Insights on the Future of Quality Management Research

JAMES R. EVANS AND
MEMBERS OF THE *QMJ* EDITORIAL BOARD

As the outgoing editor, I solicited members of the QMJ *Editorial Board with whom I have worked to share their insights about the future of quality management research. These individuals have reviewed numerous papers, are engaged in ongoing research in the field, and most are also involved in teaching the subject. Their insights provide numerous ideas to help the many contributors to the field identify pertinent topics to build new knowledge and to sustain the discipline and the journal.*

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INTRODUCTION

As the outgoing editor, I solicited members of the *QMJ* Editorial Board with whom I have worked to share their insights about the future of quality management research. These individuals have reviewed numerous papers, are engaged in ongoing research in the field, and most are also involved in teaching the subject. I categorized their comments into several areas: the "Big Q" perspective, implementation and innovation, healthcare, standards and ISO 9000, the role of the quality manager, specific areas of opportunity, and quality theories.

"BIG Q" PERSPECTIVE

Victor Prybutok, from the University of North Texas and the Toulouse Graduate School, commented:

> "We have come a long way in the almost three decades that I have been involved in quality. I have seen the discipline evolve from trying to implement SQC to TQM and CQI to Six Sigma and beyond. I started this journey while working at the Campbell Soup Company during the days when Mary Walton reported on its efforts in the Deming Management Method (Walton 1986). I subsequently moved into academia and began to conduct research on quality. In the early '90s I gave the keynote address at the College of Osteopathic Health Care Executives Annual Conference on how to move healthcare into a process-driven quality improvement environment. Reflection on the timing of that presentation shows that it was provoked by the awakening of interest in quality applications in many industries that ranged

from manufacturing to service to specialty applications like healthcare service delivery. Many authors have addressed the evolution of the discipline of quality, including the overview of Six Sigma by Montgomery and Woodall (2008), and the research tradition of statistical quality control by Hossain et al. (2010).

"While the interest in quality has become pervasive, and has become a part of everything we do, there are still key research opportunities to be explored. More recently I gave the keynote address at Grant MacEwan University in Edmonton, Canada, on conducting business research that meets the needs of industry, and a large focus of that talk was on quality service research. Despite the general acceptance of quality as everyone's job, we have constant reminders of the need to be ever vigilant in the quality arena. Consider the news in the 2000s involving Firestone Tire—Ford Explorer and the Toyota accelerator. While one can argue that such occurrences are inevitable in an infinite number of interactions, I suggest that the likelihood goes up when quality is 'someone's job' instead of 'everyone's job.'

"Certainly we will see an increasing number of new technological applications, including more automated monitoring and feedback. But the future of quality is dependent on the development of unique and specific quality management models. We have made considerable progress with the development of the MBNQA model, and more specific applications such as SERVQUAL, yet need to better understand that the role of quality in operations still exists. The development of models that explain that role make monitoring and controlling quality more precise and better linked to outcomes.

"We have an article (published in *QMJ* vol. 19, no. 4) that examines the first test of the investment model for predicting attitudinal loyalty in service industries, and have since moved on to investigate how this model might apply in other venues. In the end, I think the future will rely on the development of the theory of Big Quality (Big Q). All of the research that we are conducting and that my team engages in has a common theme: that quality is a macro construct that encompasses other constructs. While we might argue that the MBNQA model captures this concept, I think that it only does so at the organizational level. We have yet to see a model capturing Big Q at the operations level in a manner that allows its application across a variety of products or services."

This supports the notion that quality management research needs to take more of a global, enterprise view.

IMPLEMENTATION AND INNOVATION

Professor Danny Samson of the University of Melbourne writes:

"I think a big open issue is on quality initiative implementation. Much more research needed. The core ideas of quality are conceptually sound, compelling, and well understood. Yet so many organizations fail to stay the course on implementation, and fall away. I know many companies that have made progress yet failed to embed it deeply enough, then it falls back. Perhaps those who know a lot about quality concepts may not know enough about change management."

