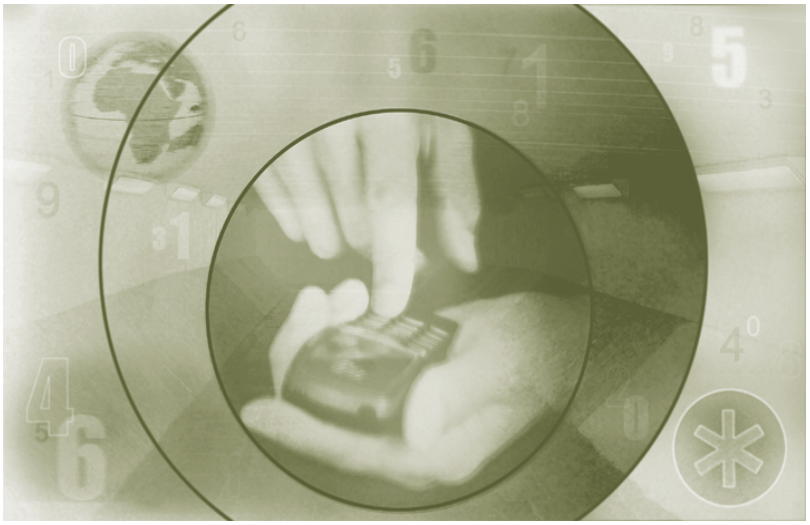
Fall 2003



The Smith School's faculty research interests encompass a broad, dynamic mix of functional and netcentric economy issues. The Smith School has numerous research projects ongoing, and Research@Smith is the medium to keep you informed about many of these projects.

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KUDOS

Ken G. Smith, Dean's Chaired Professor of Business Strategy, has been elected vice president and program-chair elect by the Academy of Management. Smith will chair the academy's 2005 annual meeting in Honolulu and ascend to the presidency of the organization in 2007.

Roland Rust, holder of the David Bruce Smith Chair in Marketing, director of the Center for e-Service, and chair of the Smith School marketing department, and co-authors Christine Moorman (Duke University) and Peter Dickson (Florida International University) received the 2003 Marketing Science Institute H. Paul Root Award for their article, "Getting Return on Quality: Revenue Expansion, Cost Reduction, or Both" (Journal of Marketing, October 2002). The article was chosen by members of the JM editorial review board for its significant contribution to the advancement of marketing practice. An earlier version of the paper was released as an MSI working paper (Report No. 00-120) and received the 2002 MSI Best Paper Award.

Lawrence A. Gordon, Ernst & Young Alumni Professor of Managerial Accounting and Information Assurance, and Martin Loeb, Deloitte & Touche LLP Faculty Fellow, received the certificate of merit from the Institute of Management Accountants for their paper, "Return on Information Security Investments: Myths vs. Realities." The paper appeared as the cover story in the November 2002 issue of Strategic Finance.

More than 60 percent of Smith's **management and organization (M&O) faculty** and of the department's Ph.D. students presented papers at the 2003 annual meeting of the Academy of Management, held in Seattle.

Timothy Pollock, assistant professor of strategy, was invited to join the editorial board of the Academy of Management Journal.

Deepak Somaya, assistant professor in logistics, business and public policy, received the 2003 Best Dissertation Award from the Academy of Management Technology and Innovation Division. Somaya, who joined the Smith School faculty in 2000, received his Ph.D. from the University of California at Berkeley.

Louiqa Raschid, professor of information systems who holds a joint appointment with the University of Maryland Institute for Advanced Computer Studies and the Department of Computer Science, and Alex Tuzhilin (New York University) were guest co-editors of a special issue of the spring 2003 INFORMS Journal on Computing. The issue focused on the mining of Web-based data for e-business applications.

m-Commerce: Breaking Through the Adoption Barriers

Research by
Viswanath Venkatesh, V. Ramesh, and Anne P. Massey

THE INTRODUCTION OF WEB-ENABLED CELLULAR TELEPHONES, PERSONAL DIGITAL ASSISTANTS (PDAS), AND OTHER WEB-READY MOBILE DEVICES PRESENTS A NEW, AND HUGE, OPPORTUNITY FOR BUSINESSES TO CONNECT WITH CONSUMERS. MOBILE COMMERCE, OR "M-COMMERCE," IS ALREADY A BIG PART OF LIFE IN ASIA AND EUROPE. INDEED, A RECENT STUDY BY MARKET RESEARCH FIRM INSTAT/MDR SUGGESTS THAT ONE-THIRD OF MOBILE PHONE SUBSCRIBERS IN KOREA USE THEIR HANDSETS FOR M-COMMERCE ACTIVITIES. BUT IN THE U.S., WHERE MANY STILL CONSIDER TEXT MESSAGING AN "EMERGING" APPLICATION, M COMMERCE LOOKS MORE LIKE E-COMMERCE DID IN 1995.

