

The **ASQ** **Global** **State** of **Quality**

RESEARCH

DISCOVERIES **2013**

APQC



ASQ

The Global Voice of Quality™



A Message from:
Paul Borawski
ASQ CEO

The ASQ Global State of Quality Research is a groundbreaking initiative that identifies quality successes and opportunities from around the world. This unprecedented worldwide research has taken nearly a year and a half to complete, with more than 2,000 survey responses from organizations in more than 22 countries.

“Discoveries 2013” is entitled to be just that: a first view of the data, where we will begin to advance the world’s understanding of and appreciation for what quality is and does. This report uncovers regional quality trends throughout the world and provides a baseline of benchmark data to help you compare your organization to the current state of quality while gaining a solid understanding of local, regional, and global landscapes to pinpoint new growth opportunities. You will find Discoveries 2013 to be a benchmark resource and an actionable report that equips your organization with a practical resource to identify gaps and bridge them.

Subsequent reports—scheduled for release in the third and fourth quarters of 2013—will provide deeper insights, greater context around trends and opportunities, and in-depth case study reports.

In addition to the support of the ASQ Board in seeding this work, we offer thanks to the generous support from our Advisory Panel and project sponsors: Enterprise Gold and Silver sponsors, our World Partners®, and Quality Supporters. This work was also shaped through the vision of Jorge Gerdau Johannpeter, chairman of Gerdau S.A.

Jorge Gerdau Johannpeter
Gerdau S.A.
Chairman

From the moment I learned about this effort and the support it gained from the ASQ board and membership, I knew this initiative would yield results to increase the understanding and importance of what quality and continuous improvement achieves around the world, in business, and industry, benefitting local, regional, and global economies.

This report highlights the importance of leadership, the quality community, and the profession. The release of quantitative results ... and the case study spotlights of companies and organizations will prove the case for quality as never before.

THE ADVISORY PANEL

Starting in April 2012, an Advisory Panel of quality experts and thought leaders has participated in the project by providing input on the survey, promotion and outreach around the world, and analysis of the data. We would like to give a special thanks to Advisory Panel members for their hard work, passion, and dedication to the quality discipline.

Steven Bailey, DuPont

Lloyd Barker, Alcoa

Sister Mary Jean Ryan, SSM Health Care

Roberto Saco, Aporia Advisors

Paulo Sampio, University of Minho, Portugal

Tiiia Tammaru, Estonian Association for Quality

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Discoveries Summary

Quality is free. It's not a gift, but it's free. What costs money are the unquality things—all the actions that involve not doing jobs right the first time.

—Philip Crosby

The data and information presented in this initial report (Discoveries 2013) for the Global State of Quality Research outlines the first set of key findings regarding the current practices used by organizations around the world to govern, manage, measure, and support *the quality discipline*. Our goal is to provide a baseline of these practices that will support ongoing research this year into the patterns and relationships outlined in this report.

The Global State of Quality Research started in late 2011 after benchmarking nearly 30 global organizations concerning enterprise measures of quality. We found a gap in the current research for the quality discipline; there is no comprehensive view of the current state and thus the future opportunities regarding the use of quality tools and techniques, as well as continuous improvement systems, within and across regions around the globe. But why is that so important?

When we look at the building blocks of any quality or improvement process, one of the first activities we do is understand the current state of activities and create a baseline from which to analyze the potential impact of change. Without understanding the current baseline and how it is achieved, any improvement activity is based on speculation and not empirical evidence—basically just guessing. The Global State of Quality Research gathered and interpreted the benchmarks for the quality discipline to help guide further research and activities to move the discipline forward. As quality leaders we must not simply guess.

In many ways, this is ground-breaking research concerning how organizations of different sizes from around the world instill quality processes. ASQ recognizes the gap between the current and future state and the important role it must perform in filling it. By asking the questions, stating the problems, and focusing on the solutions in the Global State of Quality Research, ASQ endeavors to advance the world's understanding of and appreciation for what quality is and does in business and industry today, as well as what continuous improvement can mean for countries and communities tomorrow.

This Discoveries 2013 report provides the first highlights regarding the current use of core quality practices (the “what”) and will help to frame the remaining research to be conducted in 2013 that will answer the next series of questions (the “why”). The report is organized into a set of core main themes, associated key findings, and statistically significant factors that affect quality practices within these themes. With input from quality leaders and practitioners, the Discoveries 2013 report will start the journey to answer the “why” questions this year and provide the quality discipline with real-world data to help shape the focus of our work to move our own organizations forward—as well as the world.

During hundreds of conversations and dozens of projects, we have found there are still unanswered questions that quality leaders struggle with on a daily basis. “What is the best governance and management structure for quality to maximize the impact on outcomes?” “What measures of quality should an organization use to drive value?” “How should quality be supported by an organization?” and “How can we affect the culture of quality to make it change the way we work?”

The structure of this Discoveries report is organized into four sections, each related to one of the core themes and associated questions above. Each section then provides a rich set of supporting information describing the aggregate and significant variances. The themes are:

QUALITY GOVERNANCE AND MANAGEMENT

Theme 1

Organizations that have executive leadership directly govern or manage the quality process are 30 percent more likely to view quality as a continuous improvement activity or method to manage organization-wide performance as compared to the average. This section highlights the quality practices and factors that influence the governance and management methods, planning, strategy, and implementation of quality.

OUTCOMES AND MEASURES

Theme 2

Manufacturing-based, compared to service-focused, organizations, are nearly twice as likely to use quality measures to drive higher performance by promoting challenging goals, as part of variable performance compensation, and to support predictive analytics. This section highlights the methods and factors that influence the selection and application of quality measures.

COMPETENCIES AND TRAINING

Theme
3

Organizations that govern quality with a centralized group are roughly 30 percent more likely to provide quality training to staff than organizations where a senior executive governs the quality process. This section highlights quality-related training in terms of what type of training is provided, who receives the training, and how training is provided.

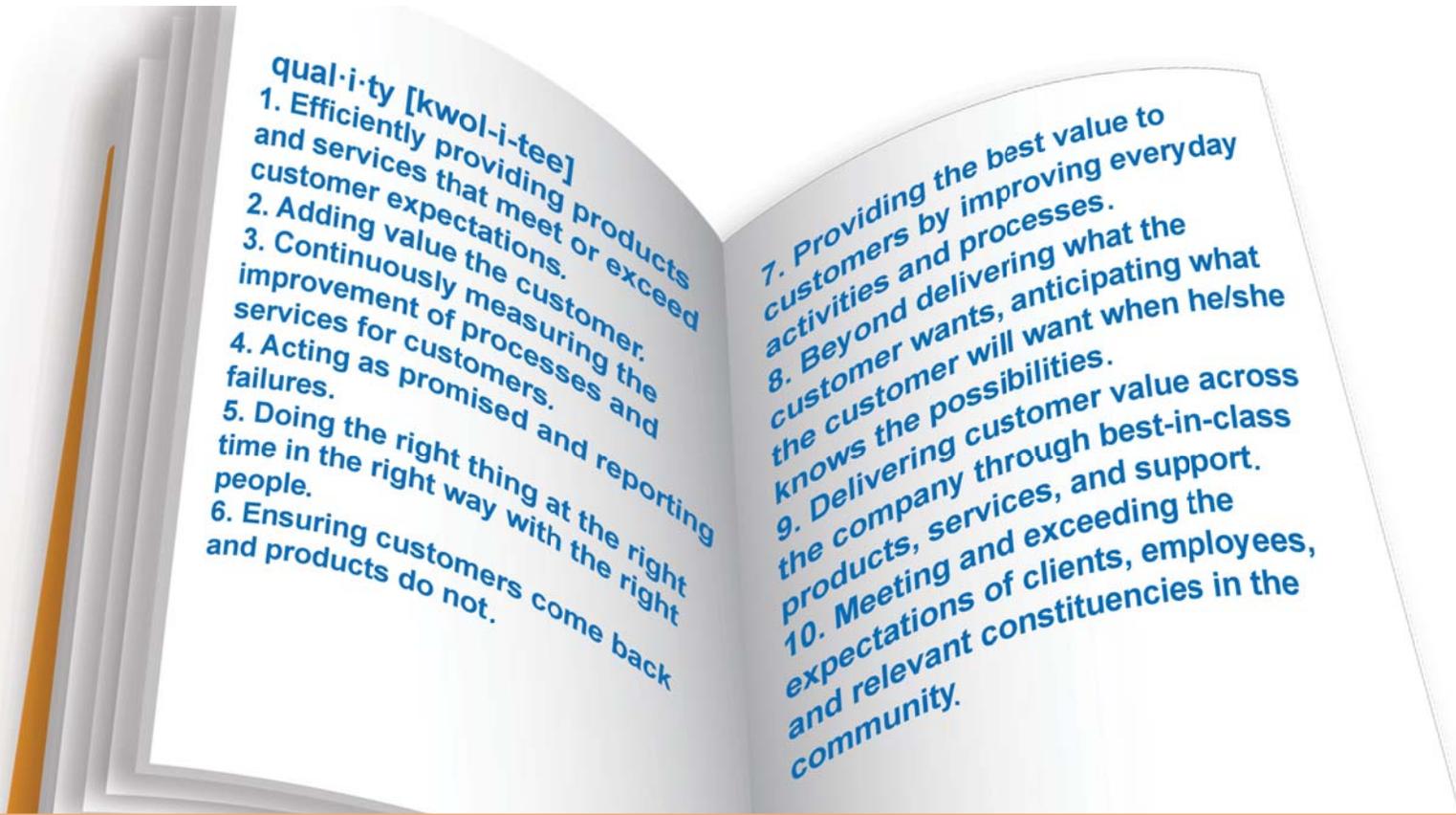
CULTURE

Theme
4

Only 68 percent of all organizations share information on product or service quality with customers. The connection between quality and the customer is a key element to the definition, activities, and ultimately the culture of an organization. This section highlights several key quality practices that influence the overall culture of an organization.

In addition to these core themes, the following three statements represent several key explanatory factors that are used extensively throughout the analysis and are highly related to the variability in the application of quality practices.

- There are significant differences in the use and application of quality practices between manufacturing-focused and service-based organizations. This includes governance and management models, the availability of and use of metrics, quality management frameworks and certifications, and training. In general, manufacturing organizations are more likely to utilize mature quality practices.
- There is a common notion that larger organizations (based on annual revenue) tend to use more mature quality practices than counterparts in smaller organizations. Although this statement is true for several practices, in general the size of an organization has a much smaller impact on variability than an organization's specific industry on the application of mature quality practices.
- There is no significant indication that the use of quality practices generally differs by region. A few variations do exist but are typically related to size, industry, or other unidentified factors.



