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with the material handling industry of america

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INSIDE

Change is Good:

How Supply Chain Advances Can Impact Your Bottom Line

By Patrick Penfield
Whitman School of Management
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Change. Alter. Transform. Modify. All imply breaking away from sameness; making an essential difference; shifting direction. Organizations today are using the supply chain as a competitive advantage in business and they are transforming their companies in the process. Technology is also changing the way we look at the supply chain. With the advent of the internet and other technologies we can do things today that we only dreamed about 20 years ago. And that is good.

Business Strategies Impacting the Supply Chain

Many companies are focusing on core competencies and outsourcing the things that do not work well. All companies must define their core competencies. What do we do really well and how do we keep focused on those attributes? This is the key to the success of most businesses.

IBM is a perfect example of a company which has changed based on the realization that it would not be able to succeed in business without re-inventing itself. It went from being a hardware supplier to a service supplier. This dramatically changed the company's supply chain. IBM realized that one of its core competencies was purchasing materials, replacement and operating (MRO) materials. It turned this strength into an advantage and now offers that service to other companies. As a result, today IBM is one of the largest MRO procurement organizations in the world.

If you look back 20 years ago, companies did everything internally (payroll, human resources, accounting, etc.). Many companies were vertically integrated. Now the trend is for companies to outsource major components of their organization.

How does this work? "The growing adoption and advances in information technology are introducing new opportunities."[1] We can actually treat another company as an extension of ourselves based on the information technology we have today. This is where great companies are really taking advantage of technology to make lasting, cost-effective improvements.

Third Party Logistics Providers (3PLs) are now a "$103 billion a year industry."[2] Ten years ago people didn't even know the acronym 3PL. Today, 3PLs handle all of the warehousing, freight transportation, third party reverse logistics and other services for numerous companies.

Contract Manufacturing (CM) is another business area that has exploded. These are companies that manufacture and design for other businesses. According to *Electronics Business Magazine*, $113 billion in revenue was tied to just 20 contract manufacturers. CMs are now offering other services such as engineering, design work, procurement and repair work. There are a host of other companies that can offer other functions such as payroll and human resources. In the future, we will see "virtual corporations" as more and more tasks are outsourced for greater efficiency and improved bottom lines.

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All of these changing business strategies impact the supply chain. Managing processes with better IT systems will be required. Companies will be constantly evaluating their supply chains to see if portions of it can be outsourced to achieve higher quality at a lower cost. This should be the focus of most organizations, particularly those who want to thrive (or even survive) in today's competitive environment.

Advances within Manufacturing

Rapid Manufacturing or Rapid Product Introduction is a term many companies are starting to understand. "Rapid Product introduction helped Hewlett Packard dominate the ink-jet printer market. Nokia captured 40% of the cell phone market place by rapidly bringing fashionable products to market."[3] Companies that can get products out to market faster usually earn more profits. To succeed, companies must get new products out to market faster than ever.

An example of rapid turn-around through advanced technology is a prototype machine developed by Direct Dimensions. The company recently worked with talk show host Kelly Ripa, traveling to her New York City studio and scanning a 360 degree picture of her entire head. "The scanning process took about a total of five minutes. The data was processed and a full-size replica was created significantly cutting down on production time. 3D scanning is a relatively new process in which a 3D camera is used to take a series of rapid laser images."[4] This technology has many industrial applications including reverse engineering and can turn out rapid prototypes to turn out short production runs.

Vision systems are also becoming a valuable tool for many companies. Vision systems are great at handling redundant and mundane jobs. The beauty of a vision system is its ability to reduce costs. "Ford Motor Company implemented a 3D vision system at its engine plant in Windsor, Ontario. The automaker increased assembly accuracy in nut-running, reduced rework time, reduced downtime and increased efficiencies. But arguably the biggest benefit the auto giant has seen since implementing the vision system is zero incidences of engine failure associated with loose bolts. There are additional impacts on the bottom line. Sara Stojcevski, a fastener engineer with Ford, says that the automaker quantifies its engine exchange due to loose bolt failures at about $5,000 an engine if they have to exchange the engine. She estimates that the company has saved $150,000 by implementing a system that ensures that engines with loose bolts do not leave the repair bay, and thus never have to be exchanged."[5]

Nanotechnology is still in the research stage, but many applications are currently being examined. Nanotechnology focuses on the molecular and atomic level of objects. This is where we will truly start to see the miniaturization of items. One day we will have nanomachines building items for us at the atomic and molecular level. This should reduce costs and dramatically impact the supply chain. "Computers can be a billion times smaller and use a million times less power. Materials can be about 100 times stronger than steel. This means that most human-scale products would consist almost entirely of empty space, reducing material requirements and cost."[6]

Supply Chain Advances within Warehousing and Distribution

The biggest technology advancement making the news is Radio Frequency Identification (RFID) tags. If an item has an appropriate RFID tag on it, we can identify it through radio waves. The reason everyone is infatuated with this technology is that we now have the extraordinary ability to track almost anything and know where it is at any step of the distribution process. What's the end result? Companies become more efficient, increase sales and reduce costs.

There are two types of RFID tags: passive and active. The difference between the two tags is that the active tag has a power source while the passive tag does not. Functionally, the active device can do more than a passive device because it can communicate to another device, while the passive device has to be read by a piece of equipment. The passive tags cost roughly five cents a tag while the active tags can cost several dollars. Big organizations such as The Department of Defense, Wal-Mart and several other retailers are working with their suppliers to utilize this technology.

Photographs provided by Direct Dimensions

Right now the big issue for RFID implementation is the Return on Investment. Many companies are struggling to justify the cost of RFID implementation. Other companies are working to reduce the cost of the RFID tags. And several other industries have already adapted RFID technology.

The reasons why retailers want to use this technology are abundant. Making sure the right items are in stock and are not misplaced is an important factor. So is a new technique called "Pay as you scan." Some retailers will use RFID to track product and pay suppliers only once the item has been bought by a customer (and you thought consignment was bad).

In addition to tracking products and shipments, RFID technology is currently being utilized in other ways that may be familiar to you. "ExpressPay is a contact-less payment option that incorporates an RFID chip into a card. Users simply hold the card with ExpressPay next to a special reader near the register to complete a purchase. Payment is authorized in seconds, and no signature is needed."[7] Many national retailers have already incorporated this technology. Another interesting use for RFID is with golf balls. A firm named RadarGolf has devised a system where they have embedded RFID chips into USGA conforming golf balls which can be located with a handheld device (no more strokes for lost balls). Expect to see more creative uses for RFID technology moving forward.

Automated Guided Vehicles (AGVs) are back in use with growing popularity. In the 1970s, when the technology was still emerging, many companies did not easily see the benefit of automated solutions like AGVs versus the investment, but recently the benefit has become clearer. AGVs are vehicles that do not require manpower. There are two types of AGVs: wired and wireless. You can program an AGV to do manual repetitive tasks such as moving material from one location to the next. This ability to perform redundant tasks efficiently without the need for human operators on the equipment is a priceless function of today's AGVs. For example, a local brewer in the Syracuse area recently implemented AGVs in its shipping area. When the brewer's beer is palletized the AGVs will pick up the pallets and place them on a truck for shipment. The Return on Investment (ROI) on this project was significant!

Voice Directed Warehouses, another exciting advancement, are now being used by many companies. A voice directed system interfaces with your Warehouse Management System and allows users to pick and put away parts by talking to the system through a headset and microphone. This eliminates the need for paper and allows users to become more productive. Several studies have shown increases of 10 to 20% in productivity.

