AS THE PMI TURNS: A TOOL FOR THE SUPPLY CHAIN MANAGER

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SUMMARY

Supply chain managers use the PMI, an index of business activity and proxy for the general business cycle, to obtain valuable information important to strategic managerial planning. This research explores a methodology to provide managerial insight into the general business cycle by tracking and forecasting cycle turns in the PMI. A regression model is developed based on inherent cycles in the PMI between 12 and 65 months to forecast turning points for the index and anticipate changes in the business cycle, which is superior to the more commonly used Box-Jenkins forecasting technique. Strategic planning using this knowledge allows management to optimally adjust long-term levels of production, inventory, employment and orders as necessary. (CONTINUED NEXT COLUMN)

The PMI, formerly the Purchasing Managers' Index, is described on www.ism.ws, the home page of the Institute for Supply Management™ (ISM). According to this Web site, the PMI has earned immense recognition from economists and forecasters because of the report's early and accurate portrayal of the health of the manufacturing sector of the economy. Studies have concluded that the PMI can be a useful forecasting tool in understanding changes in U.S. economic activity and should be considered in making optimal strategic decisions (Kauffman 1999). Traditionally, supply chain managers have tended to rely substantially on judgment and manually calculated forecasts and less on sophisticated computer-generated forecasts (Wisner and Stanley 1994). The PMI is one of many decision aids available to supply chain managers in developing long- and short-range managerial plans.

The PMI results from a survey of business professionals and is positively correlated with the gross domestic product (Klein and Moore 1988; Pelaez 2003). Öller (1990) suggested that surveys of business professionals provide anticipative judgments that offer clues pertaining to changes in business cycles from expansion to contraction or vice versa. Westlund (1993) describes several issues and methods related to forecasting business cycles, which often focus on when a cycle changes directions. Business cycles have macroeconomic implications for supply chain managers with guidance being provided by forecasting tools and statistical summary data (Öller 1990; Westlund 1993). (Continued on page 2)
Since the PMI is a composite of diffusion indexes, the relevance of a diffusion index must be understood. A diffusion index is created by surveying business professionals to determine whether responses to questions are positive, negative or neutral. If 100 business professionals were asked “What is the trend for new orders?” and 60 responded positively while 40 responded negatively, then the diffusion index would be 60 percent. However, instead of 40 negative responses, suppose there were 30 negatives and 10 neutral responses. Then the 60 percent figure could be adjusted by adding half of the neutral responses. Hence, in this case the diffusion index would be 60% + 5% = 65%.

Thus, a diffusion index is created by adding the number of positive responses to one-half of the responses reporting no change, which generally represents the percent of components that increased during the month (Getz and Ulmer 1990). This number, which varies between zero and 100, is then seasonally adjusted. Another way of computing a diffusion index is to consider the change in positive responses over negative responses and use the following formula (Raedels 1990):

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\text{Diffusion Index} = 50\% + 0.5(\text{change positive over negative percentages})
\]

In the previous example with 60 percent positive, 30 percent negative and 10 percent neutral responses, the diffusion index would be 50% + 0.5(60 - 30) = 65%.

A diffusion index has great appeal. First, it can be quickly tabulated and professionals do not have to quantify their remarks. A diffusion index is a measure of the dispersion of change and provides insight into the breadth of change in an area (Getz and Ulmer 1990). Diffusion indexes require little revision and are considered economic barometers (Dasgupta and Lahiri 1993). In the early 1980s, the U.S. Department of Commerce created a composite index of five diffusion indexes to reflect a maximum relationship between the manufacturing sector and the gross domestic product. Thus, the PMI was created and was given a weighting of 30 percent for New Orders, 25 percent for Production, 20 percent for Employment, 15 percent for Supplier Deliveries and 10 percent for Inventories (Pelaez 2003).

The PMI was back-calculated for years prior to the 1980s and is available starting in 1948. ISM’s Report On Business® (www.ism.ws/ISMReport) contains nine manufacturing sub-indices that are computed from the results of a national survey of purchasing managers, and the PMI is a composite of five of these sub-indices. In addition, the ISM Report On Business® reports information on backlog of orders, new export orders, imports and prices. Survey participants represent some 400 industrial companies, reflecting diverse sectors of the economy. For a summary of the qualities of the PMI and its relationship to economic activity, refer to Kauffmann (1999). For example, the PMI has a strong relationship with changing economic activity including turning points. Previous research reveals that it often lags changes in the gross domestic product.

