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Pay Levels and Pay Raises

Research by
Kathryn Bartol

RESEARCH SUGGESTS THAT A MAJORITY OF EMPLOYEES FEEL THEIR EMPLOYERS COMPENSATE THEM UNFAIRLY. ORGANIZATIONS NEED TO UNDERSTAND HOW WORKERS PERCEIVE THE FAIRNESS OF PAY ALLOCATION IN ORDER TO EFFECTIVELY MOTIVATE AND RETAIN THEIR BEST EMPLOYEES. KATHRYN BARTOL, ROBERT H. SMITH PROFESSOR OF MANAGEMENT AND ORGANIZATION, WITH CO-AUTHORS AMANUEL G. TEKLEAB OF CLARKSON UNIVERSITY AND WEI LU OF CHUNG KONG GRADUATE SCHOOL OF BUSINESS EXAMINE THIS ISSUE IN A FORTHCOMING PAPER, "IS IT PAY LEVELS OR PAY RAISES THAT MATTER TO FAIRNESS AND TURNOVER?"

Bartol and her co-authors consider how distributive and procedural justice influence pay satisfaction, specifically the pay level and pay raise dimensions of pay satisfaction. Distributive justice refers to the degree to which workers feel their pay amount is fair, and procedural justice describes the perceived fairness of the means or method used to determine the amount of pay. Bartol examines the separate impacts of pay level and pay raise on turnover intentions and actual turnover within a framework that includes these justice considerations. Their findings provide evidence that justice considerations influence pay satisfaction and ultimately impact turnover.

Bartol conducted two cross-sectional field studies with a lagged measure of turnover. The first surveyed 288 managers from the corporate and branch offices of a professional and support services organization located in the mid-Atlantic and southeastern United States. The second study involved employees from a number of different organizations over a two-year period. Employees were surveyed about both their pay raise satisfaction and their pay level satisfaction; two years later their voluntary turnover was tracked.

These studies are the first to show that pay level satisfaction and pay raise satisfaction operate differently in regard to voluntary turnover. Bartol found that distributive and procedural justice also played different roles in regard to pay level satisfaction and pay raise satisfaction. Distributive justice significantly affected pay level satisfaction, more so than pay raise satisfaction; whereas procedural justice played a more important role with respect to pay raise satisfaction.

The studies showed a strong correlation between low pay raise satisfaction and actual turnover. There are a number of hypotheses that would explain this connection. Employees use pay raises to gauge the fairness of how they're being treated and a perceived lack of fairness appears to make turnover more likely. Pay raises also seem to convey to employees some information about their current worth within the organization.

Bartol concludes that turnover is heavily influenced by the perceived fairness of pay allocation within an organization. "A lot of times we hear that people leave because they'll receive more pay somewhere else, but this research indicates that people really leave an organization because of concerns about the fairness of the way they have been treated based on their pay raises."

Pay raises seem to indicate to employees their relative velocity within an organization, especially as compared to others. Employees benchmark their pay

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Sales Forecasting Model

Research by
Brian T. Ratchford

THE ABILITY TO RECONCILE SALES FORECASTS WITH SALES PERFORMANCE IS CRITICAL. WHEN IT COMES TO FORECASTING SALES VOLUME/DEMAND AND MAKING SOUND MARKETING DECISIONS, A MULTI-CHANNEL, MULTI-REGION SALES FORECASTING MODEL AND DECISION SUPPORT SYSTEM GO A LONG WAY TOWARD MEETING THOSE NEEDS AND CHALLENGES.

Recent research by Brian Ratchford, PepsiCo Chair in Consumer Research at the Smith School, suggests that sales volume can be forecast by applying established marketing science methods to solve managerial problems. Consumer packaged good companies like PepsiCo and Kraft Foods are increasingly faced with the complex and difficult task of forecasting sales volume and demand for goods sold through multiple channels such as grocery, drug, mass merchandise, and convenience stores in multiple regions. For this reason, it is important for companies to develop separate sales forecasts by product category, channel, region, and major customer account within each channel.

