industry, foundations and other non-governmental agencies.

ETSURF is designed to be able to respond quickly and efficiently to opportunities for research support when the university, as an arm of the State of Tennessee, would be limited by State regulations. Examples include making business decisions such as accepting a patent donation, or in some cases accepting

contract terms and conditions that would be excluded in a traditional state contract.

The foundation is governed by a Board of Directors (currently 13 members) consisting of ETSU and external appointees. The president of ETSU acts as the Chairman of the Board. An Executive Director of the ETSURF serves as Vice Provost for Research and Sponsored Programs for ETSU ensuring the University's contribution and commitment to the Research Foundation and its mission. The connectivity with the university is also reflected in the organizational structure as two-thirds of the board members are members of the university and one-third are community members. This reflects that promoting economic development is part of the mission of the Research Foundation.

The key success factors influencing the success of the ETSURF can be summarized in the integrated approach aligning (1) a compelling vision demonstrating value to stakeholders; (2) sound performance measures and management methods; and (3) excellent operational execution skills in an effective business design.

* For additional information please contact:

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Marie Williams Honored



Pictured from left to right: Dr. Curt Reimann, Marie Williams, Dr. Nat Natarajan, and Brad Leimer.

Upon her retirement as president of the Tennessee Center for Performance Excellence, **Marie Williams** was recognized by the Mayberry Center team for her numerous contributions to the Mayberry Board, the College of Business and to TTU. Since the creation of the Mayberry Board in 1998, Marie has served with distinction, great energy, and enthusiasm. All Center participants - students, faculty, board members, and staff - wish to express our sincerest thanks and warmest best wishes to Marie for a long and healthy retirement.

Newsletter prepared by Judy Hees, Brad Leimer, Dr. Nat Natarajan and Dr. Curt Reimann. It will also be available on the Mayberry website: www.tntech.edu/mayberry/ Your comments are welcome.

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