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Self-View, Goals and Choices

Research by
Rebecca Hamilton, Gabriel J. Biehal

IN THEIR PAPER "ACHIEVING YOUR GOALS OR PROTECTING THEIR FUTURE? THE EFFECTS OF SELF-VIEW ON GOALS AND CHOICES," REBECCA HAMILTON, ASSISTANT PROFESSOR OF MARKETING, AND GABRIEL J. BIEHAL, ASSOCIATE PROFESSOR OF MARKETING, EXAMINED HOW CONSUMERS' SELF-VIEWS AND GOALS AFFECTED THEIR CHOICES OF INVESTMENTS THROUGH TWO EXPERIMENTS CONDUCTED ONLINE AND IN THE SMITH SCHOOL'S NETCENTRIC BEHAVIORAL RESEARCH LAB. THESE STUDIES WERE MADE POSSIBLE BY A SUMMER RESEARCH GRANT FROM THE SMITH SCHOOL.

For the first experiment, Hamilton and Biehal constructed a set of four ads designed to evoke different goals among participants. Two ads were designed to activate an independent self-view by encouraging consumers to consider their own goals, and two ads were designed to activate an interdependent self-view by encouraging consumers to consider their responsibility to others.

After viewing one of the ads, participants were given a hypothetical budget of \$5,000 to allocate among four mutual funds. Results of the experiment show that inferred risk preferences differ depending on whether consumers think of themselves as independent or interdependent. Consumers who saw themselves as independent of others focused on promotion goals—achieving financial gains—and had a higher tolerance for risk. Consumers who saw themselves as interdependent and connected with others focused on prevention goals—preventing financial losses—and were more averse to risk.

A second experiment, conducted in the Smith School's Netcentric Behavioral Research Lab, examined the way a consumer's self-view and already-existing portfolio of investments affect his or her choice of a new investment. First, consumers were encouraged to adopt either an independent or interdependent self-view, next they were given a hypothetical portfolio of either high-risk or low-risk investments, and then they were asked to choose a new investment.

Hamilton and Biehal found that the make-up of a consumer's initial portfolio affected their investment choices differently depending on the consumer's self-view. While those with an independent self-view still chose riskier investments than those with an interdependent self-view, those with an interdependent self-view made riskier investment choices if their initial portfolio was high in risk. This indicates that the desire of consumers with an interdependent self-view to maintain the status quo was greater than their desire to avoid financial losses. Hamilton and Biehal's work is the first to demonstrate this indirect effect of self-view on consumer's desire to maintain the status quo, relating the individual's current investment portfolio to their future choices.

Is it possible to change consumer's risk preferences? Hamilton's and Biehal's research indicates that an advertisement crafted to encourage consumers to think in an independent or interdependent way can influence consumers' choices. "Our studies used MBAs and undergraduate business students—subjects who have had

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Global Business Teams

Research by
Anil Gupta, Qing Cao

THE GROWING CROSS-BORDER INTEGRATION OF THE WORLD ECONOMY HAS BROUGHT AN INCREASED INTEREST IN THE STRUCTURE AND DYNAMICS OF GLOBAL BUSINESS TEAMS (GBTs). NOT SURPRISINGLY, CONSIDERABLE LITERATURE ON GBTs HAS FOCUSED ON THE CHALLENGES THAT SUCH TEAMS FACE AND HOW MECHANISMS SUCH AS TEAM EMPOWERMENT CAN FOSTER EFFECTIVENESS. FEW RESEARCHERS HAVE SYSTEMATICALLY EXAMINED THE STRATEGIC REASONS WHY SENIOR EXECUTIVES WITHIN A MULTINATIONAL CORPORATION (MNC) CREATE GBTs IN THE FIRST PLACE AND HOW DIFFERENT TYPES OF GBTs CAN IMPOSE DIFFERENT MOTIVATIONAL STRUCTURES AND COORDINATION CHALLENGES.

Anil Gupta, Ralph J. Tyser Professor of Strategy and Organization and Qing Cao, PhD student in the management and organization department, address the strategic and organizational challenges surrounding GBTs in their paper "The Strategic Embeddedness of Global Business Teams." Gupta and Cao define GBTs as intra-company work teams consisting of members from multiple countries working on a task that also spans multiple countries. They focus on the individuals comprising the team but also on the strategic context within which each team is embedded in order to more fully understand the antecedents and consequences of internal team dynamics.

