Winter 2013 Newsletter

INFORMS Behavioral Operations Management Section

If you have any information for the next issue of this newsletter please forward an announcement to kschultz@afit.edu. General topics include:

1. People: moves, promotions, tenure, awards.
3. Things: papers.

1. People

A. As discussed at the BOPS meeting at INFORMS, we are establishing a Best Working Paper award [comment: the award we had before was a best published paper award]. The awards (with plaques and small monetary prizes) will be given at the INFORMS conference and will recognize up to three papers: the winner, the runner-upper and the honorable mention. The three finalists will be asked to present their work at a special section. Qualification criteria: a behavioral paper by a member of the BOPS section not yet accepted for publication on the date of submission. Selection criteria: based on the opinion of a panel of judges and ultimately the three-person Awards committee. Anton Ovchinnikov kindly volunteered to act as the chair of the Awards committee, and he will communicate with section members soon with more details and the “official” call for submissions, deadlines, etc. Stay tuned!

B. Rachel Croson has been appointed as dean of the College of Business at the University of Texas, Arlington. Go Mavericks!

C. Jordan Tong has joined the faculty at the school of business at the University of Wisconsin, Madison. Tong, Jordan [jtong@bus.wisc.edu]

D. Enno Siemsen has accepted an assignment as department editor at POMS, together with Johnny Rungtusanatham (Ohio State), of the Global Operations Strategy department (formerly Operations Strategy and Flexibility).
E. Lisa Yeo has graduated from the University of Alberta and accepted a position at Loyola University, Maryland. mlyeo@loyola.edu

F. Erica Gralla graduated from the MIT and has started her position at George Washington University. Erica Gralla [egralla@email.gwu.edu]

G. Lisa Scheele of the University of Köln is happy to announce the birth of a new researcher, Tom. We note he is already comfortably thinking outside the box.

H. Michael Becker-Peth finished his doctoral studies and graduated in Behavioral Operations at University of Cologne (Universität zu Köln.) He is now working at the assistant professor level (Habilitand) there. He does not yet have a new car.

I. The Schultz family is happy to announce the adoption of a one year old boy, Winston.

2. Places

A. The INFORMS Annual Meeting is in Minneapolis, Minnesota this year from October 6-9. There will be a Behavioral Operations Track chaired by Andrew Davis of Cornell University, adavis@cornell.edu the call for papers is:
We invite papers investigating operations management topics through human-subject experiments, behavioral modeling, or empirical studies on human behavior. The track is open to studies of all aspects of behavior and decision making, such as social preferences, bounded rationality, risk preferences, cultural differences, and prospect theory. The track also welcomes papers that aim at validating models of rationality in the laboratory. All talks should have an operations management context, such as (but not limited to) inventory, revenue management, procurement, supply chain coordination, sustainability, or healthcare operations.

B. The Behavioral Operations track at INFORMS 2012 had forty-five papers presented across eleven sessions. The topics covered a range of behavioral issues, including behavior in operations contexts such as supply chains, revenue management, procurement, contracting, decision analysis, and healthcare. The sessions were well-attended, and it seems that a larger room may be in order for next year. Additionally, the quality of the presentations was very high; thanks to all of the presenters and authors for their contributions to this track.

We would like to give a special thanks and recognition to the session chairs, who worked to put together high-quality sessions on their focused topics. Session chairs were Anita Tucker, Reidar Hagtvedt, Bradley Staats, Stephen Leider, Yael-Grushka-Cockayne, Kay-Yut Chen, Enno Siemsen, Anton Ovchinnikov, Elena Katok, Andrew Davis and Karthik Ramachandran.

C. The Summer Conference, the 8th Annual Conference on Behavioral Research in Operations Management, will be hosted by Stephen Leider at the University of Michigan in Ann Arbor on June 27-29. The goal of this conference is to bring together researchers with a common interest in the operations interface between human behavior studies and analytical modeling, with the aim of sharing current work, identifying new research problems, and developing relationships between scholars in the field.

