

Behavior in operations management: Assessing recent findings and revisiting old assumptions

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Received 1 May 2005; received in revised form 27 October 2005; accepted 27 October 2005

Available online 18 January 2006

Abstract

In this paper, we provide a perspective on why behavioral research is critical to the operations management (OM) field, what prior research exists, and what opportunities lie ahead. The use of human experiments in operations management is still fairly novel despite a small stream of publications going back more than 20 years. We develop a framework for identifying the types of behavioral assumptions typically made in analytical OM models. We then use this framework to organize the results of prior behavioral research and identify future research opportunities. Our study of prior research is based on a search of papers published between 1985 and 2005 in six targeted journals including the *Journal of Operations Management*, *Manufacturing and Service Operations Management*, *Production and Operations Management*, *Management Science*, *Decision Sciences*, and the *Journal of Applied Psychology*.

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Keywords: Behavioral issues; Experimental operations; Human experiments

1. Introduction

Most introductory operations management (OM) courses cover a wide range of topics including product development, process design and improvement, inventory management, forecasting, and supply chain management. Many of the latest tools and techniques taught in such courses are fairly simple and easy to apply. Despite this, there is often a disconnection between the concepts introduced in class and the actual rules-of-thumb followed in practice. There are many

reasons for this gap, but most have to do with either a lack of awareness on the part of the OM decision maker or a lack of applicability of the tools themselves. Many of our techniques and theories ignore important characteristics of real systems and therefore are perceived to be difficult to apply in practice. Also, even when methods are known and do apply, they may be difficult to implement given lack of information, trust, or proper incentives.

A common factor in this breakdown is people. When it comes to implementation, the success of operations management tools and techniques, and the accuracy of its theories, relies heavily on our understanding of human behavior. Lack of trust between supply chain partners, incentive misalignment, and natural risk aversion are but three behavioral issues that can negatively impact operational success. The impact of

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behavioral issues on economic activity is studied extensively in many fields, including economics, accounting, marketing, and management. However, its study in operations management is relatively scarce.

Our goal here is to make the case for the importance of behavioral research in the field of operations management. Specifically, we hope to provide inspiration and guidance to other researchers interested in studying behavioral operations management. We do this by first offering a framework for thinking about the behavioral assumptions commonly used in operational models. We divide these assumptions into three categories: Intentions, Actions, and Reactions. This framework allows us to systematically question underlying OM model assumptions and their implications on performance. We believe this characterization is helpful for identifying the types of operational problems that could benefit from behavioral research.

Next we report on the findings of a literature review of papers that investigate behavioral issues in OM. We limited our coverage to papers using human experiments as the methodology for uncovering behavioral effects. We cover papers published between 1985 and June 2005 (i.e., the past 20 years) in six select journals: *Journal of Operations Management*, *Manufacturing and Service Operations Management*, *Production and Operations Management*, *Management Science*, *Decision Sciences*, and the *Journal of Applied Psychology*. The first four journals were chosen since they are arguably the top four journals in the OM field. The remaining two were selected for their broader scope and amenability to experimental research. While relevant papers obviously exist outside this set of journals, we believe this coverage provides a sound initial investigation into the type of research that exists in this area.

Our literature review reveals several interesting findings. First, the application of human experiments to operational problems spans many sub-disciplines including production control, supply chain management, quality management, and operations technology. It appears that behavioral issues arise in a wide range of settings. Second, the number of human experiments using OM-contexts is significantly higher in interdisciplinary journals (such as *Management Science* and *Decision Sciences*) than in journals focused exclusively on OM. Third, the rate of publication over the past 20 years has been relatively stable regardless of recent acknowledgements concerning the importance of incorporating behavioral issues into OM work (e.g., Boudreau et al., 2003). Based on patterns and gaps observed in prior literature, we offer our thoughts on areas within OM that are ripe for further behavioral

exploration. We also discuss how one can apply our behavioral assumption framework to different OM problem domains to generate possible research questions.

The paper continues in Section 2 with a brief discussion of the benefits of using behavioral experiments to test issues relevant to OM. In Section 3, we discuss the nature of behavioral assumptions made implicitly or explicitly in OM models and introduce our three assumption categories. This assumption framework is used to organize the main literature review in Section 4. We conclude in Section 5 with a discussion of possible paths for future research.

2. Benefits of behavioral experiments

Behavioral experiments are a well-established research methodology for studying human factor issues in many disciplines including economics, psychology, sociology, and medical research. They are also commonly used in many business disciplines, such as marketing, accounting, and human resources. Their purpose, according to Wacker and John (1998), is “to investigate relationships by manipulating controlled treatments to determine the exact effect on specific dependent variables.” Experiments are normally run in carefully controlled settings where specific situational conditions are manipulated by the researcher. The ability to control and modify situational factors allows one to focus attention on the behavioral issue of interest, free of exogenous influences. If carried out effectively, behavioral experimentation provides a way to create conditions where natural behavior can be observed without a loss of generalization.

To appreciate the power and limitations of human experiments, it is important to understand their paradigm assumptions and how these differ from those of more traditional math modeling methodologies. The paradigm assumption of experimental work is that the theory being tested applies in real-world situations and to actors outside the laboratory. Behavioral experiments are sometimes criticized for using students in lieu of closer representatives of the population under question. This can be a valid criticism if, for instance, the reactions being tested depend heavily on the individual life experiences of the subjects. However, even if actual workers were used as subjects in those cases, it would still be problematic applying those findings to workers in a different industry, company, country, or region. Well-designed experiments do not test how students, managers, and employees at a specific corporation act in certain contrived situations.

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