This article proposes a methodology for predicting cycle turns for the PMI and compares it to the more commonly used Box-Jenkins forecasting technique. While the Box-Jenkins method is superior at forecasting the value of the next one or two months, the proposed methodology is superior at forecasting cycle turns of the PMI well into the future. Using a model based on the spectral analysis of the PMI, important information for basing strategic plans can be determined with accuracy in excess of 60 percent. Interestingly, the forecasts of turning points are either on time or early 92 percent of the time. This makes the forecasts a valuable tool in planning. Although the forecast PMI value for the next month is of interest to some, this knowledge provides relatively short-term information about the current business cycle. The proposed methodology enhances the usefulness of the PMI by providing insight about possible future expansions or contractions across a longer time horizon. This information could potentially make strategic decisions more effective, thus improving overall organizational performance.

Supply chain managers and business policy executives can use the proposed forecast turning points in the PMI in a variety of ways. Traditionally, profit-seeking firms are more inclined to use forecasts related to activity in the supply chain. By periodically monitoring forecast turning points, supply chain managers will not be surprised by high or low inventory, production or employment levels or with a sudden trend in placing or canceling new orders. With increased emphasis on cost reduction, supply chain managers may have to rely more heavily on forecasts to negotiate long-term contractual arrangements and perhaps even buying and hedging practices. Corporate policymakers who take a long-term view of the company can use the forecast of the PMI’s turning points as a planning tool in providing long-term strategic guidance. The methodology presented in this study gives a company another advantage in obtaining a competitive edge in planning.

Limitations to the proposed forecasting methodology include the need to update the model periodically, cycles changing without notice, the forecast being much earlier than expected, and the lack of information on the strength of the next upturn or downturn. Supply chain managers must be able to update the proposed procedure using specialized statistical software. Business cycles are not all equivalent. Supply chain managers need to be able to evaluate the business environment using multiple sources of information. The regression cycle forecast is only one tool, albeit a very insightful one. No one forecasting tool will always accurately predict the timing of business cycles.

Future research related to the PMI should explore the use of combining judgmental forecasts with the quantitative forecasting of the PMI. Combining the forecasts of the regression cycle model with other forecasts, including judgmental forecasts, could provide a more accurate model. Supply chain managers should never rely on one index or forecast.
President’s Message

R. David Williams, C.P.M., President

I hope everyone enjoyed the presentation at the January dinner meeting on E-Commerce Tools. I unfortunately was not able to attend that meeting as I was out of town.

For our February dinner meeting, Neil Fried, a state labor economist with the Alaska Department of Labor and Workforce Development will be presenting his Economic Forecast for Alaska. He is well known for very interesting presentations that appeal to all audiences. In addition, our dinner meeting will have Valentines theme and you are invited to bring your spouse or significant other to the meeting.

Please mark your calendars because we will be hosting a seminar on March 2-3, 2006. The topic is Negotiations and will be presented by Professor Frank Jeffries from University of Alaska, Anchorage Logistics program.

We will be hosting a booth at the 10th Annual Pacific Rim Construction Oil Mining Expo & Conference 2006 (PAC-COM) to be held on February 22 and 23, 2006 at the Sullivan Arena. If you are at the conference, please stop by and visit our booth. We will be asking for volunteers to staff the booth and if you are interested in helping us out, please give Ben Milam a call at the number in the newsletter.
Educational Offerings
Ben Milam, CPPM, C.P.M., Director of Education

We have a very small affiliate here in Alaska, but that does not mean we do things in a small way. Last month’s dinner meeting was a good case in point where we had the opportunity to rub elbows with the likes of Mr. John Vallely. John is the ConocoPhillips eSourcing program manager for the Americas and e-Catalog procurement program manager globally, with headquarters in Houston, Texas. John may work in one of the largest corporate headquarters in the country, but he was a very down to earth person and very easy to talk with. John gave a great presentation on the ConocoPhillips eProcurement system and led a great discussion that I know will benefit anyone contemplating such a system. Thanks John for scheduling your trip from Houston in order to speak with us. It was a great presentation.

Dinner February 2, 2006: We are back to our regular schedule on the first Thursday with our annual “Economic Update” If you are a regular you will remember our speaker and if you haven’t been in a while, this is a great opportunity. Our speaker will be Neil Fried, Chief Economist for the State of Alaska. Neil is one of those rare speakers who can talk economics and make it entertaining. Did you know that the number of Expresso Shops in Anchorage is an economic indicator? Ask Neil, he will be glad to explain. This is also our annual Valentines Party. Bring your favorite Valentine for dinner and a special treat (Discounted rate for your Valentine).