Advances within Transportation

The transportation industry is undergoing some major changes. Due to increased imports from China several transportation companies are trying to maximize their productivity to capitalize on the increased demand. Last year many transportation companies

(Continued on page 16)

EXECUTIVE VIEW POINT

Snapshots

Past

Present

Future

By John Nofsinger, CEO
Material Handling Industry of America

I am writing this on return from the most successful ProMat event ever. Early research shows that both attendees and exhibitors were enthusiastic about the week and the promise of activity throughout 2007. ***More*** and ***New*** were watchwords – **more** exhibits (+12%), **more** attendees (+3%), **more** international participation (over 100 countries), **more** participation in education (nearly 6000 session-seats), **more** interactive exhibits – **new** technology, **new** companies, **new** names and faces, and **new** mountains to climb. It was easy to get caught up in the euphoria of such a large show held during a period of change and industrial growth. The hard thing to do in the middle of such an event is to place the current situation into an historical context.

As you might expect, the walls of our offices at MHIA Headquarters in Charlotte are adorned with framed photos of important events in the life of MHIA, including trade shows and conferences like ProMat and NA.

These photos present a time-lapse look at where we have been and present a very useful way to place the present into context. A walk through time (with a little help from historical statistics) shows how:

- Technology has changed to speak to the issues of the day
- Consolidation and globalization have created new corporate forms
- Attendee demographics have shifted from largely domestic to international
- The roles of the attendee have become increasingly more senior and strategic
- Styles have changed (we sure dressed differently and some of us were smaller and had more hair – darn)

One of the statistics that seems most telling of the times is the reach of ProMat to exhibitors and attendees from over 100 countries. It wasn't too many cycles ago that we were reporting that ProMat's international reach as 60 countries. Certainly promotional efforts have contributed, but, in a larger sense we are seing a reflection of the importance placed on material handling and logistics and trade throughout the world – a very strategic importance.

Another statistic worth mentioning is the nearly 6,000 education session seats occupied by ProMat visitors. This participation figure is up almost 5 fold over the past decade. Indeed, structural change on how we organize and deliver education at events has played a major role in this success. There is, however, an unchanging reality from show cycle to show cycle - session seats are occupied by new employees, old faces in new roles and attendees with new challenges and projects.

Another snapshot in our time-lapse view of industry evolution will occur in April 2008 at NA in Cleveland. Plans for NA 2008 were launched at a record initial space selection held at ProMat 2007. The event is already mirroring ProMat in scope and reach.

It will be interesting to see how the snapshot will mirror the changes that we are sure to see over the next year. You are encouraged to be a regular visitor to the NA 2008 website at www.NAshow.com. Hope to see you in our next snapshot.

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A Place for Everyone

By Brian McNamara
President, Southworth International Group
Executive Chairman – Material Handling Industry 2006-2007

In past articles I have discussed various details of the structure and leadership of Material Handling Industry and our membership division, the Material Handling Industry of America (MHIA).

The first quarter of each New Year is a very busy and active time for MHIA.

As I write this, we have just returned from our annual "coming-out" event – ProMat 2007. WOW, what a week it was. All of our collective energies over the past year were presented in best-in-class solutions to the needs of visitors from over 100 countries.

Additionally, we have just concluded our annual Roundtable of Industry Leaders Meetings. You may recall that the Roundtable (as it has come to be known) consists of Members elected by the general MHIA Membership. The makeup of the Roundtable is intended to balance the overall interests of highly diverse technologies and companies found under the MHIA umbrella.

Also, preparations are nearing completion for our 2007 Spring Meetings. This set of meetings brings together our 17 Product Sections, Councils and Affiliated trade Associations, as well as our College Industry Council for Material Handling Education (CICMHE) and The Material Handling Education Foundation.

The activities undertaken during membership meetings will be both varied and important and include:

- Development of industry standards
- Market and business research
- Liaisons with industry and government influencers
- Networking with and among the broad MHIA membership
- Education
- Programs to build awareness, recognition and credibility
- Technology and trade trends

MATERIAL HANDLING INDUSTRY OF AMERICA®

For MHIA's first 40 years of existence (1945 – 1986) activities and membership mirrored the times – USA based companies addressing concerns of the USA marketplace.

In 1986, industry leaders began to challenge traditional definitions of the industry as equipment groupings and arrived at a new view that looked at process and function. This shift helped to focus attention on technologies and companies not theretofore "in the tent."

Markets and times were changing quickly and the importance of material handling and logistics were coming to be understood. Industry leadership had come to a fork in the road – continue to be a domestic trade association representing the interests of domestic companies, or change direction to represent all involved in the process wherever their domicile.

Fortunately for this industry, the vision was to be inclusive and to welcome all who would serve the USA marketplace. The industry had embarked on a bold new journey with 300 companies onboard. Today, nearly 800 companies are proud to carry on the traditions of leading our important work.

It is testimony to the vision and wisdom of all of the leaders who have preceded us that MHIA provides programming for everyone interested in improving productivity and profitability through improved material handling and logistics – whether it be trade shows, conferences, leadership or membership in MHIA or as a user of MHIA's resources throughout the year, there is indeed **a place for everyone**.

Please let us know if you ever experience any difficulty finding your place in MHIA.

MHind Twister

Four forklift drivers on different types of forklifts are finishing their shift in Building B and must return to Building A at the end of a dark, foggy night by using the narrow, temporary bridge connecting the two buildings. The automatic security doors at Building A will be closing in just over nineteen minutes and all the vehicles need to be in Building A by that time. Because of the temporary bridge, only two vehicles are allowed on the bridge at one time. Unfortunately, none of the vehicles have lights, but the drivers can share one powerful flashlight to cross the bridge. It is too dangerous to cross without the flashlight. The fastest vehicle can make it across in two minutes and the slowest in eight minutes. The other two vehicles can make it across in three and five minutes. How can you make sure all the vehicles are in Building A before the automatic security doors have closed for the evening?

ANSWER ON PAGE 7

CICMHE CORNER

Is The Sky Falling on Material Handling Education?

By Dr. Kevin Gue
CICMHE President 2006-2007

In December, 2006, the Immediate Past President of CICMHE, Dr. Russ Meller of the University of Arkansas, completed a major, CICMHE-sponsored project to assess the current state and likely future of material handling education. The current state offers some things for which we can give thanks, but the long-term future—absent a determined intervention by Material Handling Industry of America (MHIA) and CICMHE—presents significant challenges.

On the positive side, material handling or facilities planning (MH/FP) courses are required in the majority of industrial engineering (IE) departments. This is not the case, however, among the top IE departments, where only 23% have a required course. Material handling and facilities planning have been "replaced," to some extent, by courses in logistics and supply chain design. Among engineering technology programs, there is more coverage of MH/FP topics. Among Colleges of Business, coverage of "business logistics" seems to be increasing, but material handling is not a significant component in most of these courses.

The sobering part of Meller's report is his assessment of the trend and possible future of material handling education. I say "possible future" because what I am about to describe is likely to be the result, *if MHIA and CICMHE do not take positive steps to effect a different outcome*.

Meller's main conclusion is that "material handling education is at a crossroads, with an uncertain future." He notes two major developments that could lead to the demise of material handling as a significant component of business and engineering education. First, and perhaps most foreboding, is the dwindling pool of professors with interests in material handling. Right now, material handling is taught as a stand-alone course mainly by professors who have, or have had, an interest in material handling as a research area. Currently, there are fewer such professors, because the traditional sources of federal funding for research (National Science Foundation and the military Offices of Research) have not been funding this type of work. Just as in industry, professors are forced (somewhat) to "follow the money," and in this case, there isn't much money in material handling research.

Let me explain that last point a little, because it gives some insight into the deep, dark world of modern academia: Professors start their careers doing research in the areas of their dissertations, and those dissertations usually come from research "projects" of their professors, which are funded by outside agencies. In other words, the source of the money determines, to a large extent, the topics studied by our new (and old) professors. If there is no money for material handling research, then the population of material handling-oriented professors necessarily declines.