"The fact that MNCs exist chiefly for their ability to ensure coordination among subsidiaries located in different countries does not suggest that every unit must be directly dependent on every other unit or that all interdependencies need to be of the same type," says Gupta.

Gupta and Cao describe three different types of GBTs: P-type, whose goal is primarily to create value by leveraging pooled interdependencies; S-type, in which the GBT is engaged largely in managing *scheduled* (or sequential) interdependencies; and R-type, which deal with reciprocal interdependencies. Gupta and Cao argue that different types of GBT differ from each other in the alignment of incentives, which influences team members' level of commitment and motivation to

cooperate and the alignment of activities which poses varying degrees of coordination challenges. The authors also examine how differences in GBT type can affect team identity, swift trust, team faultlines, and team-based rewards, all of which can reinforce or weaken members' motivation to help the team succeed.

The authors postulate that variations in global strategy will have an effect on the extent to which the MNC relies on different types of GBTs. According to the authors, GBTs will be most used by firms pursuing a transnational strategy (such as Hewlett Packard) where the firm's value chain activities are geographically dispersed. Direct ties representing a mix of pooled, sequential and reciprocal interdependencies exist in these units. At the other end, the use of GBTs will be lowest in MNCs such as Marriott pursuing a multi-domestic strategy where the entire business model is virtually replicated across countries and interdependencies among the units in such MNCs is largely of the pooled kind. Firms such as Mercedes-Benz, which concentrate most activities in one country and export from this home base to sales affiliates in other countries, are likely to fall somewhere in between Hewlett Packard and Marriott.

GBT type has a moderating impact on the relationship between various coordination mechanisms and team effectiveness. Gupta and Cao argue that self-management will have the highest positive impact on team effectiveness in the case of

"Differences in GBT type can affect team identity, swift trust, team faultlines, and team-based rewards, all of which can reinforce or weaken members' motivation to help the team succeed."

R-type GBTs. Accordingly, hierarchical centralization of decision-making in R-type GBTs is likely to result in reduced sharing of tacit knowledge and delay the speed of mutual adjustment. On these grounds, self-management should be particularly beneficial for R-type GBTs. The authors also propose that richness of communication links, which should match the complexity of required coordination, will have the weakest effect on team effectiveness in the case of P-type GBTs. P-type GBTs generally face significantly lesser coordination complexities than either S-type or R-type GBTs.

"Our study has yielded valuable insights on the internal dynamics of global business teams. First, we have shown that it is particularly critical to take into account the effect of the broader strategic and organizational context in analyzing team dynamics. Second, to the extent that interdependencies can vary in terms of type and extent, this concept needs to be incorporated into studies of all types of teams," says Cao.

Gupta and Cao's work is the winner of the Best Paper 1st Runner-Up Award in the Annual Meeting of Academy of International Business in 2005. Gupta is the co-author (with Vijay Govindarajan) of *The Quest for Global Dominance: Transforming Global Presence into Global Competitive Advantage* (Jossey-Bass, 2001).

For more information about this research, please contact agupta@rhsmith.umd.edu.

KUDOS

Michael Ball, Orkand Professor of Management Science, and **Michael Fu**, professor of management science, have received a \$630,000 grant from NSF under the special initiative on "Dynamic Data Driven Application Systems." The title of their proposal is "Dynamic Real-Time Order Promising and Fulfillment for Global Make-to-Order Supply Chains." Ball has been named Area Editor for Transportation in the flagship journal *Operations Research*.

Chris Bingham, assistant professor of management and organization, won the Best Paper Award at the 2005 Atlanta Competitive Advantage Conference for his paper on "Opening the Black Box of Capability Creation: The Internationalization of Entrepreneurial Firms." Bingham's paper on "Building Theory Using Simulation" has been conditionally accepted for publication in *Academy of Management Review*.