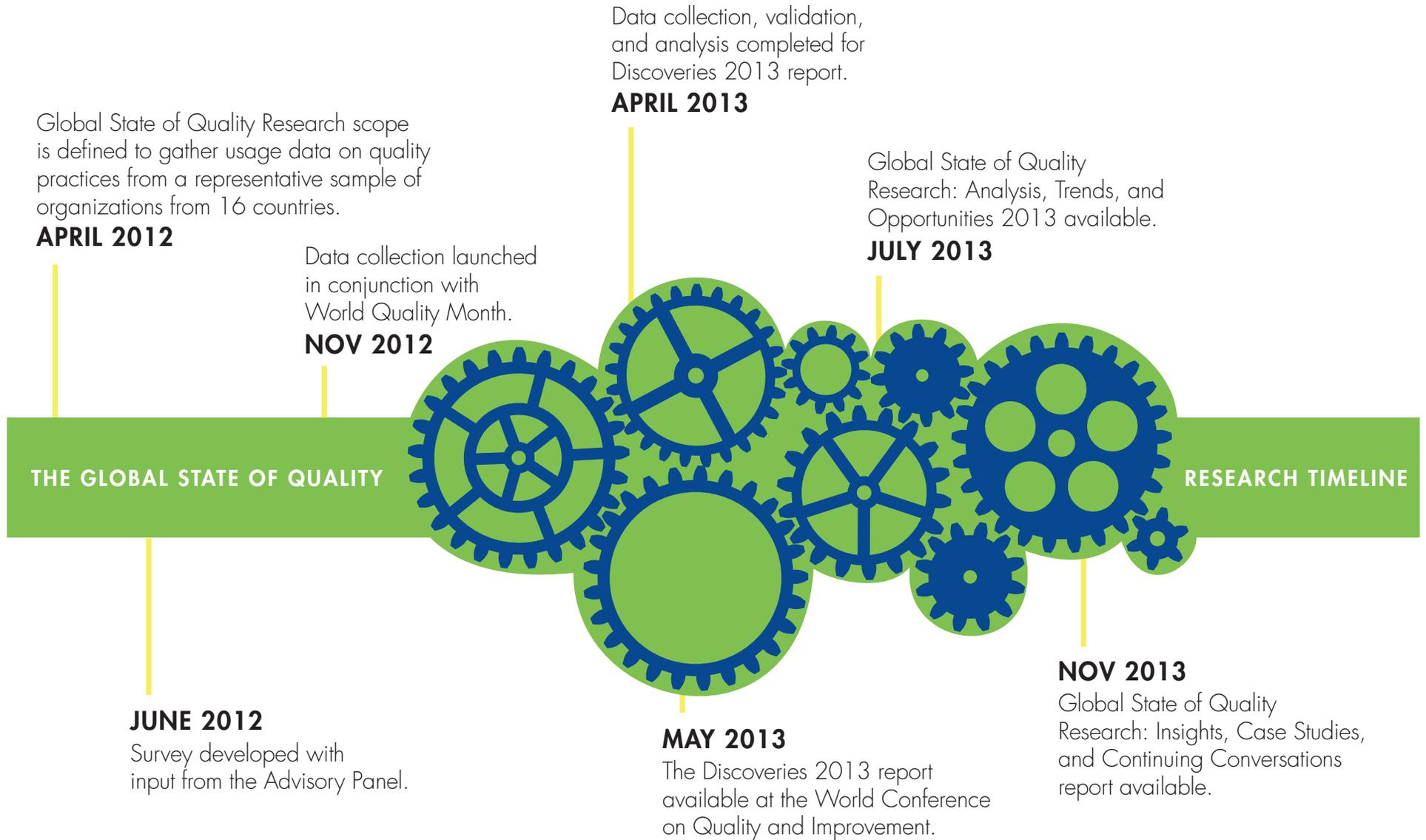
One of the first questions on the Global State of Quality Research survey asked respondents to define *quality* from their organization's perspective. The definitions in the book above are the most common. From the breadth and depth of survey respondents it is clear that quality is a cultural management philosophy used by organizations globally of every size and industry. Over the last three decades the discipline has evolved from a strong manufacturing focus on compliance requirements to a more holistic approach that affects the daily work of every employee, regardless if they are manufacturing a part or providing a service. As ASQ CEO Paul Borawski referenced in the latest version of the ASQ Future of Quality Study, "There still is no official definition of quality that serves all purposes. The statistics remain unchanged. Fifty percent say there is no single definition of quality. Fifty percent say there needs to be one."

Background and Basics

An integrated quality management system implementation should not be taken lightly. It must be a careful, planned design that should be carried out in order to maximize the benefits and minimize unwanted outputs. Several requirements should be considered before, during, and after an integration process: top management commitment, resources availability, communication, integrated training across the organization, integrated audits, technical guidelines, customers, employees, and certification entities support.

—Paulo Sampio, University of Minho, Portugal

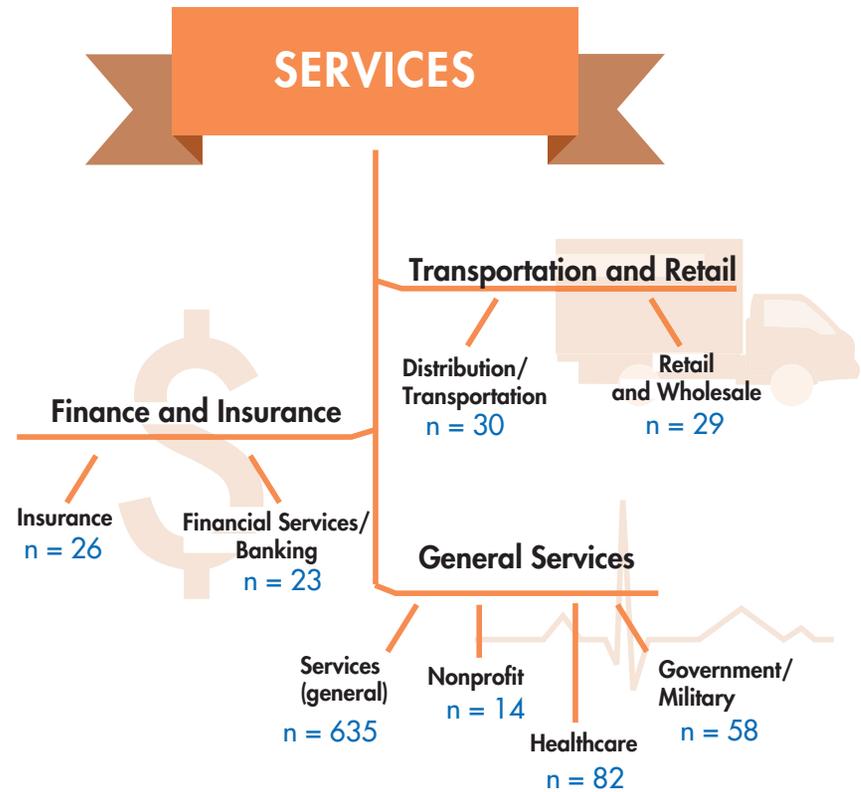
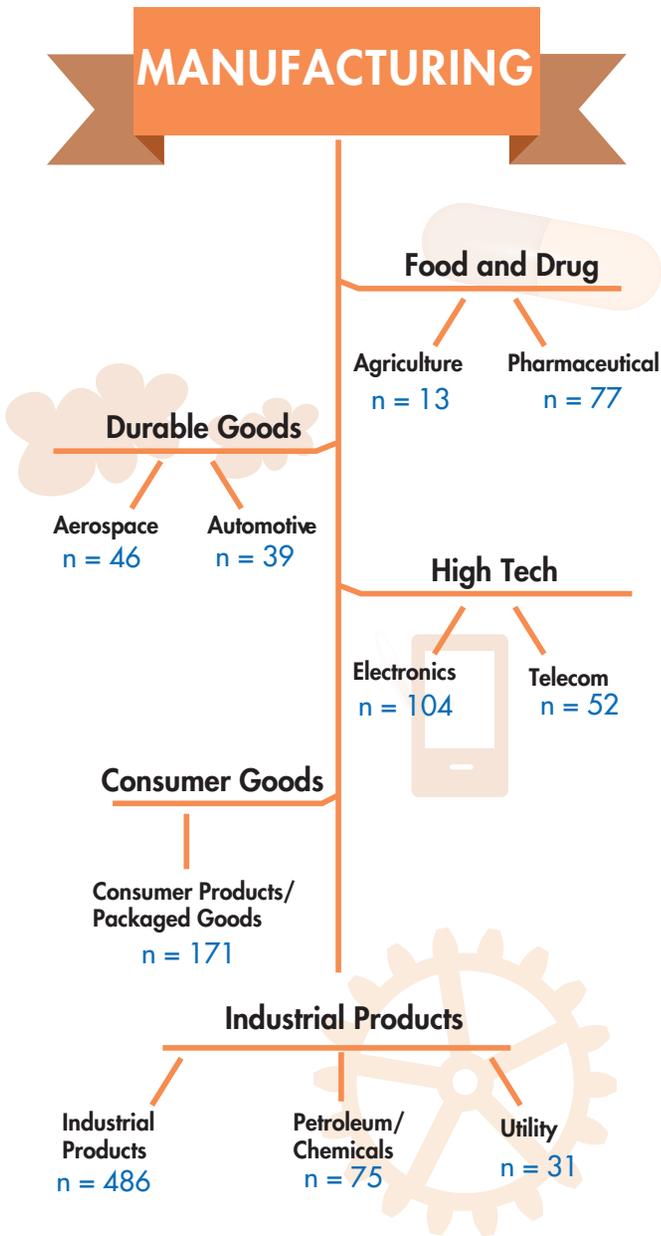




For the inaugural year, the Global State of Quality Research focuses on gathering input on quality-related practices from organizations of various revenue sizes from 15 countries (listed below; the remaining seven are grouped into *Other*), which represent more than 75 percent of the world's gross domestic product (GDP). A total of 1,991 surveys are included in the analysis for this report (with several removed during validation). Japan was initially included; but due to regulatory restrictions to surveying organizations in that country, it was removed from the list. Geographic location (defined as the primary region of operations) and annual revenue (presented as U.S. dollars throughout the report) were selected as the primary normalizing factors based on research in other functional and process areas, which shows these two characteristics as significant factors of variance. Although industry is another factor that has an impact on the variation of practices, the ability to gather a representative sample based on region, revenue, and individual industries was not within the scope for 2013.

