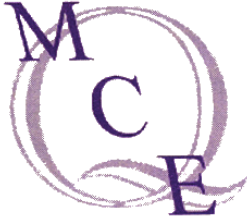


# Mayberry Newsletter

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

Tennessee Technological University • College of Business • Fall 2013



Mayberry Center  
TTU Box 5025  
Cookeville, TN 38505

Phone: 931-372-6341  
Fax: 931-372-6249

E-mail: [quality@tntech.edu](mailto:quality@tntech.edu)  
Website: [www.tntech.edu/mayberry](http://www.tntech.edu/mayberry)

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## Performance Management Evolution Settling: Business Education's Continuing Challenges and Opportunities

by Dr. Curt Reimann

### Introduction

This Newsletter's primary interest area is performance management (PM), especially as PM relates to business education (BE). A central thread of this interest is important PM-BE linkages—what we call their “convergence”—or two-way contributions: PM as an authentic “translator” of marketplace requirements students need to understand; and BE to prepare students for employment, and to perform research to strengthen PM's foundations.

Previously, we highlighted key characteristics of PM, describing its dynamic, 25/30-year evolution, beyond its earlier roots in manufacturing quality control and quality assurance (QC/QA). We noted PM concepts, practices, and tools being steadily enriched and adapted, and applications spreading to all economic sectors and types of organizations, around much of the World. We have also said that this evolution is driven mainly by marketplace forces, not led by advances in BE. As regards BE's “light coverage” of PM, we perceive that most business graduates enter workplaces lacking a holistic grasp of a major requirement of modern organizations: a compelling need to achieve ever-higher performance. Graduates are unfamiliar with practices for enhancing organizational performance, how such practices relate to academic knowledge, and with the critical distinction, often misunderstood, between professional competence on one hand, and organizational excellence on the other.

Although the rapid spread of PM practices continues, we now see clear signs that PM content is settling—becoming a distinct body of knowledge, perhaps best described as a productivity discipline. From the BE point of view, however, fuller convergence with PM poses a number of curricular challenges, but, importantly, could also improve opportunities for students.

We believe that PM's content maturity and continuing spread call for BE coverage beyond QC/QA

in operations management, to, potentially, broader and deeper curriculum inclusion. The critical distinction here is: PM as QC/QA “tools and techniques” and PM as a systems-oriented, comprehensive body of knowledge. Opportunities we see for students include improved integrative learning and job-placement. In this article, we update PM evolution and spread, and outline key opportunities and challenges.

### PM Evolution Update: Content Settling With Continued Rapid Spread

Previous descriptions of PM evolution emphasized key trends in two distinct but related areas: (1) PM body of knowledge content; and (2) practices spread. On PM's developmental trajectory, an important early “phase”, frequently called TQM (total quality management), was quite visible and important, but often unclear. Its QC/QA terminology associated PM with manufacturing operations, even though the “total” in TQM usually meant extending it to all types of organizations, and involving all employees. This phase was “fad” oriented and prescriptive, because of two major factors: common initiatives (Six Sigma, ISO 9000, etc.) and language were “trendy”; and the “agents” were either from manufacturing or were recent TQM “converts”. Among PM's tendencies were orientation toward universal tools and implementation pathways, and focus on “defects” and mistakes. Confusion and rejection were greatest in high-contact and knowledge-intensive services. However, as approaches became more systems- and strategy-oriented, PM became more conceptually enriched and adaptive. More importantly, PM gained many new types of practitioners, broadening and accelerating sector spread. This spread was critical to shaping PM content, and the spread itself was fed by the greater validity and adaptability of the emerging content. Although the rapid spread continues, unlike the fad

phase, implementation is now “quieter” and more adaptive.

This pattern is not surprising: Content settling should occur faster than spread of practices to millions of organizations. Spread depends upon competitive pressures, practices utility, and on multiple and reinforcing channels of education and influence. Despite its limited contributions to date, we believe that BE should now be the most basic and promising vehicle for further PM development and use.

