MANUFACTURING Matters

Understanding Global Competitiveness

of Indiana Manufacturers

Greetings from DCMME/GSCMI. The summer was hectic with a lot of activity involving students, staff and faculty. Working with summer student assistants and a few MBA students, we contacted 2076 manufacturing and distribution companies around Indiana. Of those contacts, 500 or more agreed to assist us with our survey of Indiana Global Manufacturing Competitiveness with nearly 150 companies providing the data requested. The analysis of the survey is complete and results were disseminated at the Fall Operations Conference on September 25, 2009, a conference we titled " Manufacturing: Thriving Through the Storm."

The survey focused on specific changes made by firms (insourcing, outsourcing, product mix changes, process adjustments, globalization etc) as they attempted to maintain competitiveness during the economic upheaval the past year and ongoing. In our mix of firms, we saw some firms that held their own and many other firms that went through severe trauma. In addition, many of the companies were private companies so the data set provides insights that may differ from those generated from public databases. Over 8% of the firms we contacted were in the process of shutting down. But there is an interesting story that emerges; my own impression is that our results provide a process based view of changes in US manufacturing – and thus permits us to provide a unique vantage point for Indiana manufacturing competitiveness. We plan to leverage the insights and results to increase our local footprint.

An important visible change around the Center is our new website, coordinated by Mary Pilotte and executed by Arun, our summer center GA. Please visit our site (http://www.dcmme.org) and browse the various activities that have happened and will continue this year. We are thrilled to have the flexibility to provide quick updates and maintain a close to real time representation of events at the center. We believe that managing our digital image will greatly enhance our ability to showcase students, faculty, and staff roles at the center. The Center library section provides reports, presentations, videos etc. to permit learning well beyond the specific events. All projects ultimately are a work in progress – so please do send us your suggestions for improvement.

Finally, with faculty supervision by Professors Suresh Chand and Jim Ward, a team of students went to TVS Motors in May as part of the Global Internship in India. A summary of their projects and pictures of their visit are also available at the center website. Feedback from the company executives confirms the impression from students and faculty – the field experience and performance provided value for both students and TVS company managers. We hope to continue these trips for the next few years.

We are also pleased to feature in this newsletter an interview with Professor George Shanthikumar, the Richard E. Dauch Chair in Manufacturing at Krannert. We hope you will get to know more about George in this brief highlight. For the new academic year, we are already in the midst of planning plant trips, organizing the Spring conference, finishing off old projects and proposing new ones etc. Please join us in our efforts to spread the enthusiasm for manufacturing and global supply chain management among students at Krannert. Contact Mary or myself with your ideas as we strive to preserve Krannert's excellence in manufacturing and global supply chain management.

Fall 2009

The Dauch Center for the Management of Manufacturing Enterprises

Meet the New Richard E. Dauch Chair in Manufacturing

by Dr. Ananth Iyer

Knowing that J. George Shanthikumar, the Richard E. Dauch Chair in Manufacturing, has a significant interest in manufacturing in the newly emerging industries of solar panels, biotechnology and alternate fuels, we sat down for an hour long chat about challenges in these areas. Our discussion focused on potential challenges and solutions in these industries:

AI: How would you interpret "sustainability" in these new industries (solar, biotech, alternate fuels and batteries) ?

JGS: For real sustainablility, it is important that one takes a network view – this network has to tie in product and process developments with manufacturing. Of course, the raw materials supplies, it's effect on the environment, other supplies for this and other products, etc. have to be brought into this network. It is the network that will determine if a technology is scalable and sustainable. This also means that technological innovation in the product and the process has to continue at a steady pace – **there has to be a reason why a company's product can justifiably claim to be better than the competition.** In electronics, for example, most of semiconductor manufacturing has moved outside of the U.S. But, sustainability of product innovation in the U.S. is achieved through a third party providing simulation tools. Process innovations are achieved through proper feedback from the manufacturing facilities and through maintaining research and development facilities in the U.S. If manufacturing is shipped out of U.S. without a proper set up for innovation in products and processes, sustainability of U.S. competitiveness will be severely hampered. With the evolving technologies, one needs to carefully plan the lifecycle.

Take Wind Energy, for example. The peculiar wind characteristics in the Midwest may well require a locally optimized solution to be generated rather than a cookie cutter design. But pretty soon the local market will get saturated so there is a need to plan to develop technologies with a global reach. Since Windmills require continuous maintenance, perhaps remote diagnostics that permits dispatch of crew before a problem develops completely may be a key capability. Developing such a competence may permit data gathering, analysis and problem resolution to be scattered throughout the globe. But the company that masters such systems may have a global reach. While a fixed targeted design may be cost effective, a flexible design capable of adapting to different environment with a minimal cost may turn out to be a better bet for sustainability.

AI: There is the worry that product and process innovation requires ownership of manufacturing; do you agree ?