NUMBER OF RESPONDENTS BY ORGANIZATION SIZE AND REGION

	< \$100M	\$100M to \$1B	\$1B to \$5B	\$5B to \$10B	> \$10B	TOTAL
Australia	36	29	3	1	1	70
Brazil	46	31	4	12	21	114
Canada	68	11	51	10	13	153
China	52	34	29	10	20	145
Czech Republic	13	4	0	0	1	18
Finland	71	53	17	6	4	151
France	50	22	15	17	24	128
Germany	101	48	12	7	6	174
India	37	10	8	14	22	91
Mexico	50	20	11	3	5	89
Netherlands	57	25	34	16	17	149
Russian Federation	30	10	4	19	17	80
Spain	64	13	9	3	4	93
United Kingdom	40	32	57	14	21	164
United States	122	74	52	33	40	321
Other	34	7	3	4	3	51
TOTAL	871	423	309	169	219	1,991



Although individual industries are not the focus of this first year of the Global State of Quality Research, two industry-related variables are analyzed. First is the significant variation in quality practices used by manufacturing-based (labeled *Manufacturing*) organizations compared to service-oriented (labeled *Services*) organizations. The illustrations above and to the left show what constitutes the manufacturing and services groups in the research. Secondly, to show the value of industry-based comparisons, there are several findings in the report that highlight healthcare organizations vs. all other organizations. This is an example of further analysis that will be conducted and the subsequent findings that the Global State of Quality Research will uncover and explain.



Quality Governance and Management

All organizations are perfectly aligned to get the results they get.

—Arthur W. Jones

One of the most common challenges that organizations struggle with is how to structure the governance and management of quality processes in order to maximize the impact on core organizational outcomes. Although there are always exceptions, generally speaking it is this structure that translates an organization's intangible goals into tangible daily quality activities, **creating a culture of quality.**

These three tables show the basic relationship between how quality is managed/governed and the size of an organization based on annual revenue. Governance includes setting policy, strategy, and overall quality goals but not the implementation of policy nor the day-to-day management of quality processes, which is the purview of quality management. The predominate management model is distributed leadership located in business units or divisions, with a small yet significant relationship with the size of the organization.

Quality is managed by:	Revenue Group				
	< \$100M	\$100M to \$1B	\$1B to \$5B	\$5B to \$10B	>\$10B
A centralized quality department	32%	35%	24%	33%	28%
Leadership located in multiple business units/parts of the organization	32%	53%	65%	55%	68%
A centralized committee of leaders from multiple functions	9%	7%	7%	5%	4%
Senior executive leadership/officers	27%	4%	4%	8%	0%
Board of external representatives	1%	1%	0%	0%	0%

Quality governance is more distributed among the various methods compared to management, with a much larger number of organizations relying on senior executive leadership/officers for governance activities. Again, the influence of organization size on the use of a distributed leadership model is very pronounced, with smaller organizations using it infrequently (12 percent of the time), which is nearly three times less often than the largest organizations.

Quality is governed by:	Revenue Group				
	< \$100M	\$100M to \$1B	\$1B to \$5B	\$5B to \$10B	>\$10B
A centralized quality department	22%	50%	22%	17%	24%
Leadership located in multiple business units/parts of the organization	12%	18%	28%	64%	43%
A centralized committee of leaders from multiple functions	13%	14%	36%	16%	22%
Senior executive leadership/officers	50%	18%	13%	3%	9%
Board of external representatives	2%	1%	2%	0%	1%

Lastly, there is a significant relationship between the type of model used for governance and the management of quality. Organizations are more apt to use the same model for both activities (seen as the bolded percentages in the table). Or, the possibly obvious question is why some organizations deviate from general practice and use different models.

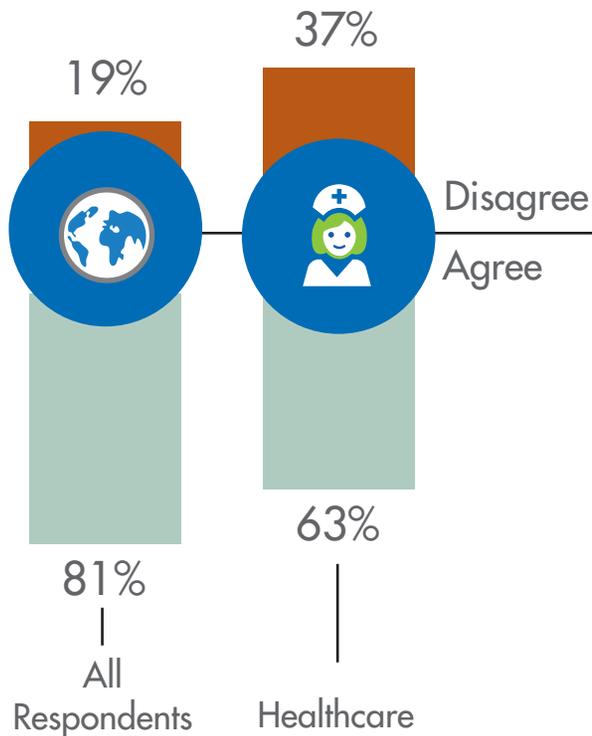
Quality is governed by:	Quality is managed by:				
	(CQD)	(LMBU)	(CCLMF)	(SEL)	(BER)
A centralized quality department (CQD)	44%	25%	15%	5%	10%
Leadership located in multiple business units/parts of the organization (LMBU)	13%	38%	9%	6%	20%
A centralized committee of leaders from multiple functions (CCLMF)	15%	19%	54%	3%	10%
Senior executive leadership/officers (SEL)	27%	16%	22%	84%	30%
Board of external representatives (BER)	1%	2%	1%	2%	30%

75% of respondents indicated that the senior quality leadership in the organization reports directly to the top leader. The smaller the organization, the more likely this is to be true (<\$100M are at **75%** compared to **67%** for >\$10B). In Germany, nearly all organizations (**93.7%**), indicated quality leadership reports directly to the top leader.

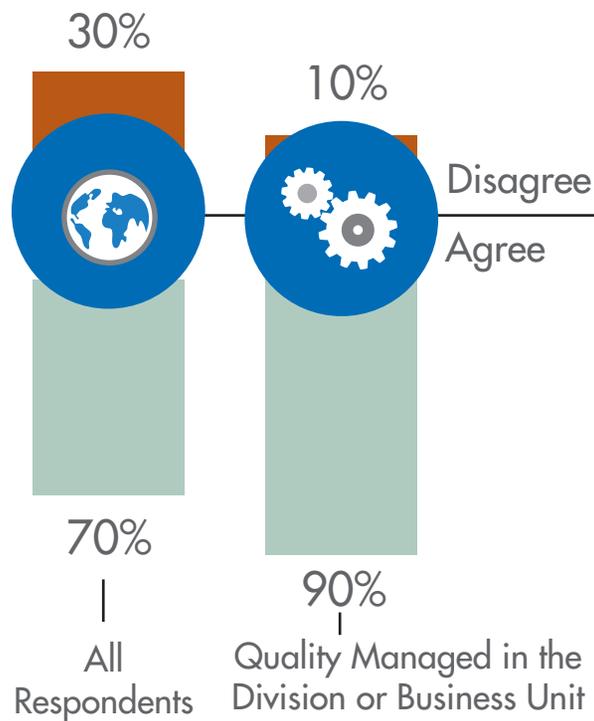
In addition to organization size, industry (**manufacturing vs. services**) also has a significant influence on the type of quality governance and management model used. Manufacturing organizations use a central quality department to govern **35%** of the time (services only **18%**), whereas service organizations are much more likely to have **senior executive leadership govern quality**.

Although there is always intrinsic value in the use of quality goals and measures within an organization, it is when these goals are established across the organization that quality can have the greatest impact on overall performance. This can be done by aligning quality goals throughout the entire product or service value chain—that is, in operations, support functions, and at the strategic level. Respondents were asked if measurable quality goals exist in ...

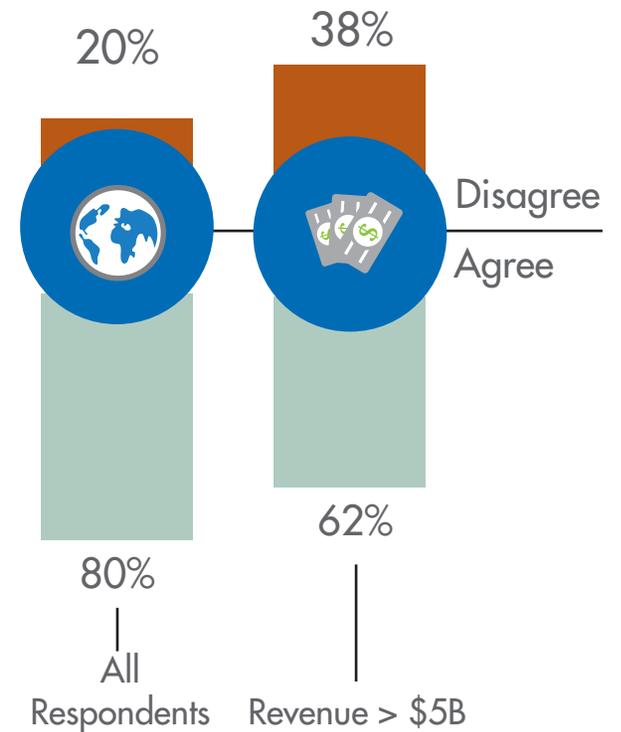
... the strategy and/or goals for operational business or functional units.