### ***Body of Knowledge Stability: Performance Excellence Award Parallels***

We see close parallels between the objectives of BE and criteria-based performance excellence awards. Such awards seek to bridge across content and applications, expressly to enable and promote sharing of practices. Awards do so mainly via: (1) a criteria framework that embeds systems concepts and overall organizational requirements and performance objectives, in ways that subordinate and rationalize tools; (2) involvement of all sectors to create large networks of diverse expertise that accelerate cross-sector, adaptive learning; (3) evaluation constructs that enable assessment relative to systems requirements, thus useful in “seeing” organizations’ stages of development; and (4) role-model organizations in all sectors that illustrate parallels among disparate organizations’ PM systems. The framework is “open”, thus accommodating new requirements within its dynamic learning structure. The framework’s existence itself both reflects PM settling and induces further settling—very similar, conceptually, to development of other bodies of knowledge. Use of the framework gives actionable meaning to related concepts, sometimes called organizational learning and evidence-based practice.

The Baldrige Award’s (and affiliate’s) approach is built on the concept that learning and practices spread derive from adaptive processes for meeting parallel, basic organizational requirements, not from proliferation of learning structures. Consistent with this approach is the observation that although many PM variants are seen across sectors and organizations, these can now be described as organization-specific adaptations of conceptually parallel PM forms and developmental stages. The point we

emphasize here, however, is that the observed content maturity also supports BE’s basic purposes and requirements.

### ***Implications For Business Education***

Concept settling and continued spread of PM practices have three major types of implications for BE: (1) emergence of a widely used and holistic PM body of knowledge—with elements of its content enabling drawing clearer connections with other BE disciplines; (2) PM’s unique value in integrative and experiential learning; and (3) broadened and improved employment potential for BE graduates. However, we also see challenges—ones that could be addressed differently, depending upon school demographics, degrees offered, principal markets served, and curricular strategies.

### ***PM as a Body of Knowledge***

Past Newsletters have spelled out key elements of PM—ones we believe identify its core and value: systems-based perspective; anchoring in organizational purpose, strategy, and requirements; sets of integrated measures (usually called metrics); and ongoing, evidence-based assessment and learning via process management. By its nature, PM spans across and utilizes all BE disciplines, using them as tools within process-management, learning-based structures.

### ***Student Integrative and Experiential Learning***

Our 2011 and 2012 Newsletters focused on BE discipline integration. For integration, we proposed: “Effective use of discipline-based knowledge to support organizational purposes, strategies, requirements, and practices.” For experiential learning, we used: “acquiring and making sense of knowledge, facts, and opinions.” We emphasized that such sense-making, or ongoing construction of understanding, is what we perceive to be the essence of effective school-based and life-long, experiential learning.

In addressing integrative and experiential learning, we framed two questions: (1) What curricular and experiential learning (bodies of knowledge and related bodies of experience) should be used or created that not only improve knowledge integration, but also illustrate purposeful application of all BE disciplines and relationships among them?; and (2) How do we more directly build

students’ capacity for experiential learning, so that it persists beyond formal education? These questions focused our PM-BE convergence interest on contextual learning and choices of contexts. To guide our work, we proposed criteria we believe effective integrating contexts should meet. We then applied these criteria to performance as the trial context. We were encouraged by how well performance met the criteria. Later (2012), we applied the criteria to strategy as the context, and compared performance and strategy relative to the criteria. We concluded that both strategy and performance matched up well against all dimensions of the proposed integration criteria. Both are inherently holistic, which means that all business disciplines are drawn in, but occur as means, not as ends. We also noted: in terms of experiential breadth and depth, performance would appear to be a more visible, general, and intuitive learning vehicle than strategy. For example, what we experience in our contacts with hundreds of organizations is mainly aspects of their performance: Most often, we could not infer their strategies.

Performance should also be more useful than strategy for learning systems thinking and causal links. Critical to this are sets of metrics created to track and guide action. However, because performance is a key determinant of strategy’s success, performance targets and metrics should be derived from strategy or used to set strategies. This strategy-performance relationship is critical to teaching both subjects. In much current teaching of strategy, as well as organizations’ strategic planning, performance is often a “missing link” or not explicitly addressed.

### ***Business Graduates’ Employment Potential***

Although BE graduates work in all economic sectors, relatively few work in non-profits, government, and health care. Employment growth in these sectors over the last three decades now makes them sizeable fractions of U.S. employment. Manufacturing jobs have declined greatly and remain under pressure. As emphasized above, organizations in all sectors have compelling needs to achieve ever-higher levels of performance. Hence, rapid sector spread of PM practices should open new employment avenues, especially for BE graduates with basic PM literacy.