The conference will follow the same format as last year: a one day Young Scholars Workshop and a two day main conference. The workshop will consist of tutorials on Behavioral Research in the morning, following by a research incubator in the afternoon where young scholars can present and receive feedback. We especially encourage all conference participants to attend the workshop and share their insights.

The conference website is at http://www.bus.umich.edu/Conferences/Behavioral-Operations-Conference/

3. Things

We will use this forum to keep members updated on papers published in the area of Behavioral Operations Management. This is a great opportunity for you to get the word out on your research. Papers qualify if they are aimed principally for an Operations Management audience and if they explicitly include consideration of behavioral factors other than strict profit maximizing, of if they empirically test that assumption. Normally we include papers on individual, not organizational behavior but for the purposes of this newsletter we will accept both. Papers do NOT have to be empirical.
Please send citations and abstracts of any paper you publish in 2013 to KSchultz@afit.edu

A. The Journal of Operations Management Special Issue on Behavioral Operations Management will be published (has just been published) as Issue 1, Volume 31, 2013. Papers in the special issue highlight the continued growth of contextual and methodological diversity in our field.

The editors of the special issue are Enno Siemsen, Kenneth Schultz and Rachel Croson. Eighty papers were submitted. Nine were accepted and are included below. Due to the great response to the call for papers, many fine manuscripts were not able to make it through the process. We hope to see many of those works published in other locations in the future. The editors would like to thank many fine reviewers for their assistance in preparing the special issue and the present and former editors of JOM for their support.

B. As part of the work on the special issue it was necessary to develop a definition of Behavioral Operations to assess whether a paper belonged in the special issue.


As such, a behavioral Operations paper must have a behavioral context and include an explicit behavioral component that differs from the standard hyper-rational model or provides an empirical test of that model. When developing this definition we intentionally excluded those paper which concentrate on the behavior of organizations as opposed to individuals. That is a very rich and productive area of research but continues a classic split between micro and macro studies that is useful.

Papers in the Special Issue include (page numbers are not yet know.):


The field of behavioral operations has matured into an established area within the discipline of operations management. The field fills an essential void by laying the micro-foundations for the broader discipline of operations management. As such, the field examines a variety of topics and is methodologically diverse.


Revenue management (RM) systems now have an established role in the hospitality industry. Nevertheless, use of the systems varies. The price points that these systems generate through
the analysis of demand forecasts are, by their very nature, imperfect prescriptions. Given the risk of forecast error in certain reservation contexts, hotel agents are often given the latitude to accept rate bids below the pricing prescriptions of these systems. The frequency and extent of such deviation is dependent in large part on the judgment of reservation agents, who in turn are influenced by their perceptions of how their actions will be viewed by higher levels of management. In this study, we use a laboratory experiment to investigate how different forms of continuous performance feedback influence agent decisions. More specifically, we consider both a revenue-focused metric as well as a metric framed around pricing-curve adherence as the basis of two feedback mechanisms of interest. In an attempt to provide additional insight, we also monitored physiological markers of stress and arousal to determine the emotional state of subjects. The purpose is to use such observations in support of theory regarding the impact of performance measure orientation on decision making. The results suggest implications for the practical use of continuous feedback in these settings.


Chinese and American decision makers demonstrated significantly different biases while making newsvendor decisions in a laboratory experiment that utilizes the open-ended verbal protocol analysis approach. Chinese subjects (i) asked more questions before reaching their decision, which suggests that they are more cautious when making a decision; (ii) were more frequently able to come up with a new number as their decision whereas the American decision makers tended to use one of the given numbers as their decision; (iii) were more cognizant of salvage values and as a result ordered more than the American decision makers. Due to the open-ended, time-consuming nature of our experiment, our subject pool was small and thus we present these results as exploratory in nature and discuss directions that are worth further study in future experiments.


We present results from two experiments that reveal significant gender differences in ordering behavior in the newsvendor problem. In high margin settings, males tend to order more than females, and they also tend to achieve higher profits. There are no gender differences in low margin settings. We show that the observed gender differences are partially driven by (or mediated by) gender differences in risk appetite. Males tend to prefer taking greater risk than women, and this leads them to order more in the newsvendor problem (in high margin settings). We show that the risk-ordering relationship is related to financial risk attitudes but not to social.
risk attitudes, and also that the effect is not driven by gender differences in affect, a likely alternative explanation for the results.