Second, and this one is related to the first, material handling is widely viewed as a legacy topic, especially among top IE programs. In the academic world, a legacy topic is one for which the main insights seem already to be known, and which does not seem to have a significant bearing on the performance of industry. Whether or not you agree that material handling is such a topic, this view is widely held among top departments of industrial engineering.

Russ provides in a second report some excellent recommendations for CICMHE and MHIA. For CICMHE: We must develop materials that support professors teaching material handling in non-material handling courses. For example, we should develop 10-minute, 30-minute, and 1-class period modules that introduce business school students to the issues and importance of material handling. These we must aggressively market to professors teaching logistics and supply chain management courses. We must also develop a more coherent and "universally-accepted" design methodology, which would make material handling and its importance more compelling.

How can the Industry help? One of Russ's recommendations is to promote material handling as an enabling technology. This is done everyday by the Industry to the business world, but we are talking about promoting material handling to the *academic* world. The Council will be thinking of ways to work with the Industry to this end. Russ's second recommendation is to establish an endowment for research in material handling. The idea here is to establish a source of research funds specifically targeted at material handling, so that professors can fund Ph.D. students who will someday become the future teachers of material handling.

Space does not allow me to describe how CICMHE is responding to these realities, but trust that we have the message onboard and are actively engaged in shaping a different future. If you are interested in the reports Russ Meller has written, you can contact him directly at rmeller@uark.edu or CICMHE@mhia.org.

ECONOMIC INSIGHT

NABE Industry Survey: Growth Continues but Expectations are Modest

By F. Hal Vandiver
Executive Vice President, Business Development
Material Handling Industry of America

The National Association of Business Economists (www.nabe.com) is a great resource for economic information. The NABE conducts surveys of its Members throughout the year gathering information on a variety of economic topics. The January 22, 2007 report presents the responses of 124 NABE members to a survey on business conditions in their firm or industry conducted between Dec. 14, 2006 and Jan. 10, 2007 and reflects fourth quarter 2006 results and the near-term outlook.

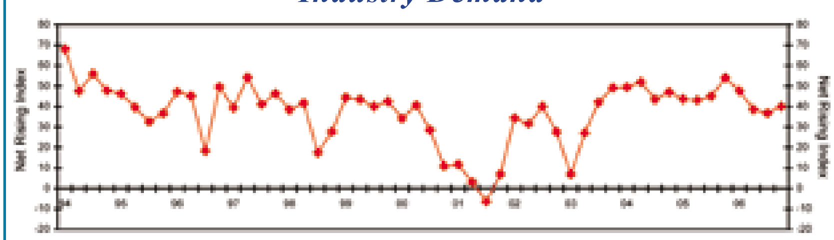
"Results of the January NABE Industry Survey showed a modest upturn in demand for goods and services for the first time in a year," said Ken Simonson, Chief Economist, Associated General Contractors of America. "Price increases were more likely to stick than in recent quarters, although two-thirds of firms still kept prices unchanged. That may reflect the reduced pressure from both actual and expected materials cost increases. Wage increases were more common in the fourth quarter, while employment expanded at the same rate as in the third quarter and skilled-labor shortages increased. One-third of respondents expect to add workers in the next six months, a higher share than in the past two surveys. Profit margins improved for the 14th consecutive quarter, helped by a turnaround in the goods-producing sector and another strong performance by the services sector. Two-thirds of panelists now expect growth of inflation-adjusted gross domestic product to be at an annual rate of 2-3% in the second half of 2006, while a higher share than before expect even slower growth. Capital-spending growth continued but slowed sharply. Respondents also scaled back their capital-spending plans for the next year, both overall and specifically for computers and communications equipment. Panelists expect the housing slowdown to continue for the next six months but are split on the severity and whether their firms will be affected. Most respondents said their firms exceeded their business plan last quarter; whether above or below plan, domestic market conditions were the pivotal factor, outweighing costs and interest rates."

Highlights of the complete report are given below accompanied by charts reporting the NRI (net rising index) for the particular subject where available. The NRI is a diffusion index calculated as the percent of those reporting rising minus the percent of those reporting falling. Survey respondents are NABE members who work for private sector companies and industry trade associations. Both were classified into industry NAICS codes and then grouped into four sectors as follows: goods producing; transportation, utilities, information, communications (TUIC); finance, insurance, real estate (FIRE); and services.

HIGHLIGHTS

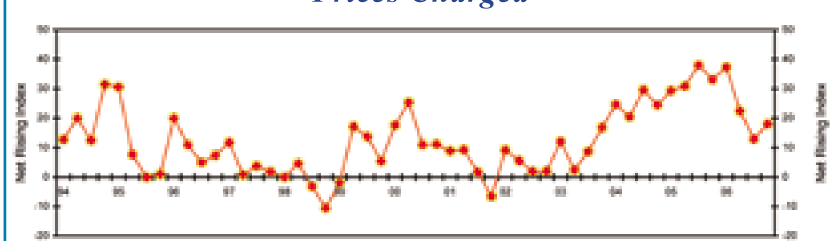
- Based on a quarterly survey of 124 NABE members, the demand for goods and services at respondents' firms increased from the third quarter to the fourth. This was the first increase in the index since the fourth quarter of 2005.

Industry Demand



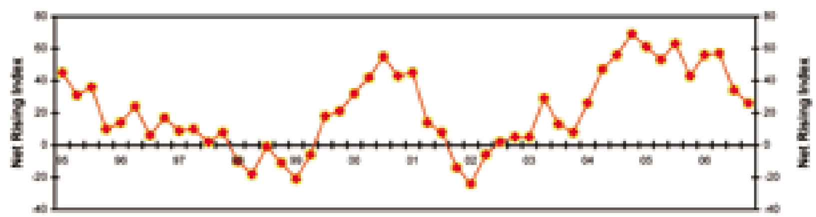
- Pricing pressures increased modestly but remain low by recent historical standards. Expectations for future prices rebounded as well but also remain relatively low.

Prices Charged



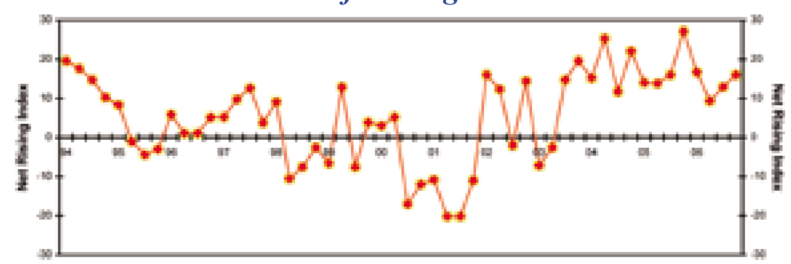
- Compared to recent quarters, far fewer respondents reported rising materials costs and far more reported unchanged costs. Looking ahead one quarter, fewer respondents now expect non-labor costs to increase than in past quarters, while nearly half expect no change. But the percentage that reported higher wages and salaries last quarter increased.

Material Costs



• Industry profit margins improved for a 14th consecutive quarter, helped by a turnaround in the goods-producing sector and another strong performance in the services sector.

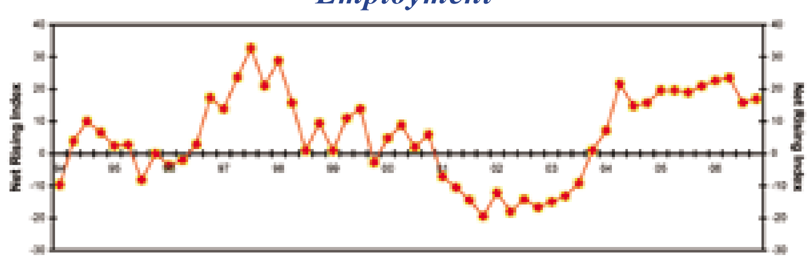
Profit Margins



• Reports of shortages of skilled labor increased, reversing declines in the three previous quarters. Very few respondents reported shortages of raw materials, intermediate inputs, or capital goods.