Finally!! Anchorage Seminar March 2-3, 2006: We have finally reached an agreement with a great speaker and a great seminar topic. Frank Jeffries, Ph.D. will present “Negotiation Skills for Purchasing Professionals.” Dr. Jeffries will talk about negotiation with the boss, peers and internal customers and with potential contractors. Dr. Jeffries is known to incorporate humor and lively discussion into his presentations, so this should be entertaining as well as informative. See flyer and registration form in this newsletter. Send a copy to friends and coworkers!

Certification: Not much new to report. It appears the new certification is definitely on track to replace the C.P.M. If you have a C.P.M. or if you are considering certification, you should definitely read my article in last month’s newsletter on the subject. There is also a very lively discussion group posting on the ISM web site. I urge every member to participate in this discussion. Check the box so that you are notified when new postings are made. http://www.ism.ws/Forums/Index.cfm?CFApp=11&Message_ID=40122
There is supposed to be another web-e-nar later this month. Hopefully I will have more info for the February newsletter. Meanwhile keep studying and take the test!


Dinner Meeting February 2, 2006:
The topic will be Economic Forecast for Alaska, presented by Mr. Neil Fried.

DINNER GUEST STATEMENT OF POLICY
A prospective member dinner guest will pay a discounted rate of $15.00 to attend their first dinner meeting. This discount shall be allowed one time prior to membership of any prospective member. The objective is to encourage prospective members to attend one of our dinner meetings.
MEMBERSHIP REPORT
Kat Wall, Director of Membership

Greetings all~

What do you think of when you think about February? No, it’s not candy and sweethearts. I think of it as time to really motivate towards those goals you set forth last month. Some goals you may have already started, while others you have not. It’s definitely not too late to start. My goal to lose weight hasn’t started off so good, but I am happy to say that I am going in the right direction towards obtaining my C.P.M. certification. If this may be a goal of yours as well, please contact Ben Milam, our Director of Education, and let him know that you’d be interested in starting a formal study group (Ben is very willing if we have enough interest).

Thanks to those of you who have sent in requests to update member information on our database! This can be done year round and will ensure that we have the most current information on record for you.

*We give a very special welcome to our newest members:*

Greg Goemer, Contract Administrator
Alaska Railroad (AKRR)

Todd Lindstrom, Assistant Purchasing Officer
Mat-Su Borough

Kristin Jones, C.P.M., Subcontract Administrator
Jacobs Engineering Group Inc.
(Kristin transfers from NAPM-Kansas City)

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**Membership Renewal**

Thanks to everyone that has returned their renewal invoices along with payment. Second notices have been mailed with a due date of not later than January 31, 2006.

For members that do not return their payment by that date will be dropped from the national ISM roster as well as the local NAPM-Alaska roster. That will result in the loss of both national and local benefits to members.

If for some reason you do not plan to renew, please let us know. If you have any questions, please contact our Membership Director, Katharine Wall at 341-8704 or wall.kat@nrim.com.

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**Annual Elections**

Nominations for open positions of officers and directors-at-large are open. A list of open positions is included below. Nominations will close at the affiliate dinner meeting on March 2nd. Elections will be conducted at the affiliate dinner meeting on April 6th. You may nominate yourself or someone else. It is suggested that, before you nominate another person, you check with that person to be sure they are willing to have their name presented for consideration. All nominees must be members of the affiliate who are in good standing and meet the requirements established by the affiliate by-laws or the nomination will not be accepted.

**Open Positions**

Director of National Affairs
President
Vice President
Treasurer
Secretary
Director-at-Large
Director-at-Large

Present nominations to R.D. Collins, C.P.M., A.P.P. at 907-263-4491 or robert.d.collins@conocophillips.com

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**Dinner Meeting February 2, 2006**

**Anchorage Seminar**
March 2-3, 2006

WHAT’S HAPPENING!

Dinner Meeting February 2, 2006:

Dinner Meeting Speaker—Mr. Neil Fried, will talk about Economic Forecast for Alaska.

Anchorage Seminar March 2-3, 2006:

Frank Jeffries, Ph.D. will present “Negotiation Skills for Purchasing Professionals.”

The Alaskan Purchaser is published monthly (September to May) by NAPM-Alaska, Inc., an educational organization committed to providing purchasing and material management practitioners the opportunity to enhance their professional skills and knowledge. If you have an item you would like to contribute to the newsletter, please contact:

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