### ***PM and BE Convergence: Challenges***

As discussed above, comprehensive PM coverage would improve student integrative learning and job-placement potential—a strong rationale for inclusion in BE. However, such coverage presents numerous choices. These include “packaging”: an individual offering vs. integration across other offerings; required vs. elective; and content sequencing. Additionally, some Business Schools might need to reconcile PM-curriculum overlap with Industrial Engineering units.

### ***Major Design Considerations in PM Curriculum Coverage:***

(1) Performance needs to be tied to strategy. Accordingly, strategy coverage and cases need more emphasis on strategy deployment, including related performance objectives. This should include setting and using metrics within defined improvement systems.

(2) PM practices carry over better from organization-to-organization than strategy, which is more organization-specific, especially when comparing dissimilar sectors, such as manufacturing and health care. For this reason, basic PM practices fit well in introductory general management. Such coverage should include process management and related human resource systems, preparing for coverage of PM later in the curriculum.

(3) Embedding organizational performance broadly across curriculum is a major design requirement—but difficult because strategy and performance are not easily treated within individual BE disciplines. Doing so requires integrated design, to ensure basic consistency and reinforcement. However, generic performance requirements, such as process management, and common metrics, such as response times, accuracy, and customer feedback, could be used to build and reinforce awareness of organizational performance, across curriculum. Also, examples of key roles individual BE disciplines, such as accounting, play in PM are helpful, and can be used to distinguish the meanings of academic competence and organizational excellence.

(4) Special topics coverage of PM, via courses or modules, should also be part of an integrated curriculum design—perhaps best used as capstones. Such offerings should illustrate differing and changing meanings of performance among sectors and organizations, to provide insights into PM characteristics and flexibility. This would also illustrate the strategic importance of performance as a competitive advantage.

Other challenges include curriculum-time tradeoffs and faculty interest and qualifications. Greater interest in teaching PM

would likely follow an increase in performance-related research and case studies—areas rich in applications, including many local and accessible organizations—across all economic sectors.



Dr. Reimann and Mayberry GA Jonathan Huddleston at the 25th Anniversary Conference of Baldrige Program

## Health Care Performance Improvement: Good News About Baldrige Use and Impacts

Dr. Harry S. Hertz, Director (1996-2013), Malcolm Baldrige National Quality Award

In the December 2008 Newsletter, Dr. Natarajan outlined the state of quality improvement and the then current challenges in health care. Much has happened since then, but most challenges remain. One vehicle for accelerating improvement is use of the Baldrige Criteria for Performance Excellence (Health Care Version). In this article, I will update some challenges to improving health care, why this matters to patients and the economy, progress being made via Baldrige, and evidence of its adoption and future use.

A PBS Report (2012), based on OECD information, indicated that the U.S. spends greater than two-and-a-half times that of other developed nations on health care, and one-and-one-half times that of the next closest nation (Netherlands). Health costs growing at historical rates would account for 34 percent of GDP by 2040. Despite much higher U.S. expenditures, the 2011 Commonwealth Fund assessment of health care quality, access, efficiency, and equity scored the U.S. 64, with benchmark performance at 100, across 42 performance indicators.

### *Examples of the challenges:*

- For sicker adults experiencing medical, medication, or lab test errors, the U.S. rate was twice as high as the benchmark of the eight best countries.
- For potential overuse or waste in the medical system, the U.S. score was 40 vs. a benchmark of 100.

### *Impacts of Health Care Quality*

Many studies document the impact of poor quality on U.S. health care costs. A 2011 Report to Congress illustrates such impacts:

- The Centers for Disease Control and Prevention (CDC) estimate that at least 1.7 million health care treatment related infections occur each year leading to 99,000 deaths. Adverse medication events cause over 770,000 injuries and deaths each year, costing as much as \$5 billion annually.
- A study to implement CDC recommendations to reduce central line blood stream infections, conducted with just 100 intensive care units, reduced infection rates by two-thirds within 3 months, and in

18 months, saved more than 1,500 lives and nearly \$200 million.