Forecasting has been less than successful in the past because multiple forecasts generated by different users within companies—such as the sales, finance or brand management departments—each based on different methods, were not reliable enough. Incomplete data, unavailable data and the need to capture the effects of past sales, trends, pricing, and promotional and seasonal variables combined to make multi-channel, multi-region sales forecasting an especially arduous task.

In his paper, “A Multi-Channel, Multi-Region Sales Forecasting Model and Decision Support System for Consumer Packaged Goods,” co-authored with Venkatesh Shankar, marketing professor at Texas A&M, and Citigroup Senior Vice President Suresh Divakar, Ratchford discusses the development and implementation of CHAN4CAST, a sales forecasting model and a Web-based decision support system (DSS) for carbonated and non-carbonated soft drinks for a leading consumer packaged goods company. Using a dataset drawn from IRI Infoscan data, the company’s wholesaler shipment data, A.C. Nielsen’s Scantrack data, and Wal-Mart’s Retail Link spanning 149 weeks, the authors developed a forecasting model

using the best available econometric procedures. Because they needed to consider a large number of variables and the tight timeline, stepwise selection was employed as a preliminary step to develop the initial models. These preliminary models were further refined and the final model was validated against alternative models, using holdout samples. The procedure includes a method for forecasting future values of variables that help in predicting sales, such as price and display activity.

To develop the DSS, Ratchford first identified the users, what forecasting information they needed to make decisions, and what contents and format of the outputs each user wanted. An information technology consultant helped map the model forecast outputs to the desired outputs and the drill-downs of the users and developed specifications for the Web-based tool. The model integrates all existing forecasting approaches into one system with field input, has a scientific benchmark for determining forecasts, and offers diagnostics when the actual volumes deviate from the planned volumes, placing accountability on the appropriate managers to meet sales targets.

“The model is being successfully used by a leading consumer marketing company for its major annual forecasts,” says Ratchford. “The company estimates that the use of the model and DSS has saved \$11 million for an investment cost of less than \$1 million.”

The model captures the effects of non-traditional variables such as temperature and quality of day effects to improve forecasts and incorporate several intricate adjustments to the forecasts, for example, day-of-week lifts for the cusp weeks,

“Forecasting has been less than successful in the past because multiple forecasts generated by different users within the company, each based on different methods, were not reliable enough.”

load-ins that occur before special holidays (e.g., Fourth of July) as well as trading-day adjustments that account for differences in sales between weekdays and weekends in a month. Key to the company’s needs, the authors’ model includes an appropriately derived quantitative relationship between weekly retail sales and wholesale shipments. Taken together, all these distinctive features of CHAN4CAST have enabled the company’s top- and mid-level executives in sales, marketing, strategic planning, and finance to develop accurate forecasts of sales volume, plan prices and promotional activities over a long-term horizon, track sales response to marketing actions over time and simulate forecast scenarios based on possible marketing decisions and other variables.

Divakar, Ratchford and Shankar’s work has been accepted for publication in the upcoming issue of *Marketing Science*.

To learn more about this research, contact bratchfo@rhsmith.umd.edu.

KUDOS

Ritu Agarwal, Robert H. Smith Dean’s Chair of Information Systems, and **Anil Gupta**, Ralph J. Tyser Professor of Strategy and Organization and chair of the management and organization department, are serving as guest editors for a special issue of *Information Systems Research* focusing on the topic of “Interplay Between Digital and Social Networks.”

Samer Faraj, associate professor of information systems, has received a Fulbright Scholarship. He will spend one year at the American University in Beirut, Lebanon, studying IT in the government sector.

Lawrence Gordon, Ernst & Young Alumni Professor of Managerial Accounting and Information Assurance, has been asked to serve on a National Infrastructure Advisory Council (NIAC) Work Group concerned with risk management. Through the Secretary of the Department of Homeland Security, the group provides President Bush with advice on the security, including cybersecurity, of information systems for critical infrastructure protection.