"Like e-commerce, opportunities for success in m-commerce will go to those companies that focus on creating compelling value for customers, founded in a deep understanding of the mobile experience," says Viswanath Venkatesh, associate professor of information systems at the Robert H. Smith School of Business.

In a paper titled "e" * "m": Ramifications for Wireless Design, Venkatesh and co-authors V. Ramesh and Anne P. Massey, both of Indiana University, present research findings that suggest organizations need to look at their wireless Web presence much differently than they do their Web sites that are accessed via a traditional Web browser. The paper, published in the Communications of the ACM (Special Issue on m-Commerce, March 2003), is the result of a study to identify which aspects of usability are most important to users of wireless Web sites.

The study, conducted in Finland, involved 812 participants who evaluated their experiences while visiting Web sites accessible via a traditional browser as well as wireless Web sites accessible via a wireless-enabled device. Research participants used a PC browser to evaluate the traditional Web sites and a cell phone emulator to evaluate the wireless Web sites. They looked at two Web sites from each of four industries: banking, news, shopping, and tourism. The researchers based the questionnaire on the Microsoft Usability Guidelines (MUG), which was developed in earlier research conducted by Venkatesh and Ritu Agarwal, Ralph J. Tyser Professor of Information Systems at the Smith School. MUG comprises five main categories which were further broken down into subcategories: content, which includes relevance as a subcategory; ease of use, which includes structure, or organization of the site; made-for-the-medium, which includes personalization; promotion, or advertising of a site; and emotion, or affective reactions invoked by a site.

The researchers learned that:

o Content was important regardless of whether users accessed traditional Web sites or wireless sites. However, they found that in each of the four industries, relevance was significantly more important in the wireless context than in the traditional Web context.

o Ease of use was significantly more important in the wireless context, largely due to users' evaluation of structure.

o Made-for-the-medium was significantly more important in the wireless context, largely due to the personalization subcategory.

o Promotion and emotion were significantly less important in the wireless context than in the traditional Web context.

o In all four industries, the usability ratings were significantly lower for each organization's wireless Web site compared to its traditional Web site.

"The results clearly suggest that a successful Web presence does not automatically lead to a successful wireless Web presence," says Venkatesh. "It is important for wireless designers to realize that the mobile experience is fundamentally different than the traditional Web-browsing experience. The wireless experience is largely about time saving, location, and convenience." Venkatesh and his co-authors suggest that wireless Web site designers should offer a small number of relevant features, rather than numerous offerings, considering the small keypads and "real estate" interfaces (screen displays) of cell phones and PDAs. They also believe wireless sites should be designed so that users can find information easily, with simple menus, forms, or icons that require little or no typing.

"For the industries we studied, the significant differences in usability ratings between wireless sites and their traditional Web counterparts suggest that much work needs to be done in the wireless contexts," says Venkatesh. "By benchmarking its site against competitor sites, an organization may be able to identify weak areas that can be the focus of site redesign efforts."

While on sabbatical this coming year, Venkatesh will be working on a number of projects related to organizational implementation of technologies, including another study related to mobile commerce. This time the Smith professor will be evaluating some of the business services that can be offered through mobile devices.

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The Impact of Network Markets on Resource Allocation

Research by
Judy Frels

WHETHER IT'S A CHOICE BETWEEN DIFFERENT COMPUTER OPERATING SYSTEMS OR THE LATEST VIDEO GAMES, BUYING
DECISIONS ARE INFLUENCED BY FACTORS EXTERNAL TO THE VALUE INHERENT IN A PRODUCT. THESE OTHER FACTORS, CALLED MARKET-BASED ASSETS OR NETWORKS, INCLUDE USER NETWORKS, NETWORKS OF COMPLEMENTARY GOODS, AND NETWORKS OF PRODUCERS.

Judy Frels, assistant professor of marketing at the Smith School of Business, sought to understand how these three networks influence resource allocation (buying decisions) by consumers. The results of her study, which formed the basis for her dissertation at the University of Texas at Austin, appear in an article published in the January 2003 issue of the Journal of Marketing. Frels' co-authors are Tasadduq Shervani of Southern Methodist University and Rajendra K. Srivastava of Emory University.

"Our thesis is that buyers allocate resources for the procurement of business assets … on the basis of a consideration of stand-alone product performance as well as the user, complements, and producer networks," the researchers write. They developed a new conceptual framework, the Integrated Networks Model, to measure the impact of these three networks on consumer choice. Previous marketing research had considered the influence of these networks, but always individually, never combined. Further, the researchers advanced the idea that intraorganizational adoption (i.e., continuing purchases) is driven by the strength of each network, as measured by five network characteristics: current size, expectations of future size, compatibility, accessibility, and quality.

The researchers then tested the Integrated Networks Model with a survey of a random sample of senior information technology professionals, questioning them on the merits of two operating systems, Windows NT and Unix, and the resources allocated by their organizations to the purchase of these systems.

"When we asked which one is better, respondents rated Unix better on eight of 10 performance characteristics," Frels says. However, on average, 61 percent of the budget of each respondent was spent on NT. In addition, the authors report, those who rated Unix's product performance superior but perceived NT's networks stronger were more than twice as likely to allocate resources to NT compared with Unix.