### *Why Baldrige?*

The Baldrige Program originally defined performance excellence as delivering ever-improving value to customers while improving the effectiveness and efficiency of a business' operations. In studying role model organizations we learned and subsequently added a third focus: commitment to organizational and personal learning. These are the foundations of a value-driven business system, and, increasingly, a value-driven health care system. This parallel between critical process and results drivers across sectors led to the Baldrige Program's expansion into health care (and education) in the mid-1990's. The fact that health care now provides the largest number of applicants for the presidential Baldrige Award, is gratifying validation for the expansion.

I turn now to independent studies that document Baldrige use and impacts.

### *Impacts of Baldrige in Health Care*

A 2011 Thomson Reuters study reports that use of the Baldrige Criteria has a direct impact on both reducing health care costs and improving quality. Key findings include:

- Baldrige hospitals demonstrate faster five-year performance improvement than their peers.
- Baldrige hospitals, as a group, were about 83 percent more likely than non-Baldrige hospitals to be awarded 100 Top Hospitals national recognition for excellence in balanced organization-wide performance (financial and health care).
- Baldrige hospitals outperformed non-Baldrige hospitals on six of seven individual measures of performance used in the 100 Top Hospitals composite score, including CMS Core Measures (health measures) and adjusted operating profit margin.

### *Implementation of Baldrige "Practices" and Criteria*

Two studies examined adoption of Baldrige in health care. Truven Health Analytics (formerly Thomson Reuters), in its annual survey (2012) of 100 Top Hospitals CEOs, reported:

- Overall, 100 Top Hospitals winners have extensively adopted practices embodied in the Baldrige Criteria, even though 63 percent reported they adopted the practices without prior knowledge of the Criteria.

- Teaching hospitals reported the highest formal use of the Baldrige criteria. Nearly 70 percent of these hospitals noted that their teams have used the Criteria to develop organizational goals and process improvement initiatives.

- More than 80 percent of the respondents agreed or strongly agreed that they have implemented the Baldrige practices listed on the survey.

The second study posed questions specifically about future use of Baldrige criteria. This study (Futurescan 2013), which surveyed CEO members of the American College of Health Care Executives and senior, provider-based members of the Society for Healthcare Strategy and Market Development reported:

- 65 percent of hospitals are likely to "use the Baldrige Criteria for Performance Excellence as a systematic framework for performance improvement or as an internal assessment tool" by 2018.
- 41 percent are likely to submit an application for the Baldrige Award or a state Baldrige-based award by 2018.

As to our own findings, we note that in 1995 when the Baldrige criteria were piloted in health care, there was a significant gap between the performance of health care organizations and forefront for-profit service companies. By 2011, health care applicants had closed this gap.

I believe the consistency between independent studies and Baldrige scoring validate key Baldrige premises: similar criteria can guide improvement and recognize excellence across industry and nonprofit sectors; cross-sector best practice sharing can be beneficial; and, most importantly, wide adoption of the Baldrige criteria by health care organizations can improve U.S. health care quality and reduce costs. But what sums it all up best for me is a quote from Rulon Stacey, President of Poudre Valley Health System (2008 Baldrige Award): "I honestly in my heart believe that because we participated in the Baldrige program, and because it gave us that consistent feedback, there are people who are alive today who wouldn't have been had we not committed to the Baldrige process."

Now that you know the evidence, please join us in spreading the word about the benefits of Baldrige!



## The Paradox of Productivity

by Dr. Nat Natarajan

The numbers are striking. During the 30 year period covering 1978-2008, the overall consumer price index (CPI) rose by about 4 percent a year in the U.S., while the cost of hospital services increased by 8 percent and the cost of physician services rose by 5 percent a year. Since the 1980s, the price of university education has gone up by about 440 percent and the cost of health care by around 250 percent while the average price increase has been 110 percent and average wages has increased by 150 percent [1]. Spending on health care as percentage of GDP in the U.S. is about 18 percent (highest in the world) and is increasing at about 1.4 percent a year. The data from other high-income countries for health care and education show similar pattern.

The trends for the manufacturing sector are equally striking. During 2000-2010, the average price rose by 225 percent but the price of manufactured goods ranging from computers to home furniture fell by 18.2 percent [3]. Employment in manufacturing declined by 5.7 million during the same period from 17.2 million in 2000 to 11.2 million in 2010.