Violina Rindova, associate professor of management and organization, has been invited to join the senior editorial team at *Academy of Management Review* (AMR). She will be one of the six associate editors working with the incoming editor, Martin Kilduff.

Louiq Raschid, professor of information systems, received a \$150,000 planning grant from the National

Science Foundation to work with colleagues in Sri Lanka on data management challenges of disaster information management within the context of a National Data Center (NDC) for Sri Lanka. Raschid traveled to Sri Lanka to provide technical advice and help on site.

Lemma Senbet, William E. Mayer Chair in Finance and chair of the finance department, received an honorary degree from his alma mater, Addis Ababa University, Ethiopia’s flagship university, on July 23, 2005. The award recognized Senbet’s contribution to the field of finance and financial planning and policy issues in Ethiopia and more broadly in Africa.

Myeong-Gu Seo, assistant professor of management and organization, **Susan Taylor**, Dean’s Professor of Human Resources, and **Paul Tesluk**, associate professor of management and organization, received a research grant from the National Science Foundation for \$273,175 for research on “Managing Radical Organizational Change: The Role of Leadership and Affective Experience.”

Galit Shmueli, assistant professor of management science and statistics, and **Wolfgang Jank**, assistant professor of management science and statistics, received a grant from the National Science Foundation to fund a conference on Statistical Challenges and Opportunities in e-Commerce Research, which was held at the Smith School in May 2005. They will be guest editors for a special issue of the journal *Statistical Science* on the same subject.

Marketing at Smith

The Smith School’s marketing department is making a name for itself through cutting-edge research on some of the most compelling issues in the digital economy. The department offers an active PhD program as well as numerous classes at the MBA and undergraduate levels. The MBA program in marketing has been named one of the nation’s top programs. Supporting the department’s customer focus, the department sponsors the Center for Excellence in Service, the annual AMA Frontiers in Service Conference, the *Journal of Service Research*, and the first MBA course in e-service. The department also has a global focus, as seen from the department’s sponsorship of the Center for Global Business.

In July 2006, the Smith School will have the honor of hosting the AMA Sheth Foundation Doctoral Consortium, at which distinguished faculty from around the world along with the best and brightest doctoral students gather for an exchange of ideas.

Knowledge Exchange and Combination

Research by
Ken Smith

AS THE PACE OF BUSINESS QUICKENS AND THE PLAYING FIELD BECOMES MORE LEVEL WITHIN INDUSTRIES, FIRMS INCREASINGLY LOOK TO THEIR HUMAN CAPITAL AND PROPRIETARY KNOWLEDGE AS PRIMARY SOURCES OF COMPETITIVE ADVANTAGE. WHAT'S MORE, THE ABILITY TO KEEP AHEAD OF THE COMPETITION IN RAPIDLY CHANGING MARKETS INCREASINGLY REQUIRES FIRMS TO HAVE A KNOWLEDGE CREATION CAPABILITY.

Little is known about how firms can create a social climate which encourages and fosters knowledge creation. One view is that human resource departments can create such a social climate by developing commitment-based HR practices—those that seek to build longer-term relationships with employees and higher-levels of employer/employee investment in the firm. Recent studies of relatively stable businesses show that a link between commitment-based HR practices and a greater knowledge creation capability may exist. What has not been known are the mechanisms and processes by which these practices lead to better firm performance. In addition, there is a need to understand how these practices affect organizations such as high-tech firms that are more dynamic and rely heavily on the creation and combination of firm-specific knowledge.

Ken G. Smith, Dean's Chair of Business Strategy at the Robert H. Smith School of Business, along with former doctoral student Christopher J. Collins, now an assistant professor at Cornell University, studied how human resource practices affect knowledge creation and firm performance through an organization's social climate. Smith theorized that commitment-based HR practices would have a positive influence on three aspects of a firm's social climate: trust, cooperation, and shared codes and knowledge. In turn, these three aspects would generate a higher level of knowledge exchange and combination that would in turn positively affect the firm's performance.