Risks arising from operations are increasingly being highlighted by managers, customers, and the popular press, particularly related to large-scale (and usually low-frequency) losses. If poorly managed, the resulting disruptions in customer service and environmental problems incur enormous recovery costs, prompt large legal liabilities, and damage customer goodwill and brand equity. Yet, despite conventional wisdom that firms should improve their own operations by observing problems that occur in others’ processes, significant operational risks appear to be ignored and similar losses recur. Using a randomized vignette-based field experiment, we tested the influence of organization-level factors on knowledge acquisition. Two organization-level factors, namely perceived operational similarity, and to a lesser extent, market leadership, significantly influenced the risk manager's likelihood of acquiring knowledge about possible causes that triggered another firm's operational loss. These findings suggest that senior managers need to develop organizational systems and training to expand the screening by risk managers to enhance knowledge acquisition. Moreover, industry and trade organizations may have a role in fostering the transfer of knowledge and potential learning from operational losses of firms.


Previous research has shown that when solving a newsvendor problem, individuals systematically and persistently deviate from the profit maximizing quantity. This paper investigates the relationship between cognitive reflection and newsvendor decision making, testing experienced supply chain professionals and subjects affiliated with a university business school in a newsvendor experiment. We find that in high and medium critical ratio environments, individuals with higher cognitive reflection exhibit a lower tendency to chase demand. We also find that cognitive reflection is related to task outcome measures including average expected profit, average order quantity and order quantity variance, and that cognitive reflection is a better predictor of performance than college major, years of experience, and managerial position. These results suggest that cognitive reflection contributes to an understanding of newsvendor decision-making behavior.


Supplier selection decisions are characterized by a high degree of uncertainty. We draw upon the behavioral operations management and decision-making literatures to examine factors that lead to the adoption of procedural rationality as a decision strategy. In addition, we emphasize
the effect of procedural rationality on decision-makers’ perceived uncertainty and subsequent supplier decision performance. Our structural equation model with cross-country survey data from 461 respondents in the United States and China reveals that (i) organizational, situational, and personal antecedents significantly influence the use of procedural rationality, (ii) procedural rationality is effective in reducing uncertainty in supplier selection decisions, and (iii) the reduction in decision uncertainty improves supplier decision performance. We also emphasize contextual idiosyncrasies between China and the United States.


The existing studies conceptualize a direct relationship between acquired labor flexibility and plant performance, producing inconsistent empirical results, which makes the topic ripe for further inquiry. We believe acquiring labor flexibility is not sufficient; its implementation is an important intervening step when companies have to tackle accompanying technical and behavioral side effects of labor flexibility. In this paper, we develop and test a theoretical model in which we introduce an intervening variable to capture the implementation of labor flexibility. In addition, evolving human resource management practices that promote acquisition of labor flexibility are also examined in our model. Case studies in ten printed circuit board plants validated our model. Subsequently, survey data collected from 74 PCB plants was analyzed using Partial Least Squares method.

Supporting the proposed model, the results show that the impact of acquired labor flexibility on plant performance is not direct but experienced through the sophistication of labor flexibility implementation exercised by the plant. Our findings also suggested that plants that emphasized process-focused training, provided greater job-rotation training, and designed positive reward structures, acquired higher labor flexibility.


We consider the “process-performance paradox” in the assessment of operational risks by professionals in the field of operations and supply chain management (OSCM). The paradox states that although professionals with more expertise tend to decide in different ways, they often do not make better assessments than those with less expertise. We first replicate that this paradox exists in a context of the assessment of operational supply risks, and then show how
the paradox can be understood as the consequence of process characteristics mediating the relation between expertise and assessment performance.