JGS: Not completely – for example, in the electronics industry various manufacturers like TSMC or UMC provide online information regarding the details of their manufacturing. They can even run the facility under different designs, in small volumes, and provide you feedback. So now there is detailed operational data that can be used in a simulation of the actual manufacturing. This combined with manufacturing research labs can sustain product and process innovations. I think that in such contexts ownership of manufacturing is not necessary. But training people to manage these simulations and manufacturing research labs is necessary.

AI: Let's talk about Solar manufacturing – you mentioned your involvement with a company in California – what is their challenge now ?

JGS: The company I am working with is focused on developing efficient thin film solar cell manufacturing process. In the thin film solar area, efficiency and yield remain key issues. There are technologies that have proven to be very successful in the lab, but are difficult to scale while maintaining a high yield. Solving this problem will be a key technological breakthrough. But sustaining the manufacturing requires guaranteed supply of raw material which is a challenge. The small companies that develop the technology worry that their size and price points may leave them vulnerable to the giants. But how do they guarantee availability of raw material as demand grows? Some say that we may not have enough indium to go around!

Notice that before scaling up, it may be prudent to simultaneously try out multiple processes to manufacture product within a plant. It may also be necessary to wait to determine the viability of each of the processes as volume increases – and not cut off choices myopically...

Like what you see?
To continue reading the entire interview, visit www.dcmme.org and click on the "faculty" link.

Manufacturing Thriving through the Storm

Rawls Hall-Purdue University September 25, 2009 West Lafayette, Indiana

The 2009 Gear and Fulcrum:

Performance and Practice of Indiana's Manufacturers

By Mark Wolfred

Indianapolis accounting firm, Katz, Sapper and Miller (KSM) sponsored the 4th annual "Gear and Fulcrum Performance and Practice of Indiana Manufacturers" survey and response analysis, lead by principal investigator, Dr. Ananth Iyer. Mr. Scott Brown, Partner of KSM provided an overview of their firm, and the value of this important study for their client base in operations and logistics firms. He then introduced Dr. Iyer, who proceeded to speak on the specific results of the 2009 survey. Optimism remains high with respondents as 85% of those with a negative ROA anticipate improved financial performance in the coming year compared to only 11% of firms with a positive ROA .

Hoosier firms are making supply chain changes. This includes a reduction in their manufacturing and corporate staffing levels. Additionally, bottom and mid-level performing firms see an increase need in supplier financing when compared to the top performing firms. Many firms are also investigating the possibility of entering new industries, with the most common response being the alternative energy/wind energy sectors.

It was also noted that Indiana firms see globalization as having a significant effect on finished goods prices, but at the same time they did not report a significant decrease in raw material costs. Results showed that the top performing firms realized a cheaper source of raw materials and new market opportunities as a result of globalization. In summary, Indiana manufacturers are facing a time of transition in the current marketplace. If these firms can embrace the challenges of globalization, product changes, and coordination with suppliers and customers, then they will put themselves in the best position to not only survive, but thrive in this current economic climate.

KATZ, SAPPER & MILLER
Certified Public Accountants

Empowering Community Change

By Brian Bobo

Mr. Jeb Conrad visited the Fall Operations Conference bearing a new vision for Kokomo, IN. The President of the Greater Kokomo Economic Development Alliance painted a bright future for the small town. His envisions a continued expansion of the industries represented in Kokomo and a decrease on the reliance of the automobile industry.

A town of only 150,000, the Kokomo economy has revolved around the auto industry. An industry Mr. Conrad sees as a strength, not a weakness. However, he foresees a changing culture within the town, a culture of expanding industries that take advantage of the current Kokomo workforce and the small, nimble size of the city.

This cultural shift is not without its challenges. Kokomo has 4-5 generations of workers who know little more than the auto industry. However, the days of showing up to Delphi on graduation day expecting a job at $30 an hour are gone. Mr. Conrad believes that as steam builds and Kokomo becomes more and more successful in their transition into emerging industry sectors, these barriers will fall.

With a commitment to manufacturing, Mr. Conrad's strategy is to take a "long view" of business and to move beyond just the automotive industry into renewable energy and other "green" focused business. A talented, trained and experienced workforce with a commitment to manufacturing has Mr. Conrad seeing the sky as the limit for new industry in Kokomo.

Greater Kokomo
ECONOMIC DEVELOPMENT ALLIANCE

Thriving through the Storm






Congratulations to the following students who placed in the 2009 DCMME Fall Operations Conference & Student Internshiip Poster Competition:

Undergraduate
1st place
Matthew Weirich
2011
Roche Diagnostics

Indiana INTERNnet
Sponsor's Choice Award
Ken Ng
2010
Shell Refining Company

Graduate
1st Place
Nathan Gross
2010
TVS Motors

On behalf of Dr. Iyer and the Center staff we would like to thank the many student volunteers who help us organize and execute these events. A special thanks to Pam Norman, executive director of Indiana INTERNnet and Eaton Corporation for their continued support and sponsorship of our events.

Please visit our newly developed websites at www.dcmme.org and www.gscmi.org

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