Smith and Collins explore the effects of commitment-based HR practices on organizational social conditions in a recent paper, "Knowledge Exchange and

Combination: the Role of Human Resource Practices in the Performance of High Technology Firms." The paper examines how commitment-based HR practices affect firm performance in rapidly changing environments such as technology firms and influence key knowledge workers—those who are likely to have the greatest impact on firm performance through knowledge exchange and combination.

The study included 136 firms in the high-tech sector, including the software, telecommunications, IT consulting, computer electronics, and semi-conductors industries. Commitment-based HR practices were defined as employee selection practices that focused on creating internal labor markets for employees and assessing fit of the employee to the company rather than to specific job requirements; compensation practices that focused on group and organizational performance incentives; and training programs and performance appraisals that emphasized long-term growth, team building, and the development of firm-specific knowledge. The intent was to capture the practices that were specific to knowledge workers such as scientists, engineers, and executives that are responsible for firm innovation.

Smith and Collins found that commitment-based HR practices were indirectly related to firm performance through their effects on organizational social climate and knowledge exchange and combination. High levels of commitment-based HR practices enhanced the social climate of the organization, creating higher levels of trust, cooperation and shared language among knowledge workers. Higher levels of trust, cooperation and shared language directly affected the knowledge creation capability of the firm, which, in turn, was related to two measures of firm performance: revenue from new products and services, and sales growth.

"Our findings provide initial evidence that commitment-based HR practices may enable firms to create a social environment that is conducive to knowledge exchange and combination," says Smith. In rapidly changing markets where existing advantages are quickly eroded by competitors, this increased level of knowledge creation capability may allow a firm to stay ahead of the competition.

"High levels of commitment-based HR practices enhanced the social climate of the organization, creating higher levels of trust, cooperation and shared language among knowledge workers."

Smith was somewhat surprised to find that the relationships between social climate variables of trust, cooperation and shared language and the two measures of performance worked almost entirely through the knowledge creation capability. They speculate that the social climate variables may affect other unmeasured organizational capabilities such as experimentation and risk-taking or the motivation put forth by the employees. The researchers intend to extend their research to non-technology based firms and to explore the effects of HR practices beyond knowledge workers.

This research has been accepted for publication in *Academy of Management Journal*.

For further information, contact kgsmith@rhsmith.umd.edu.

KNOWLEDGE SHARING

New Faculty for 2005-2006

Christopher Bingham
Assistant Professor, M&O
PhD, Stanford University

Henry Clifford Boyd III
Tyser Teaching Fellow, Marketing
PhD, Duke University

Gary Bulmash
Tyser Teaching Fellow, Accounting and
Information Assurance
DBA Accounting, University of Maryland

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PhD, Columbia University

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Gerald Suarez
Executive Education Fellow
PhD, International American University,
Puerto Rico

David Waguespack
Assistant Professor, M&O
PhD, University of Oregon

NEW BOOKS

The following books were recently published by Smith faculty.

L. Gordon and M. Loeb, *Managing Cybersecurity Resources: A Cost-Benefit Analysis*. McGraw-Hill, 2006.

J. Baum, M. Frese & R. Baron. *The Psychology of Entrepreneurship*. Mahway, N.J.: Erlbaum, 2005.

C. Grimm, H. Lee & **K. Smith**. *Strategy as Action: Competitive Dynamics and Competitive Advantage*. Oxford Press, 2005.

L. Lesser, *Business, Public Policy, and Society*. 2nd edition, Thomson, 2006.

S. Raghavan and G. Anandalingam, *Telecommunications Planning: Innovations in Pricing, Network Design and Management*. Springer, 2006.