I completely agree. This has been a recurring issue with many large organizations, and even some Baldrige recipients. I believe a lot has to do with management succession and transition and quests for short-term financial improvement. How can organizations sustain quality? Is it simply a role of leadership, or are other factors at play?

Dr. Frank Knight, ASQ Fellow, provided similar arguments and some suggestions for "building the enduring enterprise:"

> "While many firms have adopted the quality improvement methodology of the year or decade for the last half decade, with short-term financial gains often in focus, few enterprises have been successful in continually improving an enterprise for decades. A study of those enduring top-tier enterprises on a global basis would offer insight into enterprise traits, leadership, management, talent, structure, business model, regulatory and cultural environments that create the enduring enterprise. Lessons learned can also be accumulated and evaluated, which defeated enduring enterprise candidates. This, along with predicted future global trends, can provide great insight in architecting the enduring enterprise. Quality management research can be advanced by updating and expanding the quality management maturity grid based upon these findings."

Although there is a lot of anecdotal evidence to support these observations, a lack of rigorous, formal research studies exist.

Dr. Janelle Heineke at Boston University supports this notion:

> "I think the problem with quality management is not the thinking but the doing. There has been lots of good research over several decades now and we're starting to get to wrinkle-on-wrinkle kinds of insights, it seems to me. I've watched this for a while in healthcare. We know how to make processes better, we're just not doing it."

Her insight suggests to me that good research still needs a better process to get into the hands of the practitioner. The role of the journal has always been to facilitate the translation of research to the practitioner community; however, perhaps we need a more proactive process.

Professor Samson also makes a case for innovation research:

> "A second thought is the relationship between quality management and other important aspects of business success, such as systematic innovation. You can't have systematic innovation maturely in place if you aren't systematic in the first place, implying that sound quality capability underpins sound innovation capability. This area needs lots of research!"

The Baldrige program has, for some time now, sought to develop stronger linkages between performance excellence and innovation. Indeed, innovation is one of the Baldrige core values and concepts. Although several articles on innovation and creativity in quality have appeared, considerable opportunity exists.

HEALTHCARE

Dr. Kathleen McFadden of Northern Illinois University writes:

> "Within healthcare, more research needs to explore the relationship between quality and safety. A lot has been written about quality, but not so much on safety and how the two relate. Interestingly, some of our initial findings suggest that quality and safety are not the same and may actually work against each other."

Dr. Joe Van Matre from the University of Alabama, Birmingham, also notes the importance of healthcare research in the future:

> "I think that quality measurement and public reporting are topics with lots of development yet ahead. Pay for performance has many unresolved issues. Amy Edmondson's 'psychological safety' ties in so well with 'drive out fear' and is personally very interesting material."

For certain, healthcare is the hot topic in quality management today. Over the last few years we have published two special issues and numerous individual papers on quality in healthcare, and the interest in the Baldrige program continues to be great. Dr. McFadden raises an interesting question on the relationship between quality and safety that certainly deserves more attention.

STANDARDS AND ISO 9000

Dr. Ken Stephens, a long-time ASQ member and adjunct professor at the University of South Florida, provided some views regarding standards and ISO 9000:

> "I understand that the rate of growth of ISO 9001 registrations is waning and may be on its way to 'saturation.' It is affected by splinter standards as well! Long associated with this standard is the oft-voiced concern that it does not, in fact, deal adequately with the quality of actual products (or services) provided by ISO 9001 registered companies. Is it time to consider 'product certification' on a larger scale? Most standards bodies across the world (with the United States conspicuously missing) actually have a type of product certification and quality mark built into their standards act. Of notoriety is the British (BSI) 'Kite Mark.' My long-ago published book, *Preparing for Standardization, Certification and Quality Control* (Stephens 1979), presents a case study of the Thai Industrial Standards Institute (TISI) that includes a system and product certification scheme involving a product quality mark. This area may warrant further research for extensions of quality management."