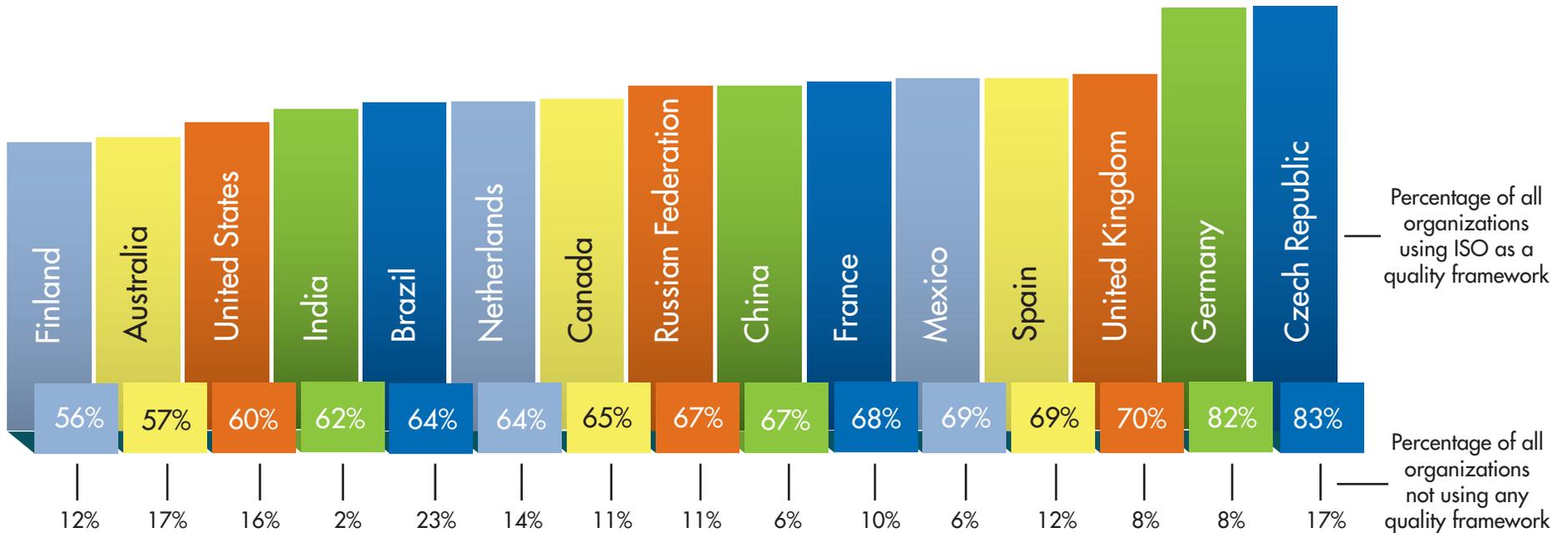
... the strategy and/or goals for management and support services.



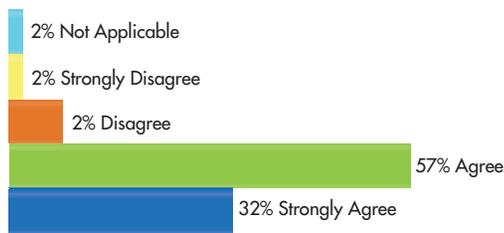
... the overall strategy and/or goals for the entire organization.



The existence of a framework or standardized processes for quality management does not guarantee success, but both can improve the efficiency of assessing adoption and compliance to quality principles throughout the organization. Used in conjunction with process, content, and knowledge management activities, a standardized quality framework can help an organization transition from quality management to using quality as a system for organizational excellence. The graph below shows the percentage of organizations using ISO as a quality framework and the percentages below the region indicate no quality framework is used.



A majority of respondents have standardized processes in place for quality management.



52% for services

vs.

78% for manufacturing

Manufacturing organizations are 1.5 times more likely to use ISO as a quality framework.

Larger organizations are more likely to use a quality award as an improvement framework.

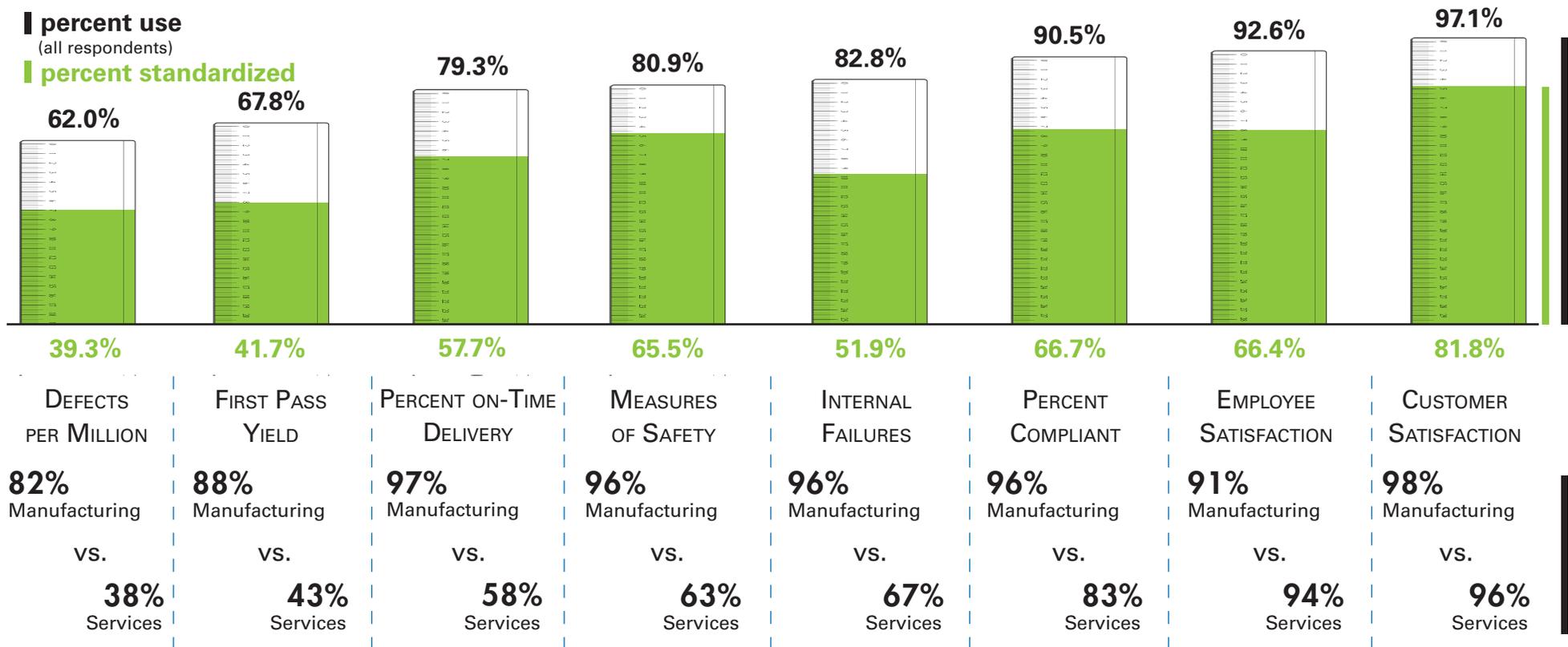




Outcomes and Measures

For most organizations, the biggest challenge in developing an organization-wide measurement framework is determining which quality measures from individual programs or functions to use. For large organizations with diverse product and service lines, comparability is a main concern. How many organization-wide measures does it take to accurately gauge quality across an entire organization? Should central leadership select and define standardized measures, or should divisional, departmental, and frontline staff be responsible for this in order to maximize applicability? And how exactly will these measures be used?

Selecting the right quality measures can have a tremendous impact on overall performance outcomes and the culture of quality throughout an organization. In addition to picking the right measures, there are also a number of benefits to using standardized measures throughout various levels of the organization. These include: the ability to compare quality performance across products and services, increased data integrity and validity through consistent definitions, and more effective communication across the organization due to a common vocabulary. The challenge is figuring out the right balance to ensure that measures are not so standardized that they lose the value to affect performance. The chart below shows the percentage of total organizations that use each quality measure (shown as the height of the bar) and the percentage that have some level of standardization for that measure (shown as the green portion). Standardization implies that the measure has a common definition across the organization, within a business unit or department, or within a product or service line. At the bottom of the page, this quality measure usage is shown for manufacturing and service organizations. Although the percent usage is interesting, an obvious question comes to mind: Why aren't these quality measures being used more?

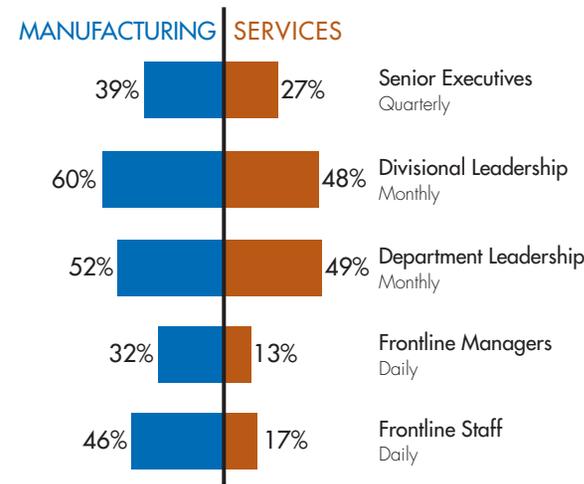


At first glance the frequency and standard cadence of reporting for quality measures may seem like mundane activities. Providing quality measures to the right people at the right time on a standard schedule enables the decision-making process to be driven by data, not by intuition. Finding the right balance is important in order to minimize the cost of reporting without sacrificing availability. The data show there may be a specific balance for organizations to use. In addition, one clear pattern is the frequency of reporting to each of the levels in the organization varies considerably between manufacturing and service organizations—possibly due to the volume of products produced.

Frequency of Reporting of Quality Measures

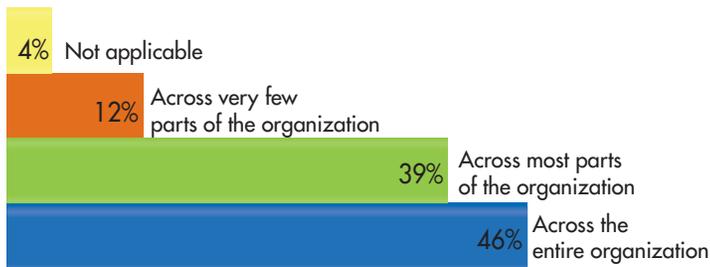
	Annually	Quarterly	Monthly	Weekly	Daily	Ad Hoc
Senior Executives	26%	34%	27%	4%	2%	5%
Divisional Leadership	11%	17%	54%	8%	2%	4%
Department Leadership	7%	9%	51%	19%	7%	4%
Frontline Managers	5%	5%	32%	22%	23%	7%
Frontline Staff	6%	5%	20%	14%	33%	10%

Based on all respondents



The chart to the left shows the percentage of respondents that are reporting quality measures at each staff level and the frequency indicated. The frequencies are the most common used by manufacturing organizations to highlight the differences between service organizations.