R. Rust, D. Narayandas and K. Lemon, *Customer Equity Management*, Upper Saddle River, New Jersey: Prentice Hall, 2005.

D. Shapiro, M. Von Glinow, & J. Cheng, *Managing Multinational Teams: Global Perspectives*. United Kingdom: Elsevier/JAI Press, 2005.

K. Smith and M. Hitt, *Great Minds in Management*. Oxford Press, 2005.

M. West, D. Tjosvold and **K. Smith**, *Essentials of Teamworking*. John Wiley & Son, 2005.

J. Coyle-Shapiro, L. Shore, **S. Taylor** and L. Tetrick, *The Employment Relationship: Examining Psychological and Contextual Perspectives*. Oxford University Press, 2005.

Management

Pay raise satisfaction and pay level satisfaction influence voluntary turnover in very different ways.

RESEARCH BY

Kathryn Bartol

Marketing

A new forecasting model allows companies to reconcile sales forecasting with sales performance more accurately than ever before.

RESEARCH BY

Brian Ratchford

Human Resources

Commitment-based human resource practices foster knowledge creation and exchange within companies.

RESEARCH BY

Ken G. Smith



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Pay Levels and Pay Raises

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raises in respect to those of others within their organizations and also with respect to their own previous raises. An employee who is dissatisfied with pay raises may use the pattern as a signal that relative progress is insufficient, which may drive the employee to look elsewhere.

The results of this study suggest that organizations and managers need to pay increased attention to pay raise procedures and outcomes. As raises depend more on performance, which usually involves some subjective assessment by supervisors, procedural issues become more complex and are more likely to result in perceptions of inequity and unfairness. Ultimately, satisfaction with pay depends less on the dollar value of a raise than on the employee's perception of fairness, velocity and his or her own worth to the organization.

Unfortunately, pay allocation resources are limited, and constitute an imperfect signal of an employee's worth to his or her organization. Bartol recommends employers consider other types of rewards in addition to pay raises in order to retain their employees. "There are other types of rewards than pay, and managers need to get away from the notion that everyone needs the same exact set of rewards," says Bartol. "One employee may value a certain training opportunity, while another wants flex time and a third wants a particular office location. As long as they are comparable and done in an upfront manner, such reward combinations can help managers creatively meet workers' needs to feel their contributions are valued and the organization is concerned about their well-being."

This research will appear in a forthcoming issue of the *Journal of Organizational Behavior*. For more information about this research, contact kbartol@rhsmith.umd.edu.

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We'd like to put *Research@Smith* directly into the hands of faculty and administrators who are interested in learning about the latest research conducted by Smith School faculty. To request a copy of this publication or make an address correction, contact Rebecca Winner via e-mail, editor@rhsmith.umd.edu, or phone, 301-405-9465.

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SMITH UNDERGRADUATE RESEARCH FELLOWS

Smith undergraduate students will have the opportunity to learn about business research first-hand through the Smith Research Fellows program. Smith Research Fellows work closely with a Smith faculty member on research projects, including field work or laboratory tests in the Smith School's finance, behavioral and supply chain management laboratories. As well as providing students with an invaluable grounding in the principles of academic research, the program is excellent preparation for those thinking of pursuing terminal degrees.

Beginning in 2006, all Smith undergraduates will participate in the Smith School Fellows program, which creates a uniquely enriching undergraduate experience based on the school's philosophy of integrating practical skills with theoretical learning. All incoming freshman and transferring juniors will participate as a cohort in a broad range of academic and co-curricular

activities designed to broaden their education and create lasting bonds within the group.

Cohorts include:

- Smith Research Fellows
- International Fellows
- Information Systems Fellows
- Entrepreneurship Fellows
- Logistics, Transportation and Supply Chain Management Fellows
- Six-Sigma Fellows
- Business Honors Fellows
- QUEST (Quality Enhancement Systems and Teams) Fellows, with students and faculty from the University of Maryland's A. James Clark School of Engineering and College of Computer, Mathematics and Physical Sciences.