Their findings helped explain a phenomenon that had puzzled Frels during an earlier career with IBM. "From time to time, we would have an exceptional product that didn't do very well," she recalls. "The reason was that we hadn't developed the networks surrounding the product."

Based on their empirical evidence, the researchers report, "in a market in which networks matter, the relative strength of the networks presents an important

influence on purchase decisions and thus presents a mechanism by which a less preferred technology can gain market share."

"To put it simply, we conclude that an inferior technology can become dominant in a marketplace because it has stronger networks than its competitors," Frels states.

The study makes several important contributions to the marketing literature. First, the Integrated Networks Model "builds on our understanding of diffusion, adoption, and resource allocation," the researchers state. "It extends our knowledge of what networks exist and influence adoption decisions, as well as how those networks can be characterized." They show that all three networks-user, complements, producer-play a significant role in how consumers allocate resources, and identify characteristics that determine the strength of a network in influencing decisions. Their examination of intraorganizational adoption provides a better understanding of the degree of success of two competing products than the customary initial or trial purchase approach.

Second, through its empirical validation of what was previously analytically modeled, the study advances the field's understanding of how purchase decisions are made in network markets.

And, third, by demonstrating that "a less-preferred technology may gain increased market share through the value delivered by its networks," the researchers state, "(the study) further validates the criticality of managing the market-based assets in a network market."

In a follow-up study, Frels and James A. Reggia and Debra Heisler of the University of Maryland Department of Computer Science are using agent-based simulations to examine the success of different competitive strategies in network markets.

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Stock Return Predictability and Model Uncertainty

Research by
Doron Avramov

THE QUEST FOR THE BEST MODEL TO PREDICT FUTURE STOCK RETURNS MAY LAST AS LONG AS PEOPLE HAVE FUNDS TO INVEST. SEVERAL MACRO ECONOMY VARIABLES, SUCH AS MONTHLY INFLATION RATES, MONTHLY TREASURY-BILL RATES, THE SLOPE OF THE YIELD CURVE (THE YIELD DIFFERENTIAL BETWEEN LONG- AND SHORT-TERM T-BILLS), AND THE AGGREGATE DIVIDEND YIELD, HAVE LONG BEEN PERCEIVED TO BE USEFUL IN FORECASTING STOCK RETURNS. SOME DECISION MAKERS, "CLASSICAL" IN NATURE, OFTEN SELECT ONE INDIVIDUAL MODEL THAT ENCOMPASSES SOME VARIABLES, AND THEN MAKE INVESTMENT DECISIONS, OPERATING AS IF THE MODEL IS CORRECT. HOWEVER, MODEL UNCERTAINTY-THE UNCERTAINTY ABOUT THE CORRECT SET OF VARIABLES THAT FORECAST WITH SOME ASSURANCE FUTURE STOCK RETURNS-STILL PERSISTS.

Research by Doron Avramov, assistant professor of finance at the Smith School of Business, may bring us closer to identifying the definitive forecasting model. A paper based on Avramov's study - his dissertation research at the Wharton School, University of Pennsylvania - appeared last year in the Journal of Financial Economics. His work is the first to formally incorporate model uncertainty in an investment decision framework with return predictability.

Avramov used Bayesian model averaging to develop a global model that has proven to be considerably better than others in predicting stock returns. "I allowed for the probability that each forecasting model is correct and then I averaged across all models," he says of his approach to the problem of investment under model uncertainty.

In particular, Avramov came up with a weighted model that averages across 16,384 competing models, each of which is based on some collection of potentially relevant predictive variables. Utilizing this model, he analyzed a sample composed of monthly and quarterly stock returns over a 35-year period.

The results of Avramov's study shed new light on the use of models in predicting stock returns and investment decision making.

Most importantly, he is able to demonstrate that "a model that averages across various return-generating processes displays robust properties," i.e., it is a strong predictor of future returns given many sensitivity analyses. The empirical evidence proves the validity of his approach both in sample and out of sample. Further, Avramov says, his findings demonstrate that stock returns are predictable through time and that investors could utilize publicly-observed information to improve the performance of their investments, a controversial idea in financial economics.

Significant from an investment perspective is his observation that overall uncertainty about future realization of stock returns is affected more by model uncertainty than parameter uncertainty. Parameter uncertainty arises when an investor, who

forecasts returns based on a single model believed to be the correct one, is unsure about the true values of the model parameters.

Indeed, investment decisions under parameter uncertainty have traditionally been the focus of research in financial economics. However, incorporating the dimension of model uncertainty into a stock return predictability framework as he has done "considerably improves the accuracy of the forecast and gives you better performance in managing your portfolio for the long run," the professor states.

Avramov has since applied the Bayesian optimizing framework in an analysis of asset pricing models that utilize return predictability. A paper on his research in this area is forthcoming in the Review of Financial Studies.

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