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Using the Web in the Teaching of Operations Management

by David Hartvigsen, College of Business Administration, University of Notre Dame

A common problem faced by those of us who teach OM, whether to undergraduate or to graduate students, is motivating the quantitative aspects of the material. Some typical tools for battling student ennui are the following:

- Touring a local manufacturing facility or inviting a guest speaker (and then cajoling the guide or speaker into uttering a few words about quantitative methods).
- Reading plant tours or showing videos of production processes and pointing out the quantitative problems.
- Doing quantitative case studies.

I'd like to propose here another tool for spicing up the more quantitative topics:

- Visiting the World Wide Web.

There is a huge, fascinating, and dynamic industry that gets little attention in the mainstream media or in most OM texts. And yet I contend that even a brief examination of this industry can make the quantitative OM techniques that we teach more appealing. I am referring to the industry that implements and markets OM software. Until recently it has been difficult to find information about this industry in student-friendly and easily accessible form. But the Web has changed that: a large number of these companies have websites that contain a wealth of interestingly presented and educationally useful information.

I believe an organized list of such web sites can serve as a useful supplement to an OM course just as a collection of articles from the mainstream media can be used to illustrate other aspects of an OM course. (I discuss how to find such sites below.) One use for such a list is as a "virtual" or "digital" tour of the OM software industry. For example, for each quantitative topic, students could be asked to visit a number of sites and see which methods have been implemented. Information from these sites

can also be used for spicing up lectures and for in-depth student projects. Let me elaborate on what I see as some of the possibilities and benefits of using the Web.

1. Although students are not likely to hear of quantitative techniques in the mainstream media, sites of OM software companies unabashedly use terms like "planning," "scheduling," "MRP," "control charts," and "linear programming." Hence, a quick tour of a number of these sites can provide outside reinforcement that quantitative topics are important. For example, a student can look at the site of a company that sells forecasting software and see references to moving averages and exponential smoothing (e.g., *Forecast Pro* at: ourworld.compuserve.com/homepages/forecastpro/). Or a student can look at a site of a company that sells optimization software and see references to linear, integer, and nonlinear programming (e.g., IBM's product *OSL* at www.research.ibm.com/osl/).
2. In addition to just mentioning OM techniques, many sites contain press releases, stories of successful implementations for major customers, and descriptions of recent product innovations. This type of information, also rarely found in the mainstream media, can be referred to in lectures, or relevant pages can be listed as supplemental reading material. Examples are *Fourth Shift* (MRP software) at www.fs.com/; *CAPS Logistics* at www.caps.com/; and *i2 Technologies* (scheduling and planning software) at www.i2.com/index.html. Three enterprise resource planning companies whose sites contain interesting press releases are *SAP* at www.sap.com/, *Baan* at www.baan.com/, and *J.D. Edwards* at www.jdedwards.com/. Some companies also list their clients. These



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use of computer software in improving the efficiency of operations. In 1996 he won the Best Teacher Award from the Executive MBA Program at Notre Dame. He has consulted for several companies including the Moore Corp., Rand McNally, and National Steel. His current research interests mostly concern the efficient flow of materials and information through networks; recent work has or will appear in *Mathematics of Operations Research*, *SIAM Journal on Discrete Mathematics*, *SIAM Journal on Optimization*, and *Journal of Algorithms*. He received his Ph.D. in mathematics from Carnegie-Mellon University. For additional information, visit his home page at: www.nd.edu/~dhartvig. Email: David.Hartvigsen.1@nd.edu

clients may include companies that students know of and/or are interested in working for (e.g., see *Sabre Technologies* at www.sabre.com/).

3. The enormous demand that exists for quantitative OM techniques can be impressed upon the students by showing them the sheer number of sites of companies that produce this type of software (there are many hundreds of such companies easily accessible on the Web). Three sites that maintain extensive lists of software relevant to operations management are *Lionheart Publishing* at lionhrtpub.com/, *Yahoo!* at www.yahoo.com/, and *Benchin' Software* at www.benchin.com/. In addition, the *Lionheart Publishing* site makes available some analyses of OM software.
4. Finally, more and more frequently, companies are making available downloadable demos of their products on their sites. This immediately suggests two educational opportunities. One is doing quick demos of products in class. I've done this with both project scheduling software (e.g., *Microsoft Project* from www.microsoft.com/msproject/)

and simulation software (e.g., *Taylor II* from www.taylorii.com/). Since most demos come with realistic examples, running a few of these in class adds credibility to claims that a particular technique has important applications. A second possibility is for student projects; for example, they can download a few demos of a particular type of software and do a feature-wise comparison. I've had students download and compare crew scheduling demos from the following sites: *Smart Sched* at www.in-sol.com/s_sched.html and *Visual Staff Scheduler* at www.atlasbsi.com/.

These ideas suggest the creation of a website where these types of links are gathered. It just so happens that I have recently constructed such a site, *OM Software* at:

www.nd.edu/~dhartvig/omsoft/top.htm.

This site contains links to all the sites mentioned above, plus many more; the links are organized around standard topics in an introductory OM course.

In conclusion, I think students in any OM course can benefit from some time

spent looking at Web sites of key companies that implement and market the important quantitative techniques that we teach. The hope is that this can help demonstrate the importance of these techniques. Aside from motivational purposes there is also a curriculum issue: students are increasingly likely in their jobs to be involved either directly or indirectly, in the purchase, implementation, and/or use of OM-related software systems (in particular, I'm thinking of the enterprise resource planning systems that many large companies have installed or are in the process of installing). Hence, it makes sense that students have a rudimentary understanding of the makeup of this huge industry. They should know who the key players are and what their products can do. ■

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NAMES IN THE NEWS

CAROL LATTA, Feature Editor, Home Office, Georgia State University



Jagan Iyengar, an Associate Professor of MIS at Jackson State University, has received recognition for research in Mississippi by HEADWAE (Higher Education in Academic Discipline-Academic Excellence) for 1997. Dr. Iyengar has published over 20 articles including journals, refereed proceedings, and book chapters. He is currently working with The School of Business Ph.D Committee in formulating resources for the Ph.D. program in management for Jackson State University, expected to start in August 1998.

Dr. Iyengar has four chapters in Information Systems contributed to a book edited by Professor Xianyuan Dai of Beijing Normal University, forthcoming in February 1998. Dr. Iyengar recently completed a research proposal to be funded by the Ford Foundation, working with the East West Center, Beijing Normal University, and Jackson State University. This project is for 3 years beginning May 1998. In 1996, Dr. Iyengar received the Faculty Achievement Award for Research at Jackson State University, School of Business.

J.P. Shim, Mississippi State University, will be on sabbatical leave at the Stern School of Business, New York University for the spring semester of 1998. He will be doing research and teaching information systems at the Department of Information Systems at NYU. Recently, he has been invited to join Booz-Allen & Hamilton Inc. as a visiting senior research associate in the field of multimedia.

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