• Employment growth at respondents' firms in the fourth quarter was similar to that in the third quarter, with 29% of firms reporting rising employment and 12%, falling employment. For the next six months, more respondents expect to increase employment than in the last two surveys, with nearly half the services firms saying they expect to add employees. But goods-producing firms cut jobs last quarter and expect to do so again.

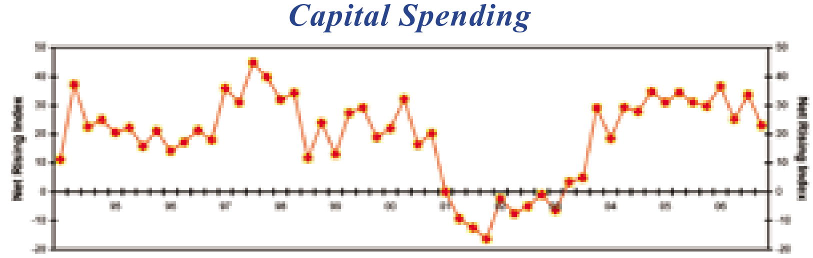
Employment



• Roughly two-thirds of NABE panelists said they expect gross domestic product to grow at an annual rate of between 2% and 3% in the second half of 2006. But 26% of respondents expect second-half growth to fall short of 2%. Only 8% of respondents expect GDP growth to exceed 3%.

• Capital spending growth was reported to be rising at less than one-third of survey respondents' firms, the smallest share in three years. Respondents also scaled back their capital spending plans for the coming year, though they still expect to increase capital spending on balance. Forecasts of spending on computers and communications equipment slowed only slightly.

Capital Spending



• About one-third of panelists said they expect a further substantial housing slowdown in the next six months, while about one-half expect a slowdown of 5% or less. Half the respondents expect little or no impact on their business from the slowdown, while 37% do expect their business to be affected.

• Whether business performance in the fourth quarter was above or below plan, domestic markets conditions were the pivotal factor, outweighing costs and interest rates. International conditions helped companies exceed plan, but were not a major hindrance for under-performers.

The survey originated in 1982 and has been conducted quarterly for 25 years. The survey is one of three taken by NABE; the others are the quarterly NABE Outlook and the semiannual NABE Economic Policy Survey. Founded in 1959, the National Association for Business Economics is the professional association for people who use economics in their work. Ken Simonson, Associated General Contractors of America; Pat Casey, TTX Company; Gene Huang, FedEx Corporation; and Sara Johnson, Global Insight, conducted the analysis for this report.

For the complete report, go to the NABE website at www.nabe.com; and for the latest release of the Material Handling Equipment Manufacturing Forecast, I encourage you to visit www.mhia.org.

MHind Twister Solution

To make it in nineteen minutes, the two slowest must cross together. However, you don't want to wait for one of the slowest vehicles to bring the flashlight back to the others, so it is best to send the two fastest first, then have one of them return with the flashlight so the two slowest can go to Building A. Then the remaining fast vehicle can take the flashlight back to the other fast vehicle so they can both return prior to the closing of the door.

One specific solution: Two fastest vehicles cross together in three minutes. The fastest vehicle returns in two minutes and gives the flashlight to the two slowest vehicles. They cross in eight minutes and hand the flashlight to the other fast vehicle. Three minutes later, it arrives to escort the other fast vehicle. In three minutes, they have returned to Building A. Nineteen minutes.

Optimizing Pallet Sizes within the Global Supply Chain:

Connecting Northeast Asia and North America

By Dong-Sun Shin, Marshall S. White, and Jongkoo Han

As recognition of the important relationship between pallet size selection and supply chain optimization continues to grow, interest in standardizing pallet sizes is also increasing. Optimizing pallet size selection is an important variable that can lead to a reduction of supply chain costs and an increase in productivity—especially across international boundaries. Decisions regarding pallet size selection within an international supply chain must emphasize the size of products (packed in boxes), the compatibility of different unit load handling and shipping equipment, and the reusability of pallets in the destination country.

In a recent cooperative study by Virginia Tech's Center for Unit Load Design and the Korean Transportation Institute a model was developed to predict and compare the costs of using different size pallets in the supply chain between North East Asia and North America. The focus of this work centers on a supply chain model whereby only the physical distribution component of the supply chain is considered.

For the study, the efficiency of three different but common pallet sizes was studied. These included the 1200 x 1000mm pallet used commonly throughout the world, the 1100 x 1100mm pallet used in Japan and Korea, and the 1219 x 1016mm (48" x 40") pallet used in USA and Canada. While it is acknowledged that, in China, a large volume of merchandise is floor loaded, it is also the case that more and more product is being palletized.

Northeast Asia includes China, Japan, and Korea. North America includes both the U.S. and Canada. Because trade between North America and Northeast Asia is expanding rapidly, the economics of both regions have been significantly affected. A consequence of this increase in trade has been an increase in supply chain costs caused by inefficiencies in material handling between the two regions. The palletization of packaged goods is a crucial component of these costs and optimum pallet size selection will help streamline costs and enhance productivity for both regions.

Factors influencing global supply chain costs and pallet size choice

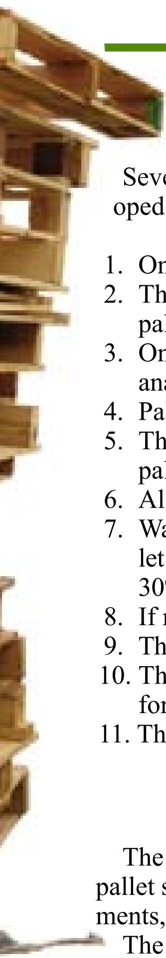
The decision regarding the choice of pallet size and resulting supply chain efficiency is based on the effect of pallet size on pallet cost, transportation cost, and warehousing cost. These costs will depend on pallet disposal costs, pallet load carrying capacities, pallet deck surface utilization, reusability of pallets and the revenue they may generate, floor utilization of freight containers, and the compatibility of warehouse racks.

This research investigated the relationship between global supply chain costs and pallet sizes. Table 1 illustrates the supply chain cost configuration used to examine each pallet size. Some factors such as pallet purchase price, pallet disposal cost, pallet durability, the cost of shipping a freight container, and order picking cost do not vary among pallet sizes.

Table 1: Costs Associated with Pallet Use in an International Supply Chain

RELEVANT COSTS		INFLUENCED BY:
Pallet Costs	Pallet Purchase Cost	• Pallet purchase price • Loading weight capacity of pallet
	Disposal Cost	• Disposal rate • Reusable pallet share • Loading weight of pallet
	Revenue of Reusable Pallet*	• Reusable pallet share • Pallet purchase price • Loading weight of pallet • Pallet durability in trips
Transport Costs		• Inland transport cost • Terminal handling charge • Sea transport charge • Maximum loading weight of freight container • Floor utilization of freight container
Warehousing Costs		• Reusable pallet share • Repalletizing cost per metric ton • Storage cost per metric ton • Picking order cost per metric ton

**This revenue would effectively reduce pallet cost.*



Assumptions of the Cost Model

Several simplifying assumptions are included in the cost model that was developed during this research.