What are the drivers of these trends and are these trends sustainable? For some answers we turn to some recent publications that address these issues [1,2,3].

Baumol's focus is on costs i.e., the value of resources used to produce the output and not the price which is what the consumers pay[1]. He also makes a distinction between the level and rate of increase in costs. His explanation for the latter has been called *Baumol's Cost Disease* and is based on his study of labor intensive services such as the performing arts. In any economy, there will be differences in the growth rates of productivity between the different sectors. In labor intensive personal services, which would include health care, education, legal services and performing arts, it is not possible to reduce the labor content below a threshold level without adversely affecting the quality of the service. It still takes the same amount of time for a professor to read and grade papers manually as it did 50 years ago. Labor productivity in these "stagnant" sectors will certainly lag behind the "progressive" sector (e.g., manufacturing) where labor content can be reduced or even be eliminated through automation

without affecting the quality of output. These productivity gains translate into higher wages in the progressive sector without increasing the price of the output. But, due to competition for labor, the wages in the stagnant sectors have to keep up with the general price level in order to attract people to work in these sectors. Increasing wages which are not offset by a reduction in labor costs imply that the price of output in the stagnant sector will be increasing at a rate above that of the average price level.

Cost disease is also invoked by Archibald and Feldman to explain the increase in costs of education [2]. Backed by research and analysis of long term data, they show that the increases in costs of education are similar to the increases in costs of other labor and skill intensive services such as legal and medical services. Like Baumol they are concerned with the costs rather than the price which is the tuition and fees charged to students. Tuition and costs do not move together because of subsidies from government and private entities. The cost of providing education is usually greater than the price and the shortfall is made up by the subsidies. They discuss a unique feature of public higher education viewed as an industry i.e., the phenomenon of tuition going up during economic downturns due to cuts in funding by the states whose revenues have declined. This is in contrast to other industries where prices tend to fall when the economy is weak. They consider two other industry factors which exacerbate the cost disease in education i.e., the highly educated and skilled labor inputs (Ph.Ds.) required in higher education and the wage premium such labor would command due to increases in the returns to higher levels of education [2].

The other factor is the role of technology. Often the technology used in education is skill-biased. While technology can substitute for labor in manufacturing, application of technology in education often raises the demand for skilled labor to support and maintain it. They point out that the reduction in labor such as eliminating a typing pool by use of word processing software does happen but the scale and scope of such opportunities are limited. While technology in education -- whether it be new equipment or software for teaching and research -- has increased costs, often it has also enhanced the quality of education and the auxiliary services [2].

There is a common theme in the "cost disease" thesis in health care and education

- there are no villains to blame. In education the "usual suspects" would be greedy colleges, college administrators engaging in prestige games and gold plating, bloated administration and support services pushing up the costs. These factors often garner the headlines in the popular press and have been the foci of books with sensational title such as *The University in Ruins* and *Declining by Degrees*. Archibald and Feldman through careful marshaling of data and analysis demolish these arguments. What critics would consider gold plating in terms of amenities and services for students is simply a response to the expectations of students, parents and the employers of the graduates. These expectations -- akin to the ones we as consumers have about the quality of autos or homes -- are shaped by the technological, social and economic environment. Archibald and Feldman argue that education has to meet an evolving standard of care which is costly to meet [2]. Employers expect students to have skills and knowledge that can only be provided with modern and up-to-date curriculum supported by equipment in labs and information technology in the class room and on campus. In today's college environment: career services; counseling and advising by professionals to prepare students to join the workforce; recruiting activities such as having campus tours to attract talented students; addressing the needs of students with disabilities; and allocating resources to campus safety have become necessary. Their data shows that the cost disease applies equally to for-profit institutions where the incentive for cost efficiency would be the strongest. Tuition in those institutions have also increased at about the same rate as the non-profit public institutions [2].

The cost/price increase in the stagnant sectors is inevitable because the cost disease is embedded in economic growth itself and in the differences in productivity between sectors. Hence, it is not just a U.S. phenomenon. The only way for the cost disease to disappear is if the productivity in the progressive sector slows down or grinds to a halt. But that cure is worse than the disease because that would mean less output to go around for everyone. It is no accident that in the 1970s when the cost of higher education actually declined slightly, it coincided with the period of slowest economic and productivity growth [2]. Baumol and his co-author point out that not all services can be classified as stagnant

and illustrate this with several case studies [1]. Many software and internet based business services whose customers are businesses rather than consumers actually help improve productivity of other businesses with their inputs while improving their own productivity albeit slowly.