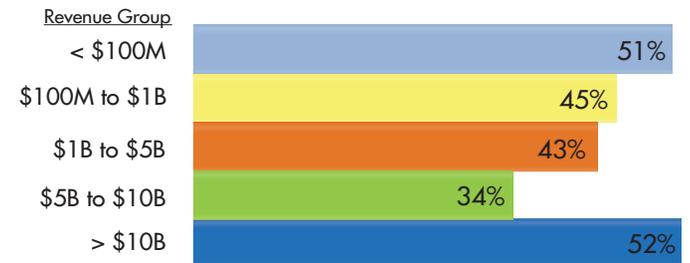
Reporting frequency for quality measures is standardized ...



Standardized reporting frequency across the organization in India:

57%

Reporting frequency for quality measures is standardized across the organization.

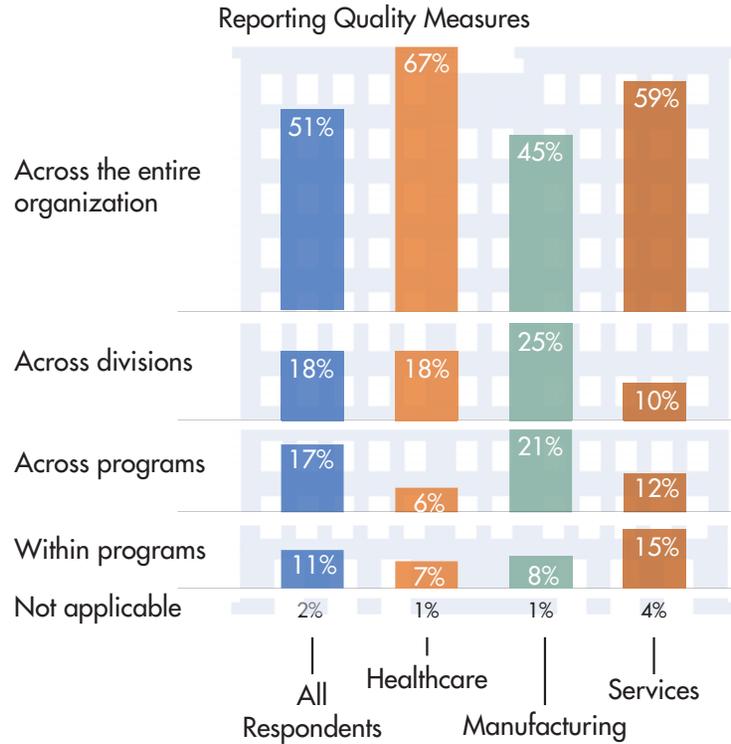


The value of widely communicating quality measures in a transparent fashion can provide tremendous benefits to an organization. One respondent summarized the value of being able to see quality measures across the organization, "It made a huge difference in our ability to quickly learn, adapt, and implement internal best practices."

For all respondents the integration of quality data with other systems is neither a common nor uncommon practice. Analysis indicates that the size and industry of an organization are significant factors in determining integration.

- Enterprise resource planning **41%**
- Product lifecycle management (PLM) **21%**
- Supply chain management (SCM) **41%**
- Organizational strategic planning **45%**

Not surprising, manufacturing organizations are 10 percent to 20 percent more likely to integrate their quality systems with other existing systems—simply due to the fact those systems exist. This pattern also exists when comparing the smallest organizations to the largest, with integration with ERP systems as 29 percent and 53 percent respectively. The one variance from this pattern is 56 percent of the service organizations responded that the quality system is integrated with organizational-level strategic planning, whereas manufacturers are at 36 percent.



The United Kingdom has the highest percentage

61%

of organizations using automated quality data collection from existing systems.

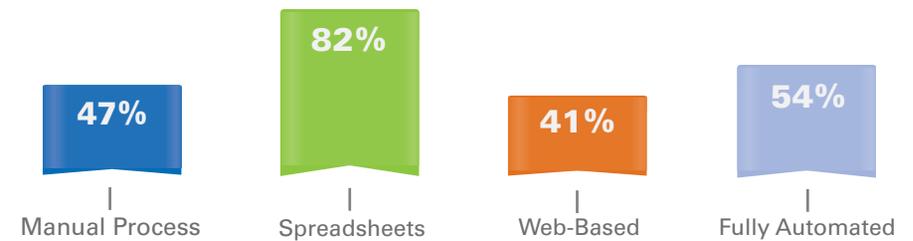
The percentage of organizations that collect quality data from tier one suppliers:

74%

Is there value in sharing quality measures across diverse divisions in large organizations? Data show a clear pattern that larger organizations share fewer quality measures across the entire organization.

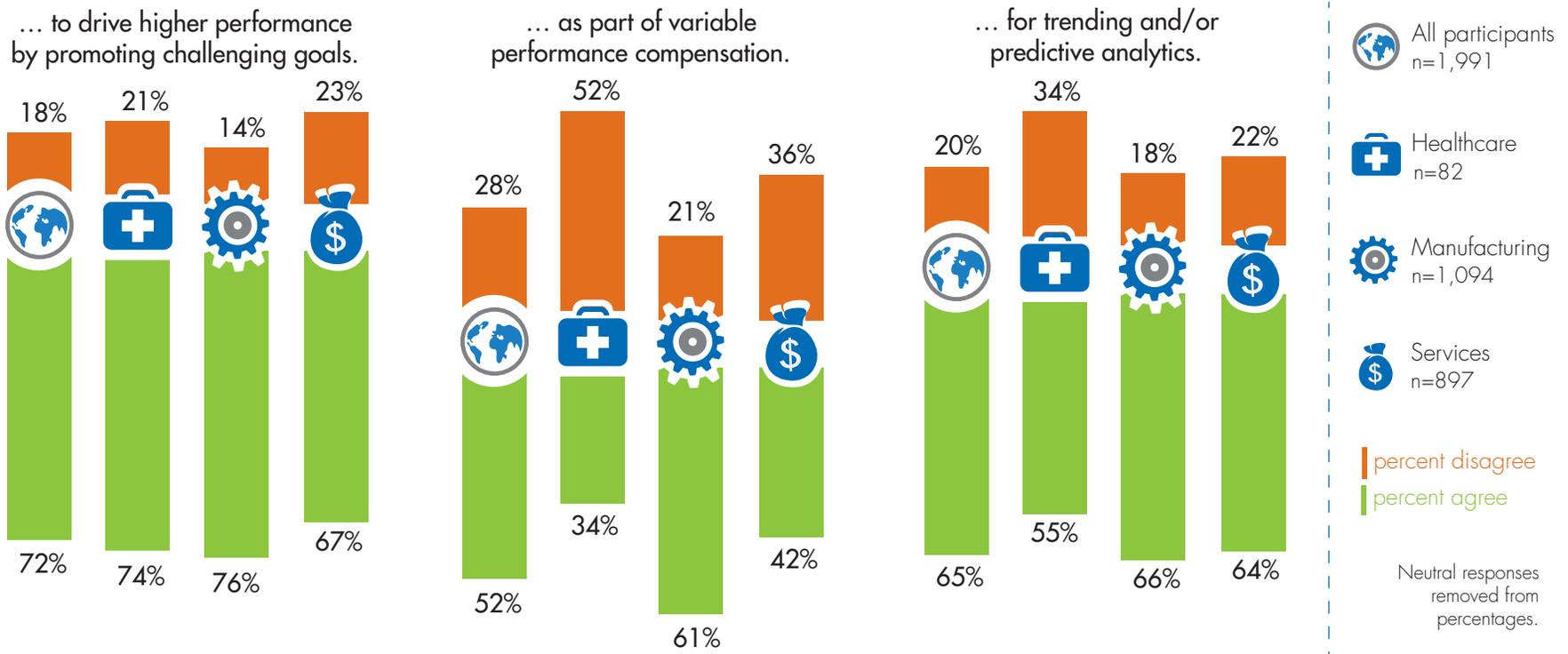


The automation of data collection for quality measures has many benefits and a steep cost. It is clear from the data that organizations (all respondents) try to balance the benefits of electronic-based data collection with the cost of automation.



Outcomes and Measures

One sign of a mature quality system that is focused on creating value and not simply compliance is how quality measures are used to affect the culture of an organization. Organizations can use quality measures in the establishment of strategic goals, for trending and predictive analysis to enable pre-emptive and not just reactive decision making, and in rewarding employees through performance compensation. Data show that the majority of organizations use measures in a more mature way, but there are a few significant differences among manufacturing, services, and healthcare respondents. The real issue then becomes why so many organizations are not using quality measures to influence their cultures. Respondents were asked three questions regarding how quality measures are used ...



Only **59%** of the organizations with distributed governance of quality use measures to drive performance, whereas usage is **81%** for organizations that manage quality by a functional central committee.
 Why the large difference?

Only **38%** of the organizations that govern quality by a distributed leadership model use quality measures as part of variable performance compensation.
 Why so low?