1. Only three transportation modes are considered: over the road, rail, and sea.
2. The weight of product in a freight container depends on floor utilization by the pallets.
3. One analysis will assume 100% utilization of pallet deck surface area . A second analysis will assume less than 100% utilization.
4. Pallets used in this model are wooden pallets.
5. The reusable rate of the pallet size is proportional to the production rate of the pallet in the destination country.
6. All of the warehouse storage is assumed to be in pallet racks.
7. Warehouse rack fit for a pallet size is proportional to the production rate of the pallet in the country. For example, production rates of 48"x40" pallets in the US are 30%. Therefore, it is assumed that 30% of racking is suitable for this pallet size.
8. If racking is not suitable for the pallet size, repalletizing is assumed.
9. The storage and order-picking activities in warehouses are unrelated to pallet sizes.
10. The model is a two dimensional solution to a tree dimensional problem. Therefore the height of unit loads is ignored.
11. The time required to repalletize is 0.25 hours per metric ton of product.

Summary of Results

The results of this study indicate that the most cost effective pallet to use is the pallet size of the receiving country—the 1219 x 1016mm pallet for eastbound shipments, and the 1100 x 1100mm pallet for westbound.

The results also demonstrate 1) the importance of the reusability of pallets on operational conflicts between different pallets sizes and warehouse equipment at the destination, and 2) the importance of the relative fit of packaged product to the pallet decks on international supply chain costs and decision making regarding pallet size. Although one pallet size may have the best performance when loading of pallets into the container, or when loading products onto pallets, it may be not the lowest cost pallet. The various supply chain channels presented here demonstrate the strength of using a simulation approach when selecting pallet size.

The use of the cost model to evaluate global supply chains also provides insight into the factors that most affect pallet size decisions. While the examples presented here are reflective of supply chains between Northeast Asia and North America, international trade in other regions may produce different results using this cost model. Therefore, this simulation approach can be used to simulate other supply chains.

The absolute cost of using a particular pallet size has not been the focus in this research. The emphasis has been on proposing a cost model and assessing the relative cost of supply chains using different pallet sizes.

The effect of pallet sizes on supply chain costs between two countries is significant. This cost model now provides a unifying framework for assessing the global supply chain costs, and enables an understanding of factors that influence the pallet size decision. Most importantly, this research shows that, with proper pallet size selection, reductions in physical distribution costs of between 5 and 6 percent can be achieved for products shipped between Northeast Asia and North America. For more information, please contact Dr. Marshall White at the Virginia Tech Center for Unit Load Design.

About the Authors
Dr. Shin is a Research Fellow, Center for Logistic Transportation Economics and Northeast Studies, The Korea Transportation Institute, Goyang-si, Korea. Dr. White and Dr. Han are respectively Professor and Assistant Professor, Center for Unit Load Design, Department of Wood Science and Forest Products, Virginia Tech, Blacksburg, Virginia, USA.

Pallet Standards for the Global Supply Chain

By Ray Niemeyer
Director of Knowledge Management
Material Handling Industry of America

In the Spring of 2006, the American Society of Mechanical Engineers (ASME) officially transferred management of the *MH1 Standard* document to the Material Handling Industry of America (MHIA). MH1 is the U.S. pallet standard by which the industry follows for unit-load pallet design and usage.

The *MH1-2005 Standard on Pallets, Slip Sheets and Other Bases for Unit-Loads* is at the center of the global supply chain, providing valuable information about domestic and international unit-load pallet sizes and detailed performance specifications for automated unit-load material handling equipment. It includes industry terminology covering pallets and related structures, protocol for measuring pallet quality and testing procedures, as well as U.S. Military pallet specifications.

As pallets can affect every aspect of the supply chain, from product transfer to equipment integration with conveyors, pallet racks, fork trucks, and palletizing machines, the understanding and use of the *MH1 Standard* can significantly impact a company's pallet choice and ultimately, its bottom line.

The *MH1 Standard* can be purchased online from the MHIA Book Store at www.mhia.org/bookstore or by contacting Alice Bumgardner at 800-345-1815/ abumgardner@mhia.org. Orders received before May 1, 2007 will receive the discounted price of $40.00 for MHIA members ($65.00 for non-members) plus shipping and handling (S&H). After that date, the price will be $95.00 plus S&H..

For more information about the *MH1 Standard*, contact Ray Niemeyer at 704-676-1190 or rniemeyer@mhia.org.

MHIA Hosts Most Successful ProMat® In Event History

ProMat 2007 lived up to its reputation as the premier North American material handling & logistics trade show and conference when it opened on January 8. The four-day event was the largest showcase in North America of the equipment, systems and technologies that offer solutions for the global supply chain. In addition, an extensive educational conference focused on improving productivity in the areas of manufacturing, distribution and warehousing and logistics.

Both U.S. and international attendees registered in record numbers for ProMat 2007. Attendance at ProMat 2007 grew three percent to over 35,000. Attendance represented key decision makers in virtually all manufacturing, logistics, distribution and the supply chain. Reflecting the growing global nature of the event, attendees from outside the United States at this year's ProMat represented 100 countries and six continents. They were welcomed by ProMat's International Visitors Center.

"Visitors and exhibitors agree that ProMat 2007 was a tremendous success for them. Attendees came to ProMat 2007 not just looking for supply chain solutions, but ready to buy and implement them. And exhibitors came armed with their best solutions the industry has to offer," said John Nofsinger, CEO of MHIA. According to Nofsinger, "one highlight of the show is its diversity, from the diversity of the equipment and technology solutions on the show floor to the diversity of the companies attending and countries represented and the unique challenges each faces to make their supply chains work more productively and profitability."

The Show featured 736 exhibitors, a 12% growth over ProMat 2005. Total Show size was 300,000 net square feet representing the largest ProMat ever. Exhibitors were grouped by category in five "show-within-a-show" Solution Centers:

- The Center for Equipment, Components and Manufacturing Solutions
- The Center for Fulfillment and Delivery
- The Center for Information Technology Solutions
- The Center for Assembly Logistics and Support Solutions
- The Knowledge Center

An educational conference accompanied the ProMat exhibition. Included in the conference was a Keynote Forum featuring industry leaders who discussed their journeys to becoming lean leaders, as well as complimentary show floor educational sessions on a variety of topics. The Keynote Forum attendance throughout the morning topped 500. In addition, more than 5,300 visitors sat in on 69 show floor seminars at ProMat 2007.

Complete information on the event and exhibitors can be found online at **www.ProMatShow.com**. ProMat 2009 will be held at McCormick Place South in 2009.

RoHS, WEEE, REACH and EUP...or... Waste:

The Global Regulation Alphabet Soup

By Dr. Michael Ogle
Sr. Director of Technical & Engineering Services
Material Handling Industry of America

Material Handling and Logistics is defined by the Material Handling Industry of America (MHIA) as, "The movement, storage, control and protection of materials and products throughout the process of their manufacture, distribution, consumption and disposal." The emphasis of this *Technology Watch* column is on the last word, disposal.

Global regulations are putting greater emphasis on the disposal phase of the lifecycle both to reduce waste volume and to reduce the types of waste. These regulations have a clear impact on sourcing and the accompanying processes and paperwork that you may need to put in place to make sure you are compliant when your products or components cross borders.

Global Trade, the EU and California

Increased global trade of end products and multi-country sourcing of product components has caused a clear decrease in the differences in regulations across borders. Since differences in regulations tend to erect barriers to trade, multi-national companies have been successful in lobbying for less local regulation and more adoption of international standards and regulations, even when they might cause some amount of pain in the form of additional short term time and expense.

Regulations in the European Union (EU) are having the greatest affect, with the strongest impact initially on electronic products, to be followed by all products in the waste stream. As California tends to be the early squeaky wheel adopter of stricter environmental and disposal regulation in the U.S., the EU is the same early adopter and influence on international policy. It is worth keeping an eye on each of them to better understand the issues and regulations that may be impacting your business in the future.