Using an experimental setup, we had 234 OSCM-professionals assess the operational risk in two series of different business cases, and measured several characteristics of their decision-making process. The strength of our approach lies in the fact that the business cases were real-life cases from our database of purchasing transactions in the area of IT-purchasing. This allows a comparison of the risk assessments of the professionals with the actual supply risk as was known from the survey database. Our findings show that, contrary to what is often assumed, the OSCM-professionals with more expertise do not use less information while assessing, nor are they faster. Instead, our results show that specialized expertise goes with increased certainty about the assessments, and general expertise goes with an increased use of intuitive judgment. However, the net effects of these expertise characteristics on assessment performance are zero. In the case of specialized expertise this is because specialized expertise is itself negatively related to performance. In the case of general expertise this is because the net effects of the use of intuition on performance are zero.


Behavior is driven not only by individual “(economically) rational” deliberation, but also by shortcuts (decision biases) and by social preferences (the achievement of status, reciprocal relationships, and group identity). An important aspect of these behavioral drivers is that they may operate (at least in part) through emotions. Emotions influence behavior in ways that are relevant to performance in processes; for example, anger prompts employees to refuse cooperation, fear inhibits workers’ willingness to take initiatives (for example, in continuous improvement), and shame motivates them to change behavior.

This study provides experimental evidence that the social preferences systematically trigger emotions. This happens not “linearly” (more achievement of a social preference might be expected to cause more positive emotions), but rather in more complex patterns that regulate social relationships. Arbitrary (but earned) status signals trigger pride, while status achievement from being lucky does not. An externally (not by an own fault) caused status loss triggers anger and disgust. Not receiving cooperation by another person triggers anger, but more so if the cooperation failure violates a reciprocity expectation; the happiness form receiving cooperation by another person is attenuated by guilt and sadness is the subject itself has previously refused cooperation to the other person. Events happening to salient in-group members trigger emotions as if they happened to subjects directly, including if the in-group member behaves in an embarrassing way.

These results are relevant for front-line managers because they help predicting and interpreting emotional reactions of employees: awarding or withholding status, offering or demanding reciprocity, and the creation of in-groups have emotional effects that depend on the context in predictable ways. Our results also contribute to theory by connecting literatures on emotions, decision making, and behavioral operations.

Other papers accepted for publication since the last newsletter include:
Despite the benefits of supplier integration (SI), research suggests such collaborative initiatives are inhibited by behavioral constraints. While studies tend to advance technical reasons that hinder SI, we draw from socio-technical system (STS) theory to suggest that the interaction among social, technical, and environmental features can give rise to behaviors that constrain SI. We conceptualize buying and supplying firms as two distinct social-technical systems and SI as a merging of technical systems across firms. We posit that behavioral constraints, which limit the realization of SI goals, arise when technical integration commences without appropriate a priori consideration for the social or environmental implications of technical changes. Our conceptual development not only proposes specific social processes that increase the likelihood of behavioral constraints during SI, but also suggests technical approaches to prevent them. Further, we identify salient environmental contingencies affecting the emergence of behavioral constraints. By extending STS theory to the interorganizational context, we contribute to SI research by offering a holistic view of SI and proposing ways managers can address the challenges that exist.

A performance metric and goal-setting procedure is defined for an order fulfillment operation. In this operation, order requests arrive continuously, and filled orders are shipped at a specific time each day. The metric links the continuous operation of order fulfillment to the scheduled shipment times. To prescribe goals against the metric, a performance model is developed that incorporates the motivational effect of a goal. Goal-Setting Theory is used to establish the performance goal and to show how to match arriving orders to deadlines based on their arrival times and expected processing times. Monte Carlo simulation on data from a large distribution center is used to demonstrate that setting these two parameters in the light of motivational research yields quite different results than doing so with an intuitive method. Moreover, a motivational goal leads to better operational performance; that is, correctly setting up the metric causes more customers to receive their orders sooner.

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In the newsvendor problem, a pull-to-center effect has been asserted, whereby subjects are said to order a quantity between the mean of the demand distribution and the expected profit-maximizing quantity. These claims have only been examined using group-level aggregate statistics. Looking at individual-level data from an previously published study and a new experiment, the current paper shows that while pull-to-center is present in aggregate data, it does not adequately describe the population of individual decision makers, who are found to be highly heterogeneous. Methodological implications and future research directions are discussed.