While we have published many papers dealing with implementation issues and relative benefits of ISO 9000, Dr. Stephens' suggestion of research on a broader scale, and alternatives to current certification processes, has significant merit. He also suggested the following:

> "Some other areas are related to the standards arena with respect to formulating as well as implementing standards (including enforcement). It would seem that worthwhile studies associated with the ISO 14000 series and ISO 26000 are feasible."

I have seen little in this area, and might add that the linkage to ISO 9000 and quality management and results might be a useful area of research.

CROSS-DISCIPLINARY RESEARCH

Dr. John Latham from the Monfort Institute at the University of Northern Colorado suggests the need for more cross-disciplinary research:

> "The cross-disciplinary and scientific nature of quality management (QM) and performance excellence (PE) methods make them uniquely suited to help solve some of the most pressing problems we face in organizations and society as a whole. Our formal knowledge of these two complementary bodies of knowledge has grown over the past few decades, in no small part due to the efforts of those involved with *QMJ*. However, we still have much to learn about how these tools, techniques, and technologies can be integrated with leadership and design to address some of our most difficult and critical challenges.
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> "Researchers at the Monfort Institute are focused on developing new insights into the conceptual equation: Leadership + Design = Sustainable Excellence. These efforts include how key cross-cutting concepts including quality management, performance excellence, sustainability, systems thinking, culture, and organizational learning are integrated with leadership and design to create value for multiple stakeholders.
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> "While we have many useful methods to help design better products, services, and processes, all too often the users of the methods focus on meeting the requirements of one or two stakeholders such as the customers and the investors. Truly sustainable designs create value for multiple stakeholders. We need a deeper understanding on how to integrate human-centered design approaches with QM and PE design techniques to develop custom designs that meet the needs of multiple stakeholders.
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> "While the development of generalizable theories and widely applicable concepts are the typical goals of academic research and

this academic journal, these efforts sometimes fall short of providing the insights needed to improve practice. We need more research that addresses the dual objectives of building theory as well as improving practice. In addition, we also need more detailed knowledge of how our concepts and theories vary due to the unique context factors of a wide variety of organizations and situations. In the end, we need research in QM and PE to help solve our most challenging dilemmas. This will require more cross-disciplinary research topics as well as research that influences theory *and* practice."

SPECIFIC AREAS OF OPPORTUNITY

Dr. Rui Sousa from the Catholic University of Portugal (Porto) provided three areas of future research:

"QM has been one of the most successful sets of business practices ever. There is ample consensus among practitioners and academics about its positive impacts on business performance, via improved operational and/or market performance (Sousa and Voss 2002). QM has reached across many different disciplines, having been the object of research by scholars from operations management, decision sciences, marketing, organizational behavior, and strategy, among others.

"QM as a field has reached maturity. Research-wise, QM has gone through the usual cycle, from descriptive studies attempting to bring to light the associated practices and initial success stories, to studies highlighting implementation challenges, studies building theoretical frames, inferential studies empirically examining QM's impacts on performance, followed by the investigation of its main contingencies (Sousa and Voss 2008). The maturity achieved in QM research naturally led to a decline in the number of articles published on core QM themes. For businesses, QM became 'business as usual' and its practices are now routinely ingrained in organizations without the need for formal labels and programs. Furthermore, they are the core of well-established practitioner models, such as those underlying quality certification (for example, ISO 9001) and business excellence models (for example, the Baldrige and EFQM Awards). Such models have been powerful tools to diffuse, institutionalize, and sustain the use of QM practices in businesses worldwide.

"More recently, there has been renewed interest from practitioners and academics in QM-related themes, associated with the emergence of programs such as Six Sigma or the encapsulation of elements of QM as part of other programs, such as lean or Lean Six Sigma. These 'new' sets of practices have introduced their distinctive flavors and additional useful tools for practitioners to implement QM practices (for example, statistical and general quality improvement tools). Despite this, a close scrutiny reveals that the elements of QM associated with these programs are not too different from the core elements of QM that have been around for a long time.