Bruce Golden, France-Merrick Chair in Management Science, will be the first Conoco-Phillips Distinguished Lecture at Oklahoma State University in October 2005. He presented two lectures as

Distinguished Speaker at the 31st Lunteren Conference on the Mathematics of Operations Research in Lunteren, The Netherlands in January 2006.

Larry Gordon, Ernst&Young Alumni Professor of Managerial Accounting, has been appointed as the International Representative for Accounting for the 2008 Research Assessment Exercise (RAE) in the U.K. The RAE is the process which determines the research ranking, and in turn research funding, for the various departments (across all disciplines) at U.K. universities for several years starting in 2008.

David Kirsch, assistant professor of management and organization, has received additional funding for his "Dot Com Archives" project. The Library of Congress has extended its funding agreement under the National Digital Information Infrastructure Preservation Program (NDIIPP) for an additional two years, through 2007, committing an additional \$813,000, bringing total direct support to \$1,056,000. Counting additional contributions from project partners, the project has received \$2,209,000 in funding.

Dilip Madan, professor of finance, has been appointed editor of *Mathematical Finance*.

S. Raghavan, assistant professor of management science, and **G. Anandalingam**, Ralph J. Tyser Professor of Management Science, co-edited a book entitled *Telecommunications Planning: Innovations in Pricing, Network Design and Management*, to be published by Springer.

Ian Williamson, assistant professor of management and organization, has won the 2005 Academy of Management Mentoring Best Practices Award. This award recognizes individuals who have excelled in providing mentoring to Academy of Management members. Williamson has been invited to join the editorial board of *Academy of Management Journal*.

D&IT Department

Information systems and networks represent the critical infrastructure on which corporations and the economy depend not only for the execution of operations, but also for the formulation of strategy and competitive differentiation. The Smith School's department of decision information technologies (D&IT) helps organizations meet these challenges through its leading-edge research and educational programs.

D&IT faculty have received international recognition for their research in management science, information systems, statistics and data analysis, and operations and supply chain management. Members of the Management Science Group were ranked sixth in the nation for the practices of operations research (*Interfaces*, 1997). *U.S. News and World Report* ranked the Smith School as having the eighth best program in management information systems. The *Wall Street Journal* ranks Smith's information technology program # 6.

The department's faculty members continue to garner awards and honors. **Bruce Golden**, France-Merrick Chair in Management Science, **Shreevardhan Lele**, Tyser Teaching Fellow of Decision

Compact Bidding Formats for Combinatorial Auctions

Research by
Robert Day, S. Raghavan

NEW RESEARCH AT THE SMITH SCHOOL IS MAKING IMPORTANT THEORETICAL CONTRIBUTIONS IN THE AREA OF AUCTION RESEARCH THAT ARE CURRENTLY BEING USED IN DEVELOPMENT EFFORTS TO IMPROVE AUCTION TECHNOLOGY IN THE TELECOMMUNICATIONS AND TRANSPORTATION INDUSTRIES. S. RAGHAVAN, ASSOCIATE PROFESSOR OF MANAGEMENT SCIENCE, AND FORMER SMITH PHD STUDENT ROBERT DAY, NOW AN ASSISTANT PROFESSOR OF OPERATIONS AND INFORMATION MANAGEMENT AT THE UNIVERSITY OF CONNECTICUT, HAVE DEVELOPED INNOVATIVE STRATEGIES FOR DEALING WITH TWO KEY PROBLEMS WITH THE DESIGN OF COMBINATORIAL AUCTIONS: PREFERENCE ELICITATION AND PRICING.

Combinatorial auctions differ from traditional auctions, where a single good is auctioned off to the highest bidder. Instead, bidders are permitted to bid on a combination of items, like landing rights in an airport or telecommunications rights in several cities. Some items are substitutes and some are complements, and combinations may change over the course of an auction. Allowing bidders to state their preferences on combinations, as opposed to single goods, allows a bidder to more accurately express his or her preferences. However, as the number of items increase, the number of combinations on which people can bid increases exponentially, resulting in a computational problem for the auctioneer, who now has massive amounts of data to process. This has been one of the key issues limiting the successful adoption of combinatorial auctions in practice.

In the past, this limitation was dealt with by the simple expedient of restricting the number of bundles a bidder could bid on. Day and Raghavan looked at the problem differently, developing two compact polynomial bidding formats where bidders submit compact bids that express preferences over an exponential number of bundles.