Some environments constrain the information that managers and decision makers can observe. We examine judgment in censored environments where a constraint, the censorship point, systematically distorts the observed sample. Random instances beyond the censorship point are observed at the censorship point, whereas uncensored instances are observed at their true value. Many important managerial decisions occur in censored environments, such as inventory, risk taking, and employee evaluation decisions. In this research, we demonstrate a censorship bias—individuals tend to rely too heavily on the observed censored sample, biasing their belief about the underlying population. We further show that the censorship bias is exacerbated for higher degrees of censorship, higher variance in the population, and higher variability in the censorship points. In four studies, we find evidence of the censorship bias across the domains of demand estimation and sequential risk taking. The bias causes individuals to make costly decisions and behave in an overly risk-averse manner.


Does the payment scheme have an effect on inventory decisions in the newsvendor problem? Keeping the net profit structure constant, we examine three payment schemes that can be interpreted as the newsvendor’s order being financed by the newsvendor herself (scheme O), by the supplier through delayed order payment (scheme S), and by the customer through advanced revenue (scheme C). In a laboratory study, we find that inventory quantities exhibit a consistent decreasing pattern in the order of schemes O, S, and C, with the order quantities of scheme S being close to the expected-profit-maximizing solution. These observations are inconsistent with the expected-profit-maximizing model, contradict what a regular or hyperbolic time-discounting model would predict, and cannot be explained by the loss aversion model. Instead, they are consistent with a model that underweights the order-time payments, which can be explained by the “prospective accounting” theory in the mental accounting literature. A second study shows that the results hold even if all physical payments are conducted at the same time, suggesting that the framing of the payment scheme is sufficient to induce the prospective accounting behavior. We further validate the robustness of our model under different profit conditions. Our findings contribute to the understanding of the psychological processes involved in newsvendor decisions and have implications for supply chain financing and contract design.

Behavioral operations management, or simply behavioral operations (BOps), aims at understanding the decision making of managers and at using this understanding in order to generate interventions that improve the operation of the supply chain. To do so, BOps imports knowledge from a number of fields such as economics, psychology and other social and behavioral sciences. We point out a blind spot in this knowledge: In BOps, the heuristics that people use are typically, though not always, viewed as a liability. The issue with this view is that it does not explain when and in what way heuristics can be an asset. We propose, as a research program for BOps, uncovering the conditions under which the heuristics that supply chain managers use are an asset, as well as the conditions under which they are a liability. We briefly discuss some research on heuristics in BOps and show how the study of quantitative models of heuristics can complement it.


Systems thinking has proven useful in project management planning activities and has been suggested as a critical driver of a range of beneficial organizational behaviors. Yet empirical evidence on the myriad of ways in which systems thinking can impact internal project dynamics and performance remains limited. This study focuses on one aspect of systems thinking in particular: the ability to recognize and understand the dynamics of systems and their features (e.g. feedback, delay, etc.). It makes use of a unique, large-scale interview data set along with objective and structured survey data drawn from multiple sources associated with supply chain system implementation projects. Analysis suggests that an individual’s understanding of system dynamics, as well as the similarity of such understanding to that typical of their team is, in fact, a strong predictor of both perceptions of psychological safety and information sharing quality in project work. These outcomes appear to mediate the relationship between system dynamics understanding and performance.


One of the main assumptions in research on designing supply contracts is that decision makers act in a way that maximizes their expected profit. A number of laboratory experiments demonstrate that this assumption does not hold. Specially, faced with uncertain demand, decision makers place orders that systematically deviate from the expected profit maximizing levels. We have added to this body of knowledge by demonstrating that ordering decisions also systematically depend on individual contract parameters, and by developing a behavioral model that captures this systematic behavior. We proceed to test our behavioral model using laboratory experiments, and use the data to derive empirical model parameters. We then test our approach in out-of-sample validation experiments that confirm that indeed, contracts designed using the behavioral model perform better than contracts designed using the standard model.