

BY MIKE CRAMER

Editor's note: This is another in a series of articles profiling members of the INFORMS Roundtable.

The Emerging Role of Operations Research at McDonald's



With 32,000 restaurants in 118 countries, McDonald's is the largest franchise-owned restaurant chain within the quick service industry. After 50-plus years, McDonald's continues to make tremendous strides within its brand. Whether it's global re-imaging, new bold tastes added to the menu or increasing the efficiency of service, the change is dramatic and the customers are "lovin' it".

It is under these "large enterprise" operating conditions that McDonald's continues to thrive. A large part of this can be attributed to McDonald's Restaurant Innovation, a global function housed in a non-descript warehouse in the suburbs of Chicago.

Innovation at McDonald's

THE ROLE OF INNOVATION has greatly evolved in the past 10 years as the focus has shifted away from being bigger in favor of being better. Innovation is about staying relevant to local operating conditions and growth strategies. It's also about finding solutions to critical operational problems and anticipating needs better and faster than anyone else.

In the suburban Chicago warehouse, a team of experts design innovative solutions and develop them for market testing. Laurie Gilbert, who heads up Innovation Operations, says, "We call this the Alpha Phase. In this phase, we rapidly prototype the design and development of solutions applying a mindset of 'Fail Fast, Fail Forward'"

O.R. experts work behind the scenes at a suburban Chicago warehouse to improve operations and service at McDonald's.

The breadth of design and testing has expanded over the past five years to include:

- The impact of new menu offerings on operational performance
- Customer experience design inclusive of sight, sound, smell, taste and touch
- Employee job design for optimal performance with the least amount of cognitive load and stress
- Equipment design and layout
- Information systems design and user interfaces
- Service systems design and stress testing

"We have been able to not only grow our value through increased innovative services, but we have also reduced our overall cycle time so dramatically that last year we completed 50,000 experiments," Gilbert adds.

None of this would be possible without operations research as a critical enabler of rapid experimentation, validation, consensus and decision analytics.

All About the Roundtable

O.R. is a relatively new competency at McDonald's.

Once the solutions are thoroughly tested in the Innovation Center, they then are deployed to target markets for rapid field tests (aka "beta testing").

It used to take six months to a year to validate a test in a market, but now with the addition of operations research and the use of video analytics, it takes less than three months. This has allowed the overall innovative process to be accelerated, which in turn dramatically reduces the time to impact as well as the cost of innovation for the company.

O.R.'s Emerging Role

O.R. is a relatively new competency at McDonald's, starting in 2004 under the vision of Ken Koziol (who is now the senior vice president of Restaurant Innovation). It started as a disciplined way of identifying what our operational issues were and framing the problems in an efficient way so that we could make tangible progress at a restaurant level.

INFORMS has two types of members: individual and institutional. The latter (usually a company) joins by joining the INFORMS Roundtable and appointing as its representative the person in overall charge of O.R.

The Roundtable has been very active since its founding in 1982, with three meetings each year and much communication in between. It, its member institutions and its member representatives take a strong interest in how INFORMS serves the needs of practitioners, and have undertaken many initiatives and provided many services toward this end. These involve, for example, public awareness of O.R., both of the annual INFORMS conferences, continuing professional education, one of the prizes and various committees.

In addition, the Roundtable has an advisory responsibility to INFORMS. One bylaw states that it "... shall regularly share with INFORMS leadership its views, its suggested initiatives and its implementation plans on the important problems and opportunities facing operations research and the management sciences as a profession and on the ways in which INFORMS can deal proactively with those problems and opportunities ...". By tradition, it meets with the newly elected INFORMS president-elect each spring to discuss practice-related topics of interest to him or her, and with the entire INFORMS Board each fall to discuss topics of mutual concern.

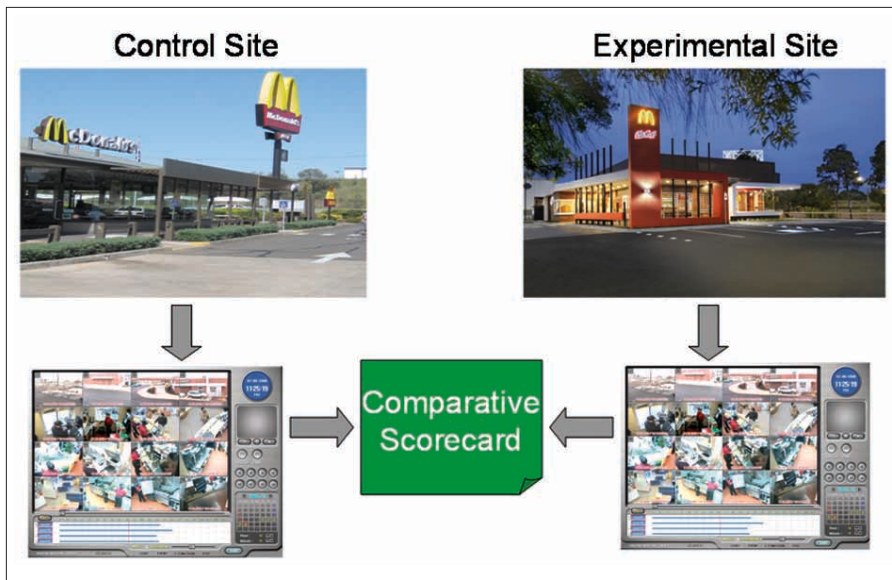
The Roundtable membership comprises about 50 organizations. Further information is available at <http://roundtable.informs.org>.

This series of articles aims to share with the INFORMS membership at large some information and insights into how O.R. is carried on in practice today.

Headed by the author, the O.R. group is now a source not only to Innovation, but also to many disciplines across the company in need of decision analytics to accelerate time to consensus and time to impact. Over the past few years we have



ROUNDTABLE PROFILES



The analytical team uses a host of analytical tools to “keep score” of progress.

built a team with talents in the area of video analytics, data mining/predictive analytics, predictive modeling and experimental design. These are the core competencies needed for our business right now.

A typical week includes engagement with a particular area of the world market to define and frame an opportunity.



Video analytics play a key role in keeping things running smoothly at McDonald's.

VIDEO ANALYTICS

Video analytics is a measurement technique that employs video data capture and either manual or automatic data coding to analyze movements and behavior. McDonald's uses video analytics and ethnography to better understand the likely performance of a restaurant design prior to an enterprise launch.

A typical week includes engagement with a particular area of the world market to define and frame an opportunity. We lead the design of experiments to ensure that there is no wasted effort in the process of alpha testing. We help them decide which tools should be applied from our portfolio to give them the best overall results. We collaboratively run the experiments, offering up advanced sciences in rapid measurement and validation. Video analytics and auto-sensing technologies play a large part in this role. Once we have determined the most likely innovation solutions, we then apply our predictive analytics and modeling to rapidly evaluate the likely impact across the market under varying operating conditions.

With new markets coming in every week, over the course of time we have built a database of experiences that provide for deep operational insight and profound knowledge that help us accelerate the overall process.

What's Next for O.R.

WE CONTINUE TO BUILD our portfolio of tools and leverage across our technologies to advance our learning process. For example, we have been using the video analytics to better understand our restaurant employee's behavior under various operational stresses in order to design out the stress while enabling them to reach their optimal performance.

We are leading the charge to equally blend innovation and science. I call it “Innovience,” the synergy of innovation and science where the enemy is waste. I see the opportunity to use this way of thinking to develop predictive consumer and employee behavior relative to a design. This will enable us to further accelerate the experimental process through new types of modeling which blend discrete, system dynamics and agent-based technologies. **IORMS**

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