The research shows that using Bid Tables allows for the expression of substitute preferences and removes many of the problems associated with using a Simultaneous Ascending Auction (SAA) as the first stage of a multi-stage combinatorial auction. In Day's dissertation, he expands on this research by developing a three-stage auction, where the first stage deals with substitute preferences, the second stage is an intermediate bundle revelation phase to allow bidders the opportunity for price discoveries on combinations, and followed by a final sealed bid-proxy auction.

The second compact bidding format, called Matrix Bids, allows for the expression of both substitute and complementary preferences. These bids express a bidder's preferences succinctly in polynomial space using a new type of mathematical bidding language that expresses bids in a matrix format.

Day and Raghavan also describe a new method of computing Bidder-Pareto-Optimal-Core (BPOC) points. The technique for generating BPOC points has been extremely arduous and time-consuming. Day and Raghavan develop a new way of computing BPOC points as a linear program with an exponential number of constraints, and shows a novel constraint generation procedure that starts with a few constraints in the linear program and adds constraints iteratively. Each constraint corresponds to a coalition of bidders that are willing to offer a higher total payment for the goods at auction. The Core Constraint Generation (CCG) technique is several orders of magnitude faster than the best prior methods to determine BPOC points.

Many industries, like electricity and telecommunications, now use high-stakes combinatorial auctions involving the sale of assets or contracts worth many billions of dollars. These new techniques will allow these industries to conduct increasingly sophisticated auctions, resulting in better alignment and pricing of items with concomitant potential gains of many millions of dollars. The methods developed through this research have already been adopted for testing by the Federal Communications Commission in its implementation of the clock-proxy auction and other combinatorial auctions with a last-and-final bidding round. The Federal Aviation Administration used bid tables for bidding in a recent mock auction of landing slots at congested airports. If they decide to use an auction

“These new techniques will allow these industries to conduct increasingly sophisticated auctions, resulting in better alignment and pricing of items with concomitant potential gains of many millions of dollars.”

mechanism to allocate landing slots at congested airports, they may use the CCG technique to efficiently find a BPOC core point in the final round of bidding.

Day's dissertation on compact bidding formats for combinatorial auctions received the INFORMS George B. Dantzig Dissertation Award in 2005. Raghavan's work in this area continues, with several papers under review. For more information about this research, please contact rraghava@rhsmith.umd.edu.

SMITH UNDERGRADUATE RESEARCH FELLOWS

Sciences, **S. Raghavan**, assistant professor of management research, and collaborators Zhiwei Fu (former PhD student) and Ed Wasil (American University) were awarded the 2005 INFORMS Computing Society Prize for their research in the area of data mining.

Raghavan, with PhD candidate **Ioannis Gamvros** and **Rick Nidel**, **MBA '05**, were selected as finalists for the prestigious 2005 Daniel H. Wagner Prize for Excellence in Operations Research Practice. Raghavan, Gamvros and Nidel developed a model to help Catholic Relief Services, a not-for-profit agency that funds development efforts and humanitarian efforts throughout the world, allocate more than \$70 million in unrestricted funding. Catholic Relief Services is using the model developed by the team for strategic planning and to help keep budgetary spending in line with its philanthropic goals.

Katherine Stewart, assistant professor of information systems, received an NSF CAREER Grant, approximately \$500,000 in funding during the period 2004-2008.

For more information about current research in the Smith School's department of decision and information technologies, please visit <http://www.rhsmith.umd.edu/dit/>.

Twenty-two students participated in last semester's launch of Smith Research Fellows, a new program for undergraduates which allows them to partner with faculty members pursuing research projects. Students learn through the research process, participate in data collection and compilation, modeling, presentation and other tasks under faculty supervision while earning a stipend for their efforts.

