

Under-researched: Operations Management Interfaces

by Danny Samson, Department of Management and Marketing, University of Melbourne, Australia

In this column I want to propose some ideas about important aspects of operations management, that we probably do a better job of teaching and even consulting in, than in our rigorous research. To begin, I want to suggest as a working definition that operations management (OM) is concerned with the design, conduct of, and improvement of any and every organizations' value-adding production processes. If we consider it as a field of professional practice, underpinned by some useful frameworks and theoretical constructs, then it can be interesting to consider the relationship between elements within operations management, and elements (of management) that are outside operations management. The thought I want to put to colleagues is that we have done a much better job of researching problems that are wholly within operations management, than those which span the boundary, and that there is much good work to be done on trans-boundary problems. If that is true, perhaps we should prioritize more work on the more challenging and complex inter-functional problems that are indeed real in most industries, which we have under-researched.

Key examples of 'interface' issues are at the boundaries of operations management, marketing, human resource management, and financial/performance management. There are many others, too. While recent decades have seen the field of operations management make a lot of progress on applications to service industries, solid consideration of environmental issues, and extensions from single firm operations to

consider supply chain management, have we largely neglected the functional interfaces challenges?

First, consider the interface with marketing: there are many practical problems in which the marketing mix and the operations strategy configuration should be jointly considered, and hopefully jointly optimized. The design of the product or service itself has massive marketing (e.g., revenue, consumer attractiveness, market positioning pricing, and channel to market) and operations implications. Clearly the complexity of a product, product family, set of offerings, degree of customization that is built in, level of technology, and other design elements have massive impacts on efficiency and cost, and on the market outcomes. What theories and models do we have and what empirical studies exist in our top journals that provide insights about what, how, and how much various approaches deliver superior overall outcomes? There are some studies, but not many. Perhaps the reason is to do with how we are organized, trained as researchers, and rewarded in our universities. As a sweeping generalization, I assert that it is generally easier to do and to publish research within a field than that which spans across fields. Too few of us in operations management work with colleagues in marketing and other fields, hence the 'under-research' outcome of the 'big' problems, which would be okay, except that these trans-discipline problems are actually some of the most important challenges faced by practitioners who need guiding frameworks, best practice tips, etc. We



Danny Samson

is a professor of management in the Department of Management and Marketing, University of Melbourne. He has served as head of the department and associate dean in the Faculty of Economics and Commerce. He

holds a BEng and a PhD in management from the University of New South Wales. He has previously held academic positions at the University of Illinois and Melbourne Business School. He has published many dozens of scholarly articles and eight books in areas ranging from management science, operations management, and general management. He serves on numerous editorial boards including as associate editor of the Journal of Operations Management. He is a member of the Global Manufacturing Research Group and recently finished a term as GMRG president. He has consulted widely to business organisations around the world in industries ranging from manufacturing to banking and professional services.

d.samson@unimelb.edu.au

need to build theories that integrate the operations strategy set with the marketing mix. We need to do more case study research at this key interface, and then we need some large-scale studies that validates 'what works' in general, and then details of what works in various sectors, industries, and big versus small companies. On the particular subject of optimizing the firm's offerings, how does the 'cost of complexity' manifest, where I assume here that product range complexity generally brings marketing benefits (up to a point), but also drives direct operations and overhead costs. There are many other issues of practical importance at the marketing-operations interface. How best to develop and integrate new products and services into mainstream operations is a further example that needs more research. This leads to a consideration of the interface of operations management and technology management, which is another area of some real complexity in organizations, in which we need to work more on theory and practice in order to guide professional practice. To the extent that here is real theory in either innovation management or technology management, have we been able to integrate it with that of operations management? How does it manifest in different industries, from commodities such as mining and oil, through traditional manufacturing, to pure services, and even the new economy? In asking these questions, it seems to me that we are at a fairly early stage of knowledge in relating operations management knowledge to most of these other areas, in the sense that we cannot yet write a definitive 'handbook,' can we? We collectively have some solid foundational ideas, but cannot yet describe detailed conditions and generalizable relationships between variables, much less 'best practices' for different contexts.