Alphabet Soup of Waste

There are many regulations focusing on the reduction of waste and the types of waste determined to have the greatest affect on the environment. This article provides an overview of four newer regulations ("regulations" may be used interchangeably with "directives", the typical EU word, for the sake of this article).

Restriction of Hazardous Substances (RoHS)

RoHS seeks to greatly decrease the use of the six hazardous substances shown below by limiting their content as a percentage of end products:

Lead (Pb)	<0.1%
Mercury (Hg)	<0.1%
Hexavalent Chromium (CrVI)	<0.1%
Polybrominated Biphenyls (PBBs	<0.1%
Polybrominated Diphenyl Ethers (PBDEs)	<0.1%
Cadmium (Cd)	<0.01%

Initially adopted by the EU in July 2006 and applied to electronic equipment, RoHS is being adopted in whole or in part by China, Japan, and other countries, as well as the states of California and Maine. Even U.S. manufacturers that don't export to affected countries may find that some components may no longer be available due to redesign or may find that their own components are being used in other products that are subject to the regulation.

Companies can currently self-certify using any test and report compliance on a form of their choosing. Expect that some standardization of test methods, forms and labeling/marking will be forthcoming. EU authorities plan to perform random spot checks on products to determine compliance. If non-compliant, penalties include prevention of sale of equipment along with fines and even possible imprisonment. Full U.S. adoption and proposed compliance measures are not yet clear.

Waste of Electrical and Electronic Equipment (WEEE)

WEEE focuses directly on the responsibility of companies to plan for the collection and proper disposal of their products. Product design will have a greater focus on the ability to disassemble, reuse, recycle, and refurbish products and components. Additional documentation and labeling must make it clear how businesses and consumers can make arrangements to properly dispose of products. Already, many companies have established stand-alone methods for managing the waste stream or they have joined consortia of other companies with like products to share the cost. The alternative is to depend on national policies that collect fees applied to all products.

Registration, Evaluation, & Authorization of Chemicals (REACH)

REACH seeks to increase the amount of information available to safely use nearly 30,000 chemicals. In June 2007, the EU REACH directive will establish an agency that will require registration of chemical substances that enter the EU. Registration and enforcement will begin in June 2008 for some classes of chemicals and will broaden the substances covered through a phased plan. Companies will be required to publish testing data regarding properties and effects, then share it with other companies (for a fee) to eliminate duplicate testing. The most dangerous chemicals will be placed into a category that requires authorization for use.

Energy-Using Products (EUP)

In July 2007, another EU directive establishes a framework for the environmentally-friendly design of energy-using products. EUP seeks to emphasize the efficient use of energy by requiring analysis and labeling of the expected energy used by a product throughout its lifetime as well as the energy that was required to produce the product. The initial primary target is high energy use products that are produced in high volumes (e.g. water heaters, lighting, refrigerators). Similar ratings have been placed on U.S. appliances for decades, but no attempt has been made to quantify the energy that went into producing the product.

Resources

- RoHS and WEEE News: www.rohs-news.com
- The WEEE Man – Representing a person's average lifetime waste at current rates: http://www.weeeman.org/
- REACH In Brief (EU Publication, Dec. 2006): http://ec.europa.eu/environment/chemicals/reach/reach_in_brief04_09_15.pdf
- EU Page on Energy Using Products: http://ec.europa.eu/enterprise/eco_design/index_en.htm

ProMat 2007 Education Recap – Learning, Growing, Improving

By Robin Moody, Manager of Conference Programs
Material Handling Industry of America

After many months of planning, ProMat's Weekend Workshops, Keynote Forum and On-Floor Theater Seminars, which offered attendees many avenues of education on and off the show floor, were delivered successfully by leading industry experts.

Weekend Workshops

Both the *Basics of Material Handling* and *Lean Material Handling Work Cells* Workshops were developed by the professional engineers and consultants of Richard Muther & Associates. Conducted by H. Lee Hales, President, all of the techniques presented were practical, easily learned, and designed for immediate application.

Keynote Forum

Creating a platform featuring success stories that might encourage ProMat attendees to approach their own businesses in a similar fashion was no easy task. It began with a general theme and included a distinguished panel of executive keynoters, each speaking for about 30 minutes on their experiences. It ended with nearly 500 attendees enjoying *Three Roads, One Destination: The Journey to Becoming a World Class Company*. On Tuesday morning, prior to the show opening, CJ Buck, President and CEO of Buck Knives, Herb Spivak, Executive Vice President for New Balance Athletic Shoe, and Dan Ariens, President and CEO of the Ariens Company shared how they successfully streamlined their manufacturing and supply chain operations while keeping their manufacturing based in the United States. Who knew that hunting knives, snow blowers and running shoes had so much in common? The audience then participated in a question and answer session conducted by an Editorial Roundtable consisting of Gary Forger (*Modern Materials Handling*), David Drickhamer (*Material Handling Management*) and Mitch MacDonald (*DC Velocity*). Visit http://www.promatshow.com/attendees/sessionDetail.aspx?id=96 for free downloads of the keynote presentations.

2007 Knowledge Center: An On-Floor Education Experience

Sponsored and conducted by ProMat 2007 exhibitors, the Monday, Tuesday and Wednesday sessions in the ProMat 2007 Knowledge Center featured industry-focused, non-commercial presentations that highlighted principles, application guidelines, best practices and real-world case studies in an on-floor theater environment. There have been over 26,000 session "seats" occupied since the inception of this popular format was first unveiled in 2002.

For ProMat 2007, there was a sixth theater added and the time slots were expanded to 45 minutes each. At the request of many sponsors, speakers and attendees, seating availability increased from 100 to 120 seats per theater. The 16 sessions shown below all had attendance exceeding 100 seats. All-in-all, over 5,300 session seats were tallied over the course of the three-day seminar portion of the ProMat event.

ProMat Session Presentations Now On-line

If you didn't get to occupy a "seat" – not to worry, these sessions are available for free download to registered show attendees. Visit the website at http://www.promatshow.com/attendees/sessions.aspx,

ProMat 2007 Seminar Title	Sponsor	Attendance
Applying Best Practices Benchmarking in Warehouse Operations Improvement	CIBER, Inc.	206
Warehouse Performance Measurement: A Step-by-Step Guide	ESYNC®	197
"Outbound Optimization" - Productivity Gains Through Dynamic Labor Balancing and Wave-less Picking	Fortna, Inc.	189
Using R.O.I. to Get Project Funding	FastPic Systems	170
15 Practical Ideas to Fine-Tune Your Operations	Fortna, Inc.	168
Start Up of a World Class DC	St. Onge Co.	155
Dynamic Distribution: An Optimized Warehouse Means Improved Efficiency & Lower Costs	Manhattan Associates	154
Ten Critical, Yet Often Overlooked Factors in High-Performance Distribution Operations	Sedlak	148
The Science and Economics of Successful DC Design	Peach State Integrated Technologies Inc.	148
Slotting: It's not what you have; it's where you put it!	FastPic Systems	147
6 Months: Up To 600% Warehouse Performance Improvement	Remstar International, Inc.	145
5 Solid Ways to Better Utilize Your Space and Increase Your Productivity	Remstar International, Inc.	134
RFID Shipping Pilot: What We Learned	SPEDE Technologies	134
Driving Warehouse Performance with Voice-Directed Distribution	Vocollect	123
Pallet Racks - Considerations for Selecting, Installing, Maintaining and Operating	Rack Manufacturers Institute (RMI)	117
Little Known Secrets of WMS	HighJump Software, a 3M Company	102

search for the seminar by date or topic and click on the seminar you wish to download. Once on the seminar page, scroll down to access the presentation's pdf link.