"Given such a successful history of research in QM, what is there to add? One line of future research that I would like to offer, among possible others, is the examination of QM in a business world that is today strongly fragmented, at several levels: the *outputs* offered to customers; *customers and their interactions;* and *production/delivery processes.*

"Regarding the outputs that organizations offer to their customers, businesses increasingly offer bundles of physical products and services (sometimes called 'solutions,' comprising product and service 'fragments'). Thus, it is increasingly difficult to distinguish between products and services. Yet, there is still a significant divide in the literature between the

fields of service quality (heavily researched by marketing scholars) and product-based quality (heavily researched by operations scholars). Can we produce a unified body of knowledge bridging both fields?

"Customers and their interactions are also fragmented. For example, the interactions between providers and customers often take place via multiple channels supported by distinct technologies (physical facilities, Internet, phone, mobile devices, and so on) (Sousa and Voss 2006). In addition, we now have to take into account key interactions between customers themselves, through social networks. Also, the use of virtual channels of 'solution' delivery, notably the Internet, has led to an increased customer reach, leading to more heterogeneous markets. Customers are now geographically dispersed, and culturally and demographically diverse. Virtual channels of delivery also allow for much stronger inputs from customers, who become codesigners and coproducers. What are the implications of this context for customer-related QM practices, such as customer focus and new solution design?

"Finally, there is fragmentation in the solution delivery ('production') processes at several levels. First, such processes may be executed by networks of organizations—each performing a set of subprocesses, such as design, production, distribution, and customer care—as opposed to a linear chain or a vertically integrated organization. The organizations in such networks may be geographically dispersed and owned by different parties. In addition, such networks may change relatively quickly over time and/or across the different solutions that are offered to customers. For example, solution A may be produced by network A, while solution B may be produced by network B, comprising a different set of organizations and configuration of relationships. Second, the production of the fragmented product-service solutions discussed previously requires individual organizations to adopt new business models. One example of this trend is the case of 'manufacturing' companies that sell product-based services, on what is often termed 'servitization of manufacturing.' Rolls-Royce, for instance, no longer simply sells aero engines; now it offers a total care package, where customers buy the capability the engines deliver—'power by the hour.' Thus, strictly, Rolls-Royce now sells a service, alongside physical products. Because the capabilities needed to deliver a service are different from those that are needed to manufacture a product, such businesses may need to adopt different business models, organizational structures and cultures, compared to 'pure' product manufacturers (Neely 2008). Among other important implications for QM, the balance of quality costs (prevention, appraisal, internal failures, and external failures) changes significantly in servitized models. For example, the costs of external failures are easier to estimate and potentially higher. What are the implications of this context for process-related QM practices, such as process management, supplier relationships, and workforce management?

"Overall, in such a fragmented world, we need research to help us understand what quality means and how QM concepts and practices can be deployed to design and execute integrated and flexible end-to-end processes. This may be a wonderful endeavor for an additional spell of successful QM-related research."

Dr. Ken Stephens, cited earlier, also suggested a wide variety of topics in which further research is needed:

- Service areas similar to the Zipkin work on mortgage-finance supply chains and our responses in *QMJ* vol. 16, no. 3, such as: other banking matters; corporate structure (to big to fail!); nanotechnology; biotechnology; 3-D printers; product and service life cycles; social responsibility (impact on revenues and

business); future education/learning; communications; energy; healthcare; workplace and workforce characteristics; retirement and unemployment; food planning and chains; food wastes; catastrophic events; travel characteristics; terrorism and violence; local, state, and federal governance, and so on

- Quality management applied to government: local, state, federal, and international
- Quality management applied to the human aspects of quality
- Environmental aspects and conservational aspects

Dr. Stephens also suggested consideration of the numerous comments made by the various quality professionals who participated in the 2011 ASQ Future of Quality Study (ASQ 2011). The study has unearthed a plethora of ideas and expected items of influence on the quality profession of the future.