Now to the interface of OM with human resource management (HRM), which I loosely and practically interpret as attracting, motivating, keeping and developing people to be the best they can be in achieving organizational goals. My proposal that operations

management includes 'conducting' the operations, clearly includes people as the key element being managed. Most OM practitioners (from plant managers to call center managers) tell us that they spend most of their time and effort on 'people issues.' We clearly have researched some issues in this domain well, and interface fields such as ergonomics, process, and facility design are useful, yet I propose that the management of people towards the achievement of great levels of efficiency, quality, flexibility, innovativeness, etc., are under-researched by POM scholars. These matters are often left to human resource management scholars, who may not understand the OM implications of various HR parameters. Just how the pure 'people factors' interface with issues of facilities location and design/layout, capacity management, process design, technology choices, insourcing/outsourcing levels, various forms of 'lean' and quality management, Six Sigma, business excellence frameworks, supply chain designs, and many other factors is of central interest to practitioners, but because it spans research discipline boundaries, we have not done enough solid research on it. There is a lot of new knowledge about 'human factors' in terms of what makes for high-performing organizations that I believe should be integrated with mainstream OM research, if not even contained within it. It's a big claim to suggest that operations management is indeed line management, or that OM actually includes line management as a subset of it, or is it? The many line managers I know who are effective are so at least substantially because of their success in motivating and coordinating their shop floor people, as much as their technical systems. Ask any competent line manager whether (s)he would prefer to get better at lifting morale and staff engagement or applying waiting line queue models and what answer would you expect? We should be researching both types of challenges. How about rewards for staff: this is an area where much more work is needed to understand how extrinsic rewards combine

with intrinsic rewards to impact the behavior of staff within operations and the resultant performance outcomes.

We should also be doing more and better on the relationship between financial performance measurement and operations management. The degree of refinement of knowledge is low on the relationships between OM variables and various measures of financial drivers and outcomes, such as asset turns, inventory turns, margins, overhead cost allocations, cost of quality/waste, return on assets, etc. Measures of some of the more complex outcomes of operations such as flexibility and innovation are under-researched. Few would deny the importance of measures in organizations, but how much do we precisely know about exactly which measures work best and in what context, and at what level of aggregation? Accounting professors are teaching balanced scorecard approaches now and are researching how these scorecard and dashboard performance metric systems can work, but they mostly don't have the detailed understanding of how operations actually work on the ground, and they need our help, or at least our joint efforts.

A key input to operations improvement is information and knowledge, probably more so today than ever. Yet, most knowledge management and information system management researchers do not span the boundary in their work. In the fully digital world, we have E-everything, but not all that much integration of information and knowledge management research in operations management studies. How does knowledge management as a field of progress best contribute the feedback necessary to drive operations performance forward? What method of knowledge management works best in various operational context? What forms of information, level of aggregation of information incentives for using it, work best? What are the knowledge management strategies and systems that best complement various operations or process types?

Sustainable development (SD) is another growing area of interest and concern for managers, including operations managers. By SD, I mean both the correct balancing of short-, medium- and long-term outcomes and perspectives in resource allocation, and the balancing of outcomes for all the organizations stakeholders. Operations managers increasingly need to consider these matters in designing and running their systems. In mining, it's increasingly about the environmental outcomes and the social and local community outcomes, as well as the productivity, cost and quality of the mineral ores extracted. It's about the mine's footprint these days, as much as purely the profit. Since these issues are of major concern to mine site managers, we should be researching these challenges and guiding them. And the same applies to every other industry. No longer is the problem of designing operations just about the pure profit outcomes for the facility owner/operator, but we must increasingly include the other two bottom lines as well as the financial: namely, the environmental and social/community outcomes. Have we adequately researched these new demands on operations managers and how best to deal with them? I would say that we have got about as far as 'scratching the surface.' In all these matters, this is not to say that there are absolutely no studies addressing these issues, rather the point is that we have not developed theories and field studies that are comprehensive.