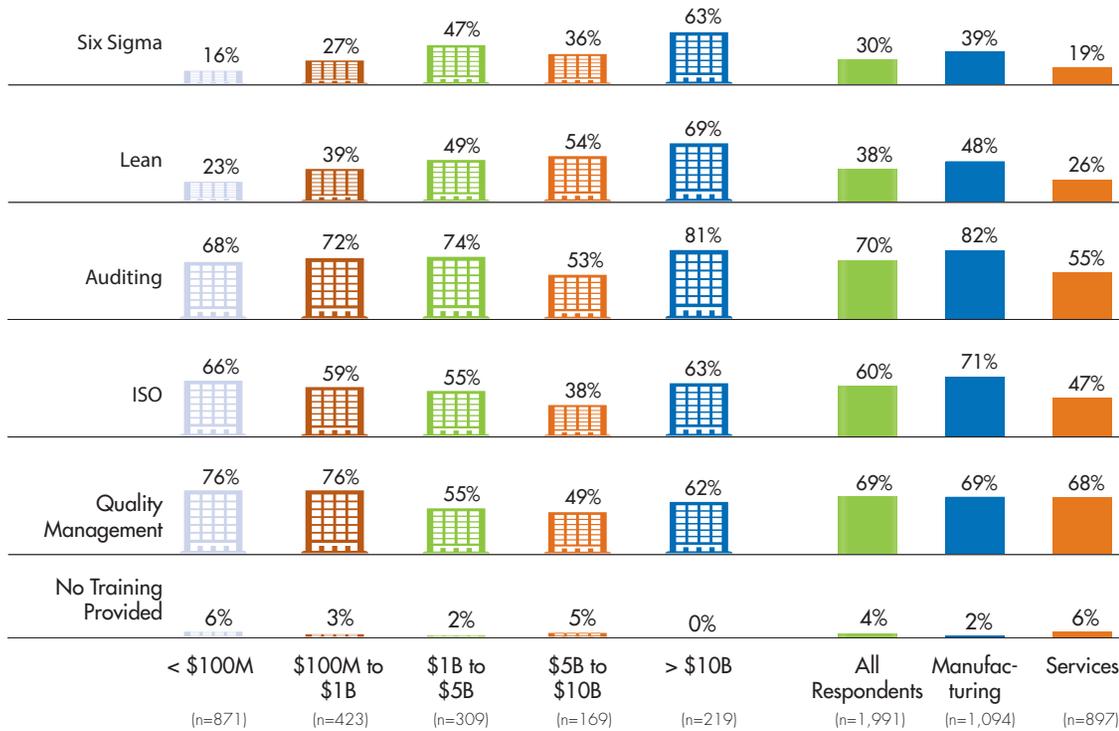
Competencies and Training

In considering quality, it is often necessary to turn your thinking upside down and to realize that quality and profit are not mutually exclusive.

—Shigeru Mizuno

The types of training offered to staff closely relate to the type of quality management framework an organization uses. For example, organizations that use ISO tend to provide ISO training. Whereas lean and Six Sigma are the least often used, the majority of organizations do provide general quality management and audit training. The data also show that the larger the organization, the greater breadth of training offered—with the majority of the largest organizations providing all types listed. Five percent of the total number of organizations currently offer no quality training.

Does your organization provide training (either through direct training or compensate for external training) to staff working on quality-related activities?



Organizations also provided data on how quality staff are trained to use quality measures. The most significant factor related to differences is between manufacturing and service organizations.

Develop normalized, effective quality metrics.

Manufacturing: **55%** Services: **38%**

Analyze quality metric data for trends and potential issues.

Manufacturing: **71%** Services: **57%**

Use quality metrics to strengthen decision making throughout your organization.

Manufacturing: **48%** Services: **54%**

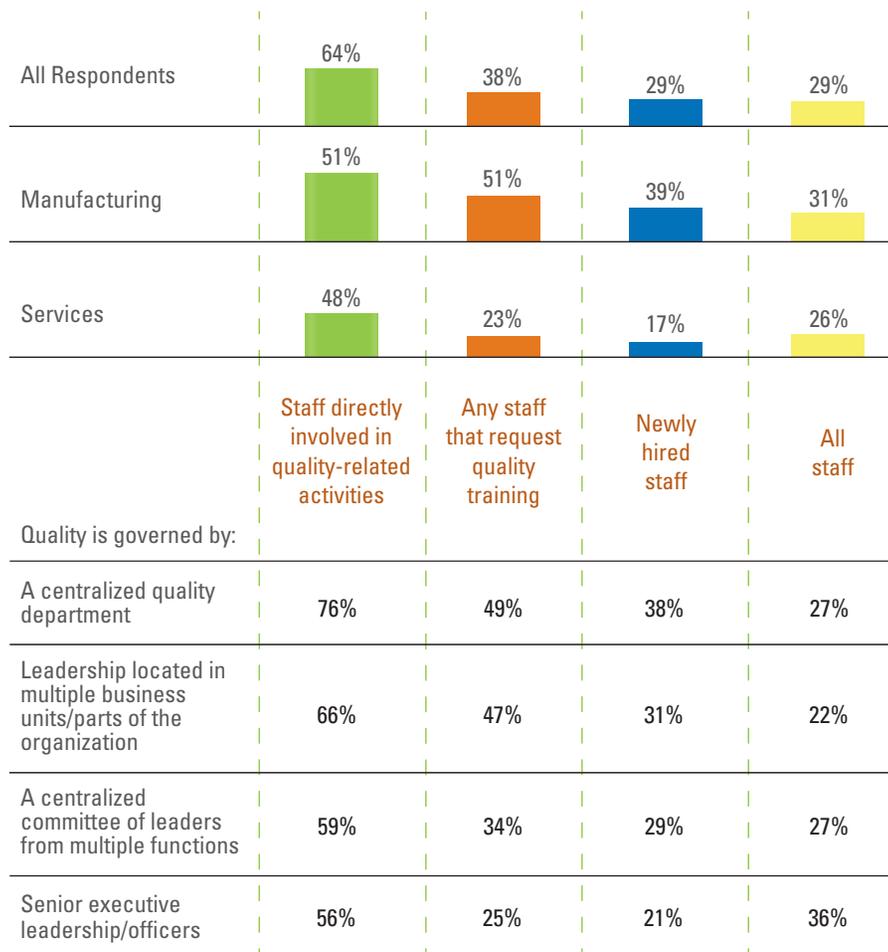
Identify areas of opportunity for performance improvement using quality metrics.

Manufacturing: **68%** Services: **69%**

In Germany, **77%** of the organizations provide ISO training and **82%** provide general quality management training—the highest of any group of organizations. Australia has the largest percentage of organizations providing no quality training at **11%**.

Past ASQ/APQC research shows organizations with mature quality systems typically provide quality training to a wider staff audience (breadth of training) and to more staff (depth of training) than the average organization. Training can have an impact on quality successes. The data here shows that the majority of organizations have a fairly narrow training scope by providing quality-related training to staff directly involved in the quality process. Only a handful of organizations provide quality training to all staff. One strongly related factor to the breadth of training is the type of governance model for quality that an organization uses. As governance moves away from a centralized quality department, the percentage of organizations providing training for various types of staff decreases significantly.

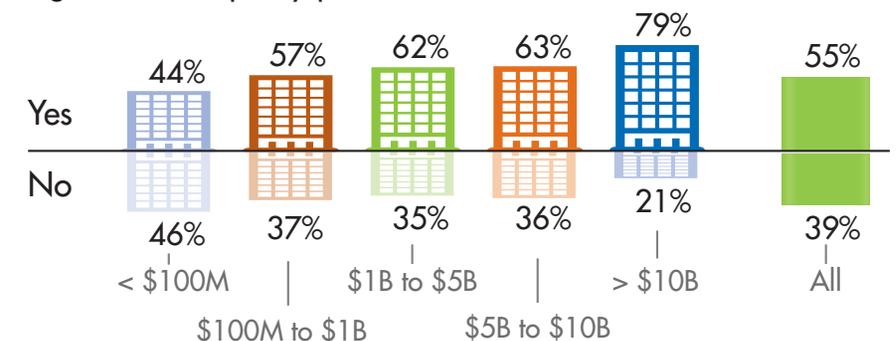
Quality-related training by industry and governance model.



We train our suppliers on our quality management system.

	Manufacturing	All	Services
Tier 1	46%	35%	21%
Tier 2	4%	3%	2%
Tier 3	2%	2%	3%

Is there succession planning for leadership managing your organization's quality process?



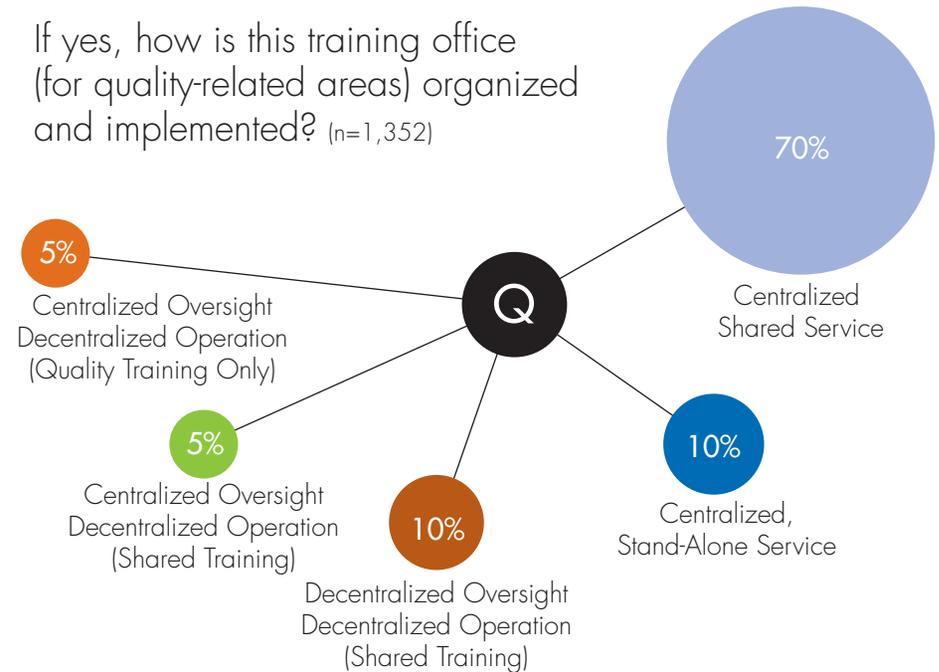
The larger the organization, the greater chance the organization provides succession planning for quality leaders. The missing portion from each bar is the percentage of "not applicable" responses.

One-third of the organizations have a formal training office or function responsible for training staff on quality practices. As with other practices highlighted throughout the report, a higher percentage of the largest organizations are able to allocate the necessary resources. For organizations with a formal program the predominate delivery method is a shared services approach with other training topics.

Does your organization have an established, formal training office (site-specific or organization-wide) for training in quality processes?