Dr. Tom Foster of Brigham Young University proposed a list of key topics that he feels merit emphasis in future quality management research:

- Lab-based experimental work similar to the psychology research performed in consumer behavior research
- Lab work in companies where techniques can be employed and then tested for efficacy (like the engineers)
- Quality module in ERP systems
- Customer relationship management systems
- Outsourcing quality: How do we assist partners to improve their performance?
- What forms of supplier management work the best
- Service quality: lean and Six Sigma in services
- Sustainability and environmental management

ROLE OF THE QUALITY MANAGER

QMJ's incoming editor, Dr. Larry Fredendall of Clemson University wrote:

> "Addressing the role of the quality professional/manager could potentially lead to joint academic/professional research. There have been significant changes in the field of business over the last 20 years. Business has become more global, the concerns in many industries have started to focus on issues such as sustainability, and research shortages as well as how to expand to serve the entire world population and not just those in the boundaries of North America. As companies become more global and subcontractors have taken more of a permanent presence in the supply chain, what is the role of the quality department/function? Should the quality department have total charge of Six Sigma and other change programs such as lean operations or Shainin problem-solving teams?
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> "What is the relationship of the quality department to safety and to human resources and industrial engineering? Work design is an integral part of the outcome of the product or service, yet the work is often designed through collaboration with human resources and industrial engineering. If the company is using self-directed work teams, what is the role of the quality department? Lean is often seen as being in the control of industrial engineering or operations management, so how do quality managers coordinate? As companies introduce more advanced manufacturing technology into the workplace, what is the role of the quality department? Another important part of this conversation about the role of the quality department is to investigate how quality managers get a seat at the table during the strategic planning. If quality is to be a competitive advantage, how can the quality department or function lead the way to ensure that quality has a strategic voice at the planning meetings?
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> "Specific research questions about this general topic might be: As manufacturing technology becomes more complex, what is the role of quality managers? As employees become more empowered, what is the role of the quality manager? As industry becomes more globalized, what is the role of the quality manager in managing

the internal and external supply chain? What is the role of the quality manager in identifying customer concerns and ensuring they are incorporated into new products and services?"

Quality management research involving organizational and human resources issues was widespread in the early days of the quality movement. Nevertheless, I also believe that, as the business environment, workforce, and job structures have changed and evolved, new research is required to identify and address key issues that organizations face today.

THEORIES OF QUALITY

Finally, Dr. Fredendall makes an important observation about theoretical development:

"There have been large improvements in the development of quality theory over the last 20 years. But we still have some lack of coherence about the underlying relationships that should be in the basic theory. We have not fully investigated all of the paths by which the use of quality tools can affect operational performance and business performance. For example, quality may directly affect product quality by establishing communication standards and creating a measurement system to control the processes creating a given set of quality attributes. However, it may also affect performance by affecting employee motivation directly by their involvement in measurements. Further, it is possible that they affect motivation via goal setting as suggested by Locke and Latham. For example, do the tools establish goals that then affect performance by creating commitment to achieving the goals?"

As W. Edwards Deming often stated, there is no knowledge without theory. That's the foundation and role of the journal, and I hope to see our knowledge and theories advance far into the future, driven not only by today's academic quality management researchers, but those in peripheral and related fields, and those who practice them.

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BIOGRAPHY

James R. Evans is a professor in the Department of Operations and Business Analytics in the College of Business at the University of Cincinnati. He holds bachelor's and master's degrees in industrial engineering from Purdue, and a doctorate in industrial and systems engineering from Georgia Tech. Evans is the author or co-author of two of the most popular quality management textbooks used in business schools worldwide: *Managing for Quality and Performance Excellence, 8th Edition, and Quality & Performance Excellence: Management, Organization, and Strategy, 6th Edition,* as well as *An Introduction to Six Sigma and Process Improvement,* all for Cengage Learning. In 2003, Evans and his co-author received the ASQ Philip Crosby Medal for *The Management and Control of Quality, 5th Edition*. In addition, he has also written books on statistical process control, management science, operations management, simulation and risk analysis, statistics and business analytics, and creative thinking. He has published more than 90 papers in the fields of operations research, operations management, and quality. Evans is a Fellow in and past president of the Decision Sciences Institute, and served as an examiner and judge for the Malcolm Baldrige National Quality Award program. He can be reached by email at James.Evans@uc.edu.