My final suggestion for doing a better job on researching key challenges related to OM is somewhat different: namely, that we have cranked out a generation of statistical analysts and survey hounds who do a lot of field studies using perception data and running very sophisticated statistical models on that data, finding things that mean relatively little to the advancement of the field. I have done at least my share of this, speaking, for example, as immediate past president of the Global Manufacturing Research Group, which does important survey-based research better

than most. What happened to the stream of good work that came from model building in the decision and management sciences? That work still goes on, but it feels increasingly disconnected to what the top OM journals look for. It's still hard to get case study research done really well, and even when it is done well, it's hard to get it accepted in 'great' journals (perhaps due to the lack of a root mean square statistic). My question here is whether we have collectively in our work efforts and top journals orientation lost the balance of what a variety of research approaches can bring in the way of valuable insights. As one who has done a fair amount of mathematical modelling, statistical analysis of survey data, and case study work, I'd hate to see us lose the diversity of value and knowledge brought by any of these three types of contribution. This is not an argument for going back to tweaking the EOQ model or queuing theory, but neither is it an argument to not do useful mathematical modelling and case study work that answers real problems and challenges as part of valued OM research.

Journal editors, deans, and department heads can collectively keep an eye on what is being worked on and actively encourage a refocus where it is needed. For example, special issues of influential journals can effectively stimulate research in 'gap' areas. Even better, top OM journals could specify inclusion of a broad range of categories, including interface issues as discussed above, and methodologically diverse studies as a way of affirming a collective commitment to these things, if they are considered valuable. In summary, we have collectively come a long way forward in a couple of decades, from EOQ to sophisticated supply chain models and field studies, to cover services, too, and now is the opportune time to thoroughly research how best to connect the operations engine of the organization to the surrounding and connected functions and activities. We will be able to really drive maturity into the field of operations management when we can clearly trace quite precisely, and under differ-

ent conditions, just how OM connects to marketing, financial management, knowledge management, Human Resource Management, sustainability, and other aspects of how organizations conduct themselves and create value in societies and economies. I look forward to seeing all that in a handbook! ■

**13th Annual Asian-Pacific
Decision Sciences Conference
Brisbane, Australia
July 2-5 2008**

Are you looking for an opportunity to attend a meeting with other experts in decision sciences? The 13th Annual Asian-Pacific Decision Sciences Conference is being held in sunny Brisbane, Queensland from the 2nd to the 5th July 2008. Papers on decision making are being presented in a variety of disciplines. (Submission deadline was March 31, 2008.)

Full conference registrants will be provided dinner and entertainment at the Australian Outback Spectacular and a trip to the Lone Pine Koala Sanctuary.

On the Saturday after the conference, a trip to the Sunshine Coast is planned. On this trip delegates have the option of a free tour of the Sunshine Coast including a visit to the University of the Sunshine Coast (a major sponsor of the conference) or being dropped off to spend some time at Steve Irwin's Australia Zoo (cost \$49 per person) or the local Ginger Beer factory (cost \$10.95 per person for the tour).

As well as the refereed conference proceedings, relevant papers from the conference will be considered for further publication in highly ranked international journals including the *Australasian Journal of Information Systems*, the *Journal of Electronic Commerce* and the *Artificial Intelligence Review*. Other refereed journal outlets are also possible in various specialised areas. In addition, papers submitted in the area of digital security will be considered for a book chapter scheduled for publication with IGI Global. To learn more about the conference or to submit a paper or book chapter visit:

[http://www.cit.gu.edu.au/
conferences/apdsi08/
index.html](http://www.cit.gu.edu.au/conferences/apdsi08/index.html)