If it is difficult to reduce the rate of cost increase in health care and education is it possible to have an impact on the level of spending? If so then costs will still be rising but from a lower base. Achieving this impact in education will not be easy. Both productivity and quality have to be defined and measured meaningfully. Some of the obvious solutions which have attempted to cut costs such as using adjunct faculty, in fact, do not increase productivity because other outputs of higher education i.e., research and service will decline along with the quality of instruction. Also, increasing class sizes has an adverse impact on teacher-student interactions.

Decision-makers in higher education are faced with the dilemma of being able to control only two of the three i.e., price, size of public subsidy and quality of programs [2]. If they try to hold the line on price then quality will decline unless subsidy increases. If subsidies are cut then quality will decline unless price is increased. The main challenge is to reduce cost without sacrificing quality. In this regard, studies suggest that “flipped classroom,” a blending of having educational materials online with the traditional face-to-face interaction in the classroom for problem solving and collaborative learning, appears to be most promising [2].

Massive Open Online Courses (MOOCs) and open courseware are transforming education as we know it. They are clearly cost-saving for offering introductory level college courses (which are taken by a large number of students across college campuses). They are being widely adopted e.g., MOOCs developed by Coursera are offered to 3.9 million students in partnership with 83 institutions and the Khan Academy has 6 million registered users on the internet. But the jury is still out on these online technologies in terms of their impact on learning outcomes.

Can society survive the cost disease? Can future generations afford health care and education? The answer lies in the ability of the economy to keep up its productivity growth. Baumol is of the view that economic incentives to innovate will keep

this going and make health care and education affordable for the society [1]. (That is not to say that in an environment of increasing economic inequality, families with lower income will also find them affordable. That is a matter of public policy which is beyond the scope of this article). Here, the manufacturing sector plays an important role. In a sweeping survey of manufacturing from the first industrial revolution to date, Peter Marsh assures us that this sector is not going to run out of steam, at least for the next 3-4 decades [3]. If the past is any guide -- during 1800-2010, labor productivity in manufacturing increased at an average annual rate of 1.7 percent while global GDP per capita rose by 1.1 percent annually -- than the relative decline of prices of manufactured goods will continue. Marsh bases his optimism on technological developments such as robotics, nanotechnology, the internet, biotechnology, innovations in materials, 3D printing and lean production. He considers practices such as collaborative and open innovation, globally dispersed value chains, industrial clusters, lower energy costs due to increased supply of shale gas and increasing number of countries developing manufacturing capabilities as the key factors that will sustain the productivity growth.

As Marsh points out, the manufacturing sector also boosts the productivity of service sectors which use its outputs e.g., ATMs, MRI machines, medical devices and implants. However, in high income countries such as the U.S., as prices and the number employed continue to decline due to labor productivity growth, the money value of output from the manufacturing sector will also decline as part of overall GDP, prompting some experts to use the metaphor “manufacturing is performing a magnificent ballet on a shrinking stage.” Moreover, we should not lose sight of the critical role of the higher education system in the U.S. -- arguably the best in the world -- in driving innovation. Through the creation and transfer of new knowledge which is embedded in its graduates and researchers, it provides the vital input to the innovation processes in the economy. Shortsighted measures in higher education -- in the name of cost-cutting -- will have a detrimental impact on the long run capability of the U.S. economy to raise the growth rate of productivity.

What does all this mean for sector spread? The aerial view of the fundamental processes of productivity growth in health care and education sketched above helps in understanding the limits to what can be achieved through sector spread. It also highlights the importance of developing a sector spread strategy to avoid tilting at windmills. Such a strategy

will recognize that: there are limits to the impact on performance dimensions; the key to the effective spread of best practices is sector-specific adaptation. One of the great achievements in 20th century manufacturing--pioneered by Japanese companies --has been that productivity and quality can be improved simultaneously, i.e., “quality does not have to cost more.” The challenge of sector spread is to find ways to replicate that wherever possible in education and health care.