Seminar Attendee Survey

A post-show survey was conducted with over 500 seminar attendees to assist MHIA in future planning. Between 69 and 72 percent indicated that the on-floor theater concept, quality of the presentations, what they learned, and the overall value received was "good," if not "better than they expected." Most of what attendees heard, they liked. Input about what attendees didn't hear (or didn't get a chance to hear) but would have liked to hear will help us assist our seminar sponsors in preparation for NA 2008.

Topics and subjects such as benchmarking, lean manufacturing, manufacturing plant set up, integrated planning of the supply chain, hydrogen fuel cells, general conveyor knowledge, what's new in pallets, warehouse management, resources available for support on design, concept, installation and the transfer of technology among firms operating in different continents are just a few things that attendees want to learn more about.

NA 2008 Seminars Sponsorship

The on-floor theater seminar program for NA 2008 is filling up fast. Just like ProMat 2007, seminars will be conducted in specially designed theaters constructed within the NA 2008 Knowledge Center on the show floor. Sponsorship of seminars requires that the sponsor be an MHIA member and a NA 2008 exhibitor and that an application be completed and forwarded to MHIA. The application along with complete details can be found at http://www.NAshow.com/exhibitors/sponsor.aspx.

If you have any questions on the ProMat 2007 or NA 2008 educational programs, contact Robin Moody, Manager of Conference Programs, by phone 800/345-1815, 704/676-1190 or via e-mail rmoody@mhia.org.

NA 2008 Kicks Off with Record-Breaking Exhibit Spacedraw

Over 250 exhibitors reserve over 125,000 net square feet

More than 250 exhibitors selected over 125,000 net square feet of exhibit space at the NA 2008 Exhibit Spacedraw. The NA 2008 Spacedraw was held on January 10, 2007 during ProMat 2007 in Chicago, IL and launches a campaign that extends into early 2008. "It was a record-breaking spacedraw with 250 exhibitors claiming more than 90% the total size of the NA 2006 event with over one year to go," according to Tom Carbott, Vice President of Sales for Material Handling Industry of America (MHIA). Plans to expand the NA 2008 show floor to accommodate demand are already under way, according to Carbott.

NA 2008, the Material Handling & Logistics Show and Conference, is sponsored by The Material Handling Industry of America (MHIA). The show, held at the I-X Center in Cleveland, OH, April 21-24, 2008, focuses on supply chain solutions provided by material handling and logistics. The four-day event will be the most comprehensive showcase of material handling and logistics equipment, systems and technologies in the United States in 2008.

The show is designed to offer productivity solutions and information by showcasing the products and services of over 450 material handling and logistics providers. To make it easier for attendees to find the solutions they need, the NA show floor is divided into five "show-within-a-show" solution centers: Equipment and components for manufacturing solutions, fulfillment and delivery solutions, information technology (IT) solutions and assembly logistics & support, and a knowledge center. The Knowledge Center is the location of the educational conference that runs concurrently with the show and focuses on improving supply chain productivity.

Included in the conference is a complimentary keynote, as well as on-floor education seminar theaters. This format allows attendees to learn about various supply solutions in the educational sessions and then actually see the equipment, systems and services that can implement those solutions.

Over 450 exhibitors from industry, commerce and government will display their productivity solutions on the 150,000 net square foot show floor at NA 2008. Industry professionals from the United States, Canada, Mexico and over 80 countries around the world are expected to attend. They will attend to find productivity solutions through material handling for their manufacturing, distribution and supply chain operations.

For free show registration and complete information on the show and educational conference visit www.NAShow.com.

NA08
The Material Handling & Logistics
Show & Conference
I-X Center • Cleveland, OH • April 21-24, 2008
www.NAshow.com

MHMS

MHMS and MHIA Reaching Out to Public School Programs

Material Handling & Management Society (MHMS) and Material Handling Industry of America (MHIA) have extended their support to warehousing and logistics programs in the public schools of Chicago and Miami-Dade County. Both school systems have programs at the high school level for students interested in material handling, warehousing, transportation and logistics. While the Chicagoland chapter of MHMS and staff at the Miami-Dade-County Technical Prep determined a strong interest in these programs, both school systems required additional support for educational resources and expertise in the field to help these programs become more successful.

Enter MHMS and MHIA. MHMS members are practitioners and integrators of material handling equipment and systems. MHIA produces and offers outstanding educational material and information about all aspects of the material handling and logistics industry. Students and teachers need these resources and MHMS and MHIA are willing and able to contribute. It's a win-win situation for everyone. For more information on this initiative, contact Allan Howie at 704-676-1190/800-345-1815 or via email at ahowie@mhia.org.

Tap into the Wisdom of ProMat 2007 Educational Sessions!

You are in charge of providing a program for your local MHMS chapter's quarterly meeting. Maybe your company is seeking information on a various types of equipment or applied technologies? This situation is not unusual. The logical question now becomes, where might I find a resource for this information?

The answer is as close as the MHIA web site and the "ProMat 2007 Education Seminar Downloads" section of the ProMatShow.com website (http://www.promatshow.com/attendees/sessions.aspx).

Sessions were sponsored by ProMat 2007 Exhibitors who are industry experts and practitioners. There were numerous PowerPoint presentations given in the Knowledge Center on a variety of topics that are now available for free download in PDF format, in case you missed them at the Show! Each presentation has information on how to contact these industry experts directly.

For more information about joining MHMS, please visit our website at www.mhia.org/PS/PS_MHMS_Home.cfm or contact Allan Howie at ahowie@mhia.org.

MHMS Chapter Presidents

Boston: Bob Liptrot, 508/740-6660
Chicagoland: Austin Power, 847/535-2058
Indianapolis: Gregg Durham, 317/575-9992
Los Angeles: Kathleen Prunty, 714/372-3299
Ontario: Chuck Leon, 416/637-5286

How We Improve

100 Years of Industrial Management and Engineering

By Dr. Richard Ward
Executive Vice President, Professional Development
Material Handling Industry of America

October 19-20, 2006 marked a celebration held in Kansas City, Missouri for the 50th anniversary of Richard Muther and Associates (RMA). I was there, as was Dick Muther, founder of RMA in 1956. At 93 years young Dick held court lecturing on his passion for planning, and in particular "Planning by Design."

But that's not all that took place. Lee Hales, the current Richard Muther & Associates President, had researched and prepared a detailed timeline on the history of industrial improvement. Given that the material handling and logistics industry is all about improvement, the product of Lee's research is worth sharing. The following, with very minor adaptation does just that. Readers interested in a downloading a PDF copy of the timeline (a wonderful graphic portrayal) may go to http://www.hpcinc.com/rma/rma.asp?TopicID=8&Name=50thYear. In addition, the proceedings of a panel discussion conducted on October 19th are also available. Now, on to How We Improve.

"Industrial engineering is the constant search for improvements – in facilities and operations, in logistics, information systems, and in business practices. As seekers of better methods and ways of working, Industrial Engineers (IEs) are also keenly interested in how improvements are made. Perhaps best known for measuring performance, IEs also seek to quantify results. To mark its 50th year in the business of improvement, Richard Muther & Associates (RMA) created a timeline to capture actual improvements in industry, methods of improving, and their results in terms of global human conditions. Ultimately, that is why we improve!

The 50-year history of RMA coincides with perhaps the most dramatic period of improvement in human history. World and per capita output are rising. So are life expectancy and nutrition, enabled by improved production and distribution of food, medicine, and hygiene. Literacy rises because industrialization and productivity eventually enable children to trade the workplace for school. Industrial improvement brings nations and cultures together through increased trade, mobility and travel. By exposing all to the fruits of better management and engineering, industrial improvement leads to greater personal and political freedom, and to private ownership of capital. Thus, striving for greater output leads mankind beyond despots and commissars, and increasingly to freedom and private enterprise.