If yes, how is this training office (for quality-related areas) organized and implemented? (n=1,352)



The median annual quality training cost per quality Full Time Employee (FTE) (staff directly involved in the quality process)

\$1,333 USD per FTE

based on 274 respondents

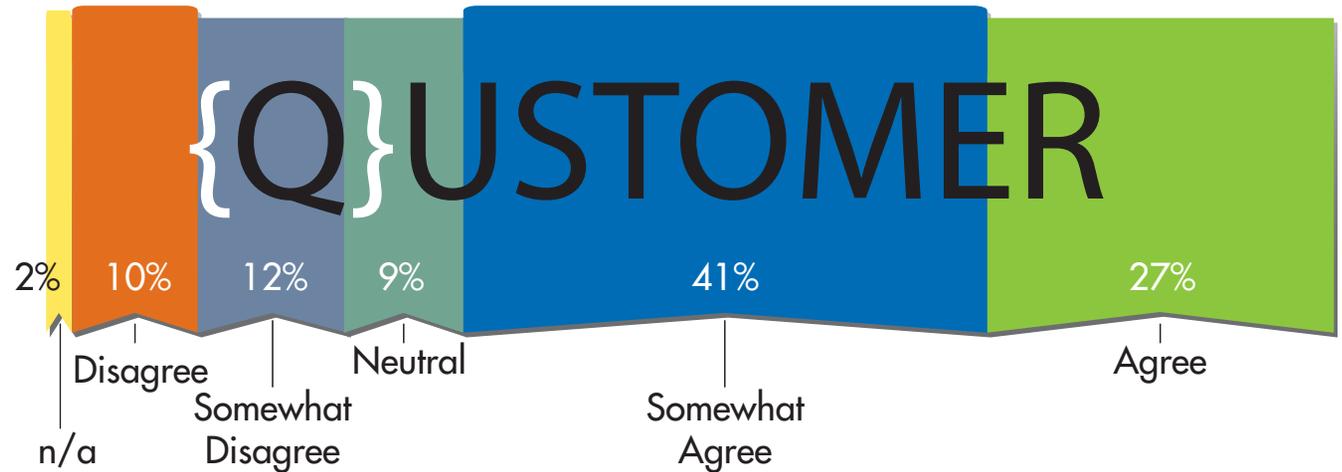


Culture

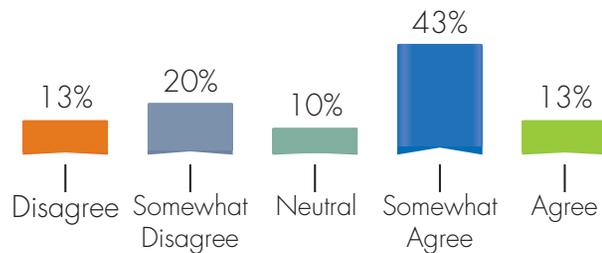
All of the sections in this report involve organizational and environment factors that define quality for organizations. The organizational structure, support elements, the work of the quality function, the use of quality measures to drive change—together, these elements provide the context of how quality diffuses throughout an organization. All these factors influence the decision-making process at all levels of the organization and shape how quality practices are infused in the process. The melding of these factors is what creates an organization's culture of quality.

Throughout the Global State of Quality Research it is clear that many organizations are becoming true partners with customers in order to maximize value for both stakeholders. Respondent definitions of quality, the actual quality processes themselves, and using quality measures to drive performance and culture are all closely tied to customers in some way. And this integration is becoming even more real as organizations begin to view internal customers in much the same way as external. Quality and customer are so closely aligned in successful organizations the two concepts are becoming one—the *Qustomer*. Respondents were asked to select a level of agreement with a number of questions related to this interaction between quality and customer, which are shown on the graphs below (all respondents; n=1,991). Although it is no shock that the majority of organizations are looking toward the *Qustomer*, there are hundreds of organizations with a distinct separation between quality and the customer.

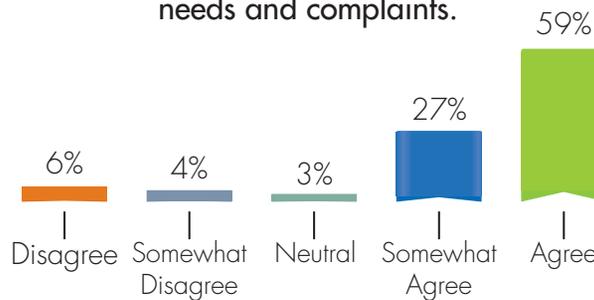
Information on our product or service quality performance is shared with customers.



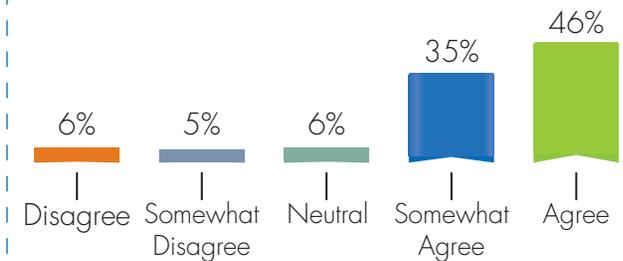
Our belief is that the customer is the only person qualified to specify what "quality" means.



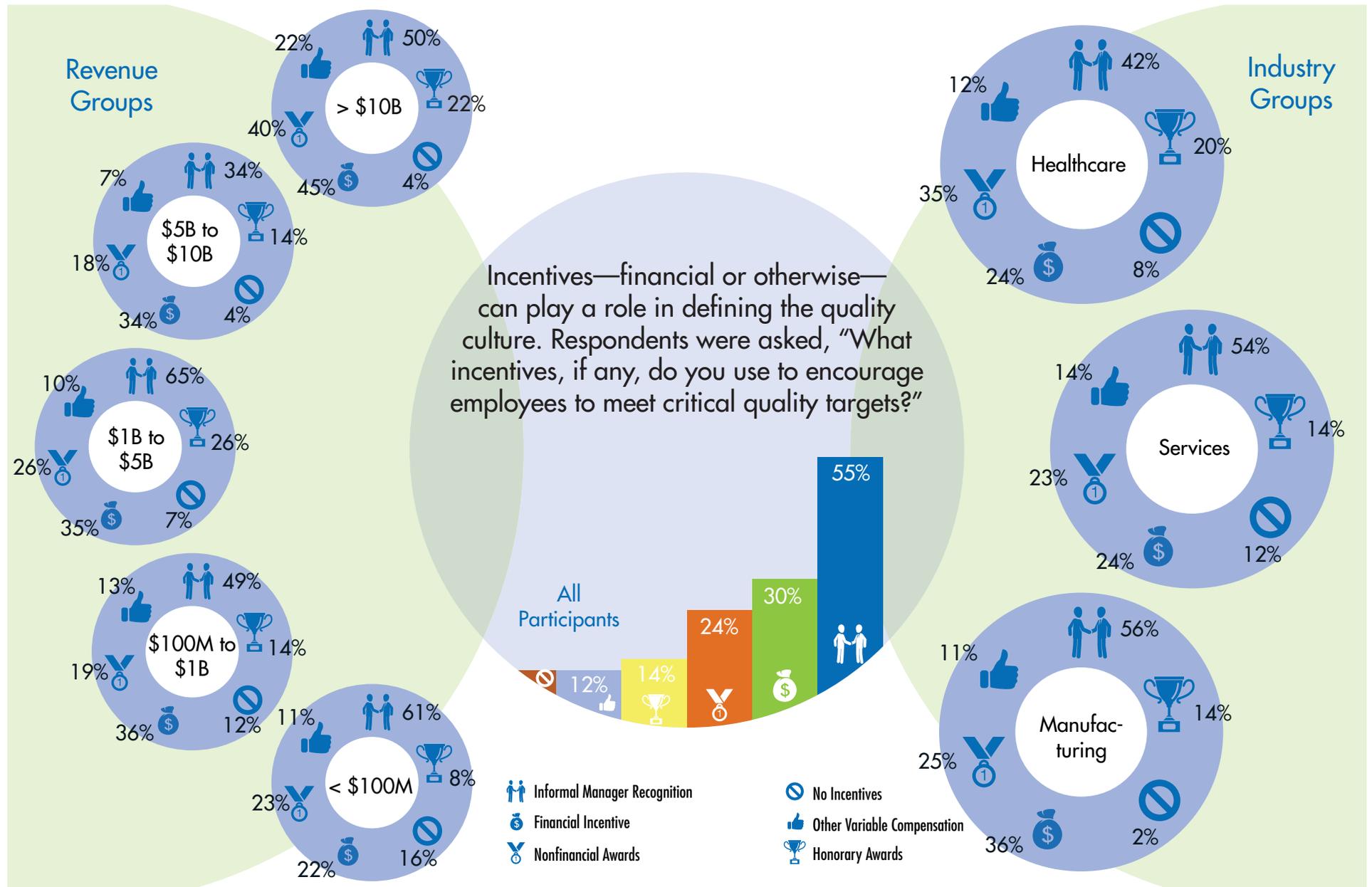
We communicate with customers regarding our efforts to address their needs and complaints.



Our organization seeks to understand product performance through our customers' eyes.