1. *The Cost Disease: Why Computers Get Cheaper and Healthcare Doesn't*. William J Baumol and others, Yale University Press, 2012.

2. *Why Does College Cost So Much?* Archibald and Feldman, Oxford University Press, 2011.

3. *The New Industrial Revolution: Consumers, Globalization and End of Mass Production* Peter Marsh, Yale University Press, 2012

## Activities and Accomplishments 2012-2013

- Dr. Curt Reimann serves as Chair of the Quality Management Subcommittee of the Veterans Board on Dose Reconstruction (VBDR). VBDR, created by Congress, serves the Defense Threat Reduction Agency and the Department of Veterans Affairs. VBDR addresses veterans' exposure to radiation in WWII and in atomic weapons testing following WWII.
- Dr. Curt Reimann served as Moderator for the International Session in Quest for Excellence, the 25th Anniversary Conference of the Malcolm Baldrige National Quality Award Program, on April 8, 2013.
- Dr. Curt Reimann wrote an article titled "Reflections on the Baldrige Award's 25th Anniversary," for *Connections*, the National Institute for Standards and Technology (NIST) Newsletter.
- Dr. Curt Reimann served as a presenter in the Opening Plenary Session for the 20th Anniversary Conference of the Tennessee Center for Performance Excellence, February 20, 2013. The Session was titled: "Treasuring the Past...Transforming the Future."
- Dr. Curt Reimann gave a briefing for the Small Business Development Center (SBDC) Advisory Board, April 16, 2013. The briefing was titled "Baldrige Performance Excellence Program: Implications for SBDC Impact and Program Evaluation".
- Dr. Curt Reimann serves as Vice President, NIST Standards Alumni Association Board.
- Dr. Nat Natarajan serves as the Associate Dean of the College of Business and chairs the Assurance of Learning committee in the College. In 2012-13, he served on the TTU committee for the preparation of the referral report submitted to the Southern Association of Colleges and Schools (SACS).
- Dr. Nat Natarajan presented the paper, "Achieving Integration in Business Education," (With Dr. Reimann) at the 43rd National Annual Meeting of the Decision Sciences Institute (DSI), San Francisco, CA, November 17, 2012. The paper was published in the conference proceedings.
- Dr. Nat Natarajan presented the paper, "Efficiency of Airlines in India: A Data Envelopment Analysis" (With Ravi Jain) at the 6th ISDSI Conference, Hyderabad, India December 29, 2012. The paper was published in "Operational Excellence - A Key to Performance Excellence." Excel Books, New Delhi India 2013.
- Dr. Nat Natarajan published the case "Modeling Strategic Decisions: The Case of Airlines in India," European Case Clearing House (ECCH) and IBS Center for Management Research, June 27, 2012.
- Dr. Nat Natarajan organized and chaired the panel on "Assurance of Learning—Implementation Challenges," at the 43rd National Annual Meeting of the Decision Sciences Institute (DSI) in San Francisco, CA, November 19, 2012.
- Dr. Nat Natarajan serves on the editorial board of the Journal of Quality Management.
- Joe Chappell, the Mayberry Graduate Assistant, served on the 2012 Board of Examiners of the Tennessee Center for Performance Excellence (TNCPE). In April 2012, he attended the Quest for Excellence conference in Washington D.C.

### Mayberry Advisory Board

- The Mayberry Advisory Board met on Tuesday, October 30, 2012. The Board discussion topic was "Sector Differences and Spread of Quality Practices." Earlier, the Board members interacted with COB students during the reception and dinner on October 29.



The College of Business' Business Media Center (BMC) was the recipient of the 2012 College of Business Board of Trustees Outstanding Business Leadership Award. Kevin Liska, the Director of BMC accepting the award.



## 20th Anniversary Celebration of TNCPE



L-R Dean Jordan-Wagner, Gary Floss (Mayberry Board Member), Dr. Reimann, Dr. Fisher (CEO, MidSouth Productivity Center), and Dr. Natarajan

Newsletter prepared by Dr. Nat Natarajan and Dr. Curt Reimann. It is also available on the Mayberry website: [www.tntech.edu/mayberry](http://www.tntech.edu/mayberry) Your comments are welcome.

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College of Business  
Tennessee Tech University  
Box 5025  
Cookeville, TN 38505-0001



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