Upon inspection, the origins of most late 20th century improvements are found in the first half of the century or even before. Thus, to provide context for the past 50 years, our timeline spans 100 years. Beginning with Taylorism, then Fordism and the early focus on improved factory productivity, industrial engineering matured in the 1930s with a new focus on the improvement process itself. In the 1950s, computers brought us better materials management and later, many other improvements in business processes. Enter better transportation in the 1960s and 70s, and we observe a long period of improved logistics – beyond the walls of the factory and warehouse. Along the way, some companies have been forced to re-learn the basics from Japan, or to reestablish product and process quality. But industry leaders keep moving, leveraging factory excellence and logistical improvements into high performance supply chains with integrated information systems. Once achieved, new business processes and even new business models become possible, allowing still higher productivity and utilization of assets.

In the early 20th century, productivity and prosperity were found in factory excellence. In the 21st century, excellent factories are still the bedrock of industrial performance. But productivity, prosperity, and even survival will depend increasingly upon excellence in supply chain management.

This brings us to the role of industrial engineers. Most of the notable improvements of the 20th century were not made by industrial engineers. They were made by inventors, entrepreneurs, managers, chemists, mechanical and electrical engineers, researchers, software developers, computer scientists, supervisors, workers... The role of industrial engineers has been to apply, adapt and improve. Our contribution has been to integrate available improvements, speed up their adoption, and assure their success. Performing these tasks better and faster is how we improve."

APMHC

Association of Professional Material Handling Consultants

Measurements Beget Measurements Beget Measurements

Patrick S. Sedlak

You can't manage what you can't measure. Words to the wise, especially if you manage a distribution center. I speak from experience, having led a team in accurately measuring all the details of daily tasks before implementing a labor management program for a large food distributor. The company now anticipates an increase in productivity of over 20% in less than a year. For a business this size, that translates into several million dollars in savings.

While effectively managing labor is the easiest way to reduce costs and increase productivity, it's nonetheless becoming more and more complex. Recently both L'Oreal (cosmetics giant) and DEMCO (national library and school products distributor) implemented a labor management program in their distribution centers.

Why? For the same reasons as other companies. They know they can:

- Control labor costs, reducing the cost-to-sales ratio
- Have a management tool that allows resource modifications to operations and tasks on a real-time basis
- Plan resources more effectively
- Bolster safety, efficiency and accuracy
- Maximize individual productivity and accountability potential

Labor management software or full program?

Imagine a blank computer spreadsheet with hidden formulas in each cell. You enter your company-specific operations information into cells, press a few buttons and the program gives you answers. Now imagine how much more helpful your answers will be if you analyze and improve the operations providing the information *before* entering it into the computer spreadsheet.

The second image is a full labor management program implementation. First, preferred methods and equipment speeds, occurrences, personal fatigue delay and other factors are measured. Keep in mind that every single physical motion is a measurable work element. Combined into what is required for tasks, they provide data about precise times required for the tasks, referred to as goal times.

The objective here is to establish guidelines for doing a job right—safely, efficiently and accurately. This is the information entered into the software designed specifically for labor management. The software program allows real-time visibility into the amount of work to be accomplished and resources needed in any area of the operation at any given time of the day as often as the manager wants to look.

An added bonus for companies with union labor, is it can provide clear documented expectations which are fair to labor and management. Union or not, employees receive clear evaluations of their productivity. Management doesn't have to rely on subjective judgment.

What's working?

When we apply industrial engineering techniques to develop standards, validate them and load them into labor management software, companies feel they've gotten the complete solution. Several software packages are available.

An industry expert estimates $6 billion worth of wasted productivity is "left on the table each year" in the U.S. Perhaps if more businesses implement a full labor management program, we'll see that figure shrink.

CALENDAR OF EVENTS

INDUSTRY EVENTS

2007 MHIA Spring Meeting
April 14-17, 2007
Hilton Charlotte Center City
Charlotte, NC

2007 MHIA Annual Meeting
September 29 - October 3, 2007
Hyatt Regency Savannah
Savannah, GA

2008 MHIA Spring Meeting
March 10-12, 2008
Hilton Charlotte Center City
Charlotte, NC

NA 2008
April 21-24, 2008
I-X Center
Cleveland, OH
www.NAshow.com

COOPERATIVE EVENTS

MHIA cooperates with event organizers in other parts of the world to present members with the opportunity to create important partnerships. For more information, including exhibitor/attendee details, contact Cathy Moose at cmoose@mhia.org.

Movint and Expologistica 2007
May 9-12, 2007
Bologna, Italy

SIL 2007
June 5-8, 2007
Barcelona, Spain

EXPO Logistica 2007
July 4-7, 2007
Mexico City, Mexico

SALAO de Logistica
August 7-10, 2007
São Paulo, Brazil

Transport-a-Logistica
October 1-5, 2007
Bravo, Czech Republic

CeMat Asia 2007
October 9-12, 2007
Shanghai, China

CeMat India 2007
December 4-7, 2007
Bangalore, India

(Continued from page 2)

were still struggling to meet the greater demand. Although the industry is starting to see some improvement in capacity, it continues to have a severe shortage of drivers and, therefore, needs to make the most of its equipment to realize any gain.

One trucking company trying to maximize its equipment is Schneider Logistics. It has over 48,000 trailers and recently installed GPS positioning and wireless communications technology to determine a trailer's location and load status, regardless of whether or not the trailer is hooked to a tractor.

Another innovation we are seeing is Triple Tractor trailers, tractors that have three trailers attached to them. They can be as long as ten stories and potentially carry up to 115 tons of weight. Each state has different rules and regulations pertaining to these Triple Tractor Trailers, but they are a viable alternative in many instances.

The Shipping Industry is also developing new freighters to handle growing demand. Typically an ocean freighter can handle 6,000 containers. Samsung Heavy Industries has built a freighter that can handle 8,000 containers and has recently taken orders for freighters that can handle 9,500 containers. To give you a rough idea of how long these ships are, one freighter would be 3.7 football fields long. These larger freighters are impacting not only the ports that receive them, but the transportation and logistics infrastructure that must accommodate and distribute these larger loads to their final destination once they arrive.

Advances within Systems

Countless companies are making investments into their IT information structure. While justifying the purchase of a new IT system is a concern for some companies, smart companies realize the initial investment will allow them to reap greater rewards down the road. We are an information-driven society. By accessing and analyzing information faster, profitable decisions can be made, thus positively impacting the bottom line.

Clearly, the Enterprise Resource Planning (ERP) landscape is changing. Consolidation is occurring within the industry. The two main players are SAP and Oracle (Oracle purchased PeopleSoft and JD Edwards). There are other Tier Two systems out there that are emerging as well. Microsoft, for example, has been making forays into the ERP with Microsoft Dynamics and Great Plains.

Some software companies have constructed systems that gather public information on trends or opportunities which a company might be able to take advantage of within its industry. One such company using public information is an import data source website; Zepol. Its software allows Zepol to analyze imports from over 200 countries and can supply information such as the suppliers competitors are using, new potential customers, legal research, and brand protection. Many organizations are utilizing resources such as this to gain a competitive edge.

Conclusion

The one constant in life is change. The supply chain and solutions for it are changing at a rapid pace. Organizations must constantly evaluate what they do and how they do it. Advances and changes need to be embraced to understand how they impact your company and how they might improve quality and profitability.

About the Author

Patrick Penfield teaches Supply Chain Management and is the Director of Supply Chain Executive Management Programs at the Whitman School of Management, Syracuse University. He can be reached at 315-443-3428 or via e-mail at Pcpenfie@syr.edu.

Footnotes

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