The Fellows worked on a variety of projects, including:

- writing white papers on the state of electronic markets in various industries
- gathering data for a study that examined the self-serving bias as it affects auditors' beliefs about tradeoffs between retaining audit clients versus improving audit quality
- testing and demonstrating auction mechanisms for a variety of applications including industrial and government procurement, real-time ticket sales for sporting events, allocation of landing/take-off slots at airports
- gathering data about private security offerings by public firms
- collection, coding, organization, and analysis of detailed data about patents, and corresponding data about the companies that use them for research on the changing nature of intellectual property
- managing the distribution of the survey instruments, collecting of survey instruments and coding and inputting of data for a study of the

motor carrier industry's adoption of information technology to manage safety performance

- Web-based coding and analysis of data regarding how young startup ventures in the biotech sector evolve

Smith Research Fellows is part of the new Smith Undergraduate Fellows Program. The Fellows program consists of groups of specialized tracks that cut across academic majors, so that all Smith School undergraduates can participate in an intimate small-school environment while enjoying the options and opportunities only a large school can provide.

Fall 2006 will see the launch of several new Fellows tracks, including International Fellows and Entrepreneurship Fellows. International Fellows will be admitted with double majors in business and foreign language study, and will participate in dedicated study abroad trips, international clubs, events and subsidized travel. Entrepreneurship Fellows will provide a four-course track in entrepreneurship, including a funded business plan competition and special activities with the school's Dingman Center for Entrepreneurship aimed at product, service and business creation.

The Smith Undergraduate Fellows program enjoys strong cross-campus support and has received major funding from the University of Maryland administration and from Smith School alumni.

For a complete list of projects and more information about Smith Research Fellows, visit www.rhsmith.umd.edu/undergrad/researchfellows.html

International Business

Different types of global business teams pose unique management challenges.

RESEARCH BY

ANIL GUPTA AND QING CAO

Marketing

Consumer risk preferences can be shifted and actively managed by marketers.

RESEARCH BY

**REBECCA HAMILTON AND
GABRIEL J. BIEHAL**

D&IT

Powerful new techniques for pricing yield potential gains in the billions for high-stake auctions.

RESEARCH BY

**ROBERT DAY AND
S. RAGHAVAN**



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classes in marketing. The average consumer is probably less aware of being influenced by marketing messages and may be even more likely to have their risk preferences shifted by the marketing messages of financial firms," says Hamilton.

Though it is possible for firms to shift consumers' risk preferences—and thus sell more of a certain type of investment vehicle—it may not be wise. The researchers caution that consumers who are influenced by temporary factors into making an investment decision

that is not consistent with their long-term goals may not be happy with the investment company in the long run.

There is a potential for economic ramifications when the marketing messages of many individual companies shift the risk preferences of large numbers of consumers in one direction or another. "There are hundreds of billions of dollars invested each year," says Biehal. "Even a relatively small effect can have a huge implications for the industry."

Hamilton and Biehal recommend that consumers take steps to ameliorate the effects of marketing messages on their own financial decision-making. Using several sources of information about investments and investment firms and taking some time before making any investment decisions makes it less likely that situational factors will unduly influence a consumer's decision-making process.

The complete paper based on this research was published in the *Journal of Consumer Research* in September 2005. For more information, contact rhamilto@rhsmith.umd.edu, or gbiehal@rhsmith.umd.edu.

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UPCOMING EVENTS

**University of Maryland's
Smith School of Business
6th Annual Netcentricity Conference**

"Netcentricity" is characterized by global connectivity, real-time collaboration, and rapid, continuous information exchange. It's a ubiquitous force reshaping every facet of our lives. The Smith School's 6th Annual Netcentricity Conference will bring together faculty, practitioners, and visionaries to share the latest thinking and innovations in the world of digital networks.

For more information on this year's Netcentricity conference, visit the Web site at www.rhsmith.umd.edu/netconference. Online registration will be available later this spring.

Frontiers in Service Conference

June 29 to July 2, 2006

Brisbane, Australia

Founded in 1992 by Roland Rust, the Frontiers in Service Conference is considered by many to be the world's leading annual conference on service research. The conference features a cross-functional list of topics, including service marketing, service operations, service human resources, service information technology, e-service, service innovation, and customer relationship management. Speakers include many of the leading service experts, including high-ranking executives and prominent academics from around the world.

The conference is sponsored by the Center for Excellence in Service, Robert H. Smith School of Business, University of Maryland, USA, the UQ Business School, University of Queensland, Australia, and The American Marketing Association (AMA).