Culture



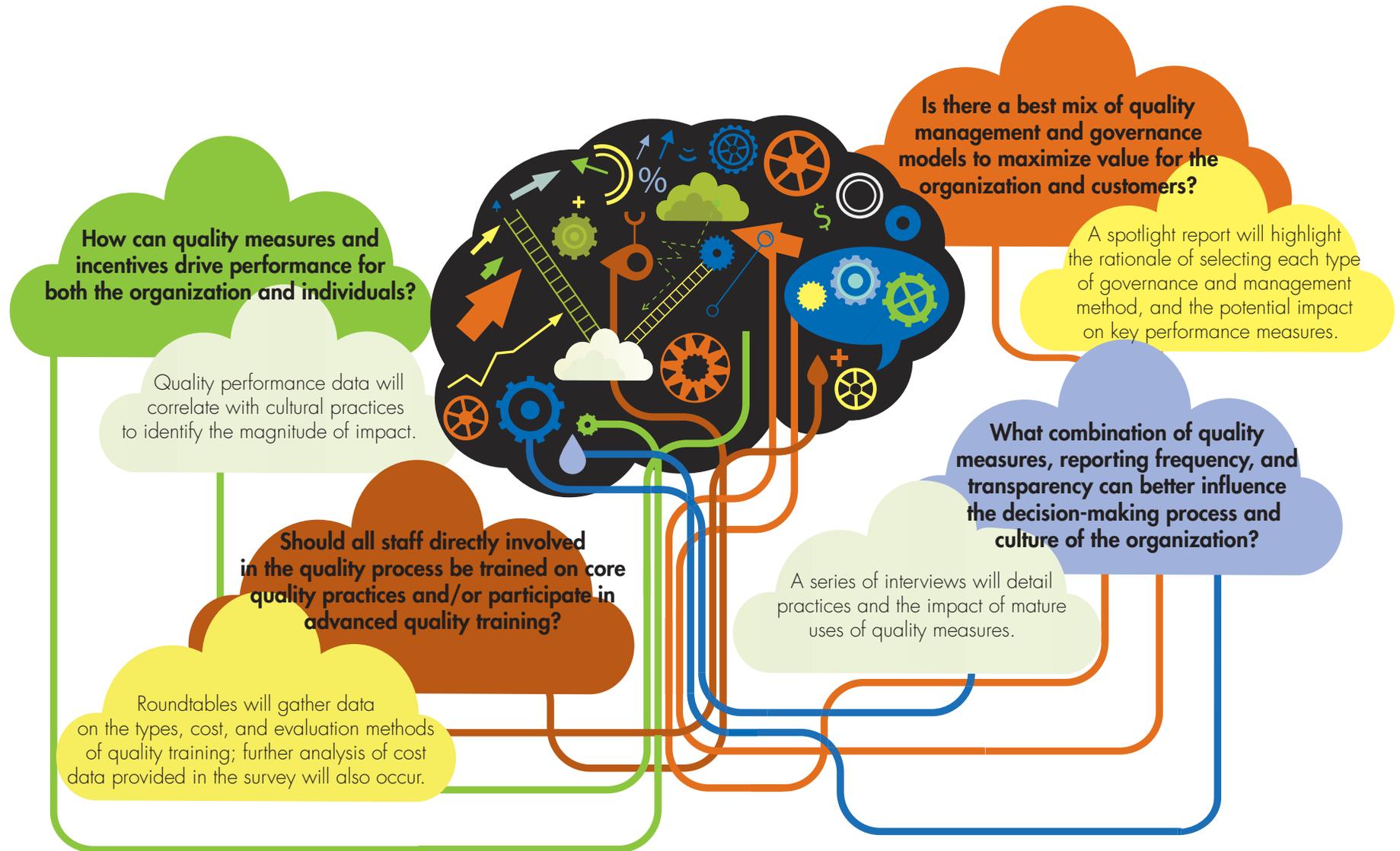
Implications and Opportunities

As you review the Discoveries 2013 report, you may be thinking, “So what?” A valid question at first glance, because we’ve all seen enough data to experience a MEGO [My Eyes Glaze Over], and this could be more of the same. However, allow me to offer a suggestion for its use: If you look across all the information, what you see is a description of a CULTURE of quality. Then measure your own organization against the survey results, and determine where you could exert the greatest leverage to advance your culture.

—Sr. Mary Jean Ryan



Any good research answers some questions and uncovers the opportunity for more. This Discoveries 2013 report provides a great baseline of data and information from which to begin answering those questions. As our team analyzed the data, and talked with advisors and sponsors, four core themes for the next step of the Global State of Quality Research became apparent.



The content in the Discoveries 2013 report is just the beginning of the Global State of Quality Research for 2013. As stated in the introduction, the purpose of the report is to provide an initial baseline of quality practices to help direct further research over the course of the year. This report is similar to a weather flag that provides data on the direction and strength of the wind but lacks all the technical information to predict weather. The key findings and corroborating information in the report ensure that continuing research is going in the right direction in order to gather the answers to the right questions.

The information presented in this report is based on the most statistically significant data relationships and patterns ($p=.01$), using analytical tools such as chi-square and, where applicable, bivariate correlations. Analysis has shown that the size of an organization (annual revenue) and industry (aggregated as either manufacturing-based or service-oriented) are the two factors that have the greatest impact on variance from the average. Sample bias is always a concern in voluntary responses, such as the Global State of Quality Research survey; but it was reduced in analysis by randomly sampling the total respondents before running statistical tests. In addition, the sample size by country and revenue is quite large in most cases and is representative of the distribution of total organizations within each country.

The Global State of Quality Research project team would like to thank the thought leadership, logistical activities, passion for quality, and insights from all the supporters listed in subsequent pages. Most of all, the tremendous number of surveys gathered from around the world could not have been met without the effort of quality leaders in thousands of organizations. We welcome everyone to the Global State of Quality Research journey and look forward to further discoveries.

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Appendix

Although this report primarily is the work product of ASQ and APOC, the Global State of Quality is “all of ours” to study and to continuously improve. Only through the support and attentive involvement of our sponsors did the Global State of Quality come to be and continue to be researched, reported, and evolved to better performance and results.



Steven Bailey—Steven is principal consultant with DuPont’s corporate Applied Statistics Group. With more than 30 years at DuPont, Bailey also leads DuPont’s corporate Master Black Belt Network. He received his BS, MS, and Ph.D. in statistics from the University of Wisconsin. He is a past president of ASQ.

Lloyd Barker—Lloyd joined Alcoa Inc. in October 2001 as director of Corporate Quality. He had been director of Corporate Quality for Howmet Castings before Alcoa acquired it in 2000. Currently he serves on the board of directors’ Nomination Committee for ASQ and is a member of the Juran and Gyrna Medal Selection Committees. He is a past judge for the Malcolm Baldrige National Quality Award, ASQ board of directors, and served on the Nadcap Executive Strategic Planning Board. In August 2007, he was the recipient of Nadcap’s Mayben Platonoff Leadership Award. He is an ASQ Certified Quality Auditor, Quality Engineer, and Quality Manager.

Sister Mary Jean Ryan—Sister Mary Jean Ryan, Franciscan Sister of Mary, transitioned August 1, 2011, into her role as board chair. She had served as the system’s CEO since its founding in 1986. Sister Mary Jean has received numerous honors, including the Distinguished Service Award (2010)—the highest honor given by the Missouri Hospital Association, the Juran Medal from ASQ, and the C. Jackson Grayson Distinguished Quality Pioneer Medal (2009) from APQC.

Roberto Saco—Roberto has been immersed in the disciplines of process and change management and service quality for more than 25 years. Saco served as ASQ’s chair and as a senior examiner and judge for the Florida Sterling Award as well as a senior examiner for the Baldrige performance excellence programs. He is the owner and principal of a consulting firm, Aporia Advisors, and is an adjunct instructor in management at Miami-Dade College.

Paulo Sampaio—Paulo graduated with a five-year degree in industrial engineering in 2002 and received a Ph.D. in systems and production engineering from the University of Minho, in 2008. Sampaio is currently a researcher and assistant professor in the Systems and Production Department at the University of Minho in Portugal. In 2011, Sampaio was nominated as a *Quality Progress* “New Voices of Quality” (ASQ), and in 2012 he was awarded with the Feigenbaum Medal (ASQ).

Joal Teitelbaum—In 1961, Joal founded the engineering company that still carries his name. It was recognized on behalf of the high quality of the services and products delivered to its customers. In 2003, after receiving the National Quality Award (PNQ), from the National Quality Foundation, Teitelbaum achieved excellence levels never obtained by any company from the civil construction sector in Brazil, the WORLD CLASS Company Status.

Carl Thor—Carl is president of JarrettThor International of Colonial Beach, VA, a management consulting firm dealing with productivity and quality improvement. He was president of the American Productivity and Quality Center for several years and is still on its board of directors. Thor is the author of several books and hundreds of articles on productivity issues and was active with the World Confederation of Productivity Science and the Shingo Prize for Operational Excellence. He also operates an art gallery in Colonial Beach with his wife, Joyce.



The Coca-Cola Company is the world's largest beverage company. It owns, licenses, and markets more than 500 nonalcoholic beverage brands. Its products are distributed through the world's largest beverage distribution system. The company estimates that of the approximately 56 billion beverage servings of all types consumed worldwide every day, beverages bearing trademarks owned by or licensed to The Coca-Cola Company account for more than 1.7 billion.

www.coca-cola.com



Tata Quality Management Services, a division of Tata Sons, is entrusted with the mandate by Tata Sons to set standards of excellence and partner closely with group companies to help them achieve their business excellence and improvement goals. Tata Quality Management Services is the custodian of the TBEM assessment process and the Tata Code of Conduct training and interventions.

Tata Quality Management Services aspires to be a trusted partner in the sphere of business excellence to all companies in the Tata group. It aims to offer value to group companies for enhancing their performance and global competitiveness.

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www.abbott.com



CareFusion is a global corporation serving the health care industry with products and services that help hospitals measurably improve the safety and quality of care. The company develops market-leading technologies including Alaris® infusion pumps, Pyxis® automated dispensing and patient identification systems, AVEA®, AirLife™ and LTV® series ventilation and respiratory products, Chloraprep® products, MedMined® services for data mining surveillance, V. Mueller® surgical instruments, and an extensive line of products that support interventional medicine. CareFusion employs more than 15,000 people across its global operations.

www.carefusion.com



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www.kraftfoodsgroup.com



The European Organization for Quality, EOQ, is an autonomous, non-profit making association under Belgian law, having its legal office in Brussels and the personnel registration office in Madrid. The EOQ is the European interdisciplinary organization striving for effective improvement in the sphere of quality management as the coordinating body and catalyst of its National Representative Organizations (NRs).

EOQ brings to Europe, the means to develop its economies, seeking always to ensure equal access for its citizens to the benefits available from the proper and effective use of quality management systems, to ensure so far as it is possible that those nations in need of developmental assistance receive it. EOQ is acting as a worldwide leader in the development and management of quality in its widest sense, and as a key influencer in education. EOQ is a crossroads of ideas, knowledge, research and information for the mutual benefit of all. EOQ's Network is comprised of National Representative, Associated, Affiliated members and partners from 40 different countries, reaching up to 70,000 members and 500,000 companies linked to its members. www.eoq.org



The Finnish Quality Association supports the association's operations by specializing in training and consultancy services. At the end of 2011, more than 500 Finnish private and public sector organizations were members of our association, with thousands of business developers and opinion leaders actively participating in the association's activities. The Finnish Quality Association was established in 1966 as an ideological non-profit-making association.

www.laatuKeskus.fi/suomen-laatuYhdistys/laatuKeskus-english



The German Society for Quality (DGQ) is one of the most eminent organizations focused on the promotion of excellence. The DGQ is an indispensable partner and opinion leader throughout the private and public sector. The Society's mission is to design networks, enable people, develop organizations and generate knowledge for the long-lasting success of our members, customers and partners. www.dgq.de



The Israel Society for Quality (ISQ), one of the world's leading quality societies, was established in 1973 in order to promote the values of quality in Israel. It is a nonprofit organization of 1,500 quality professionals including engineers, physicians, educators and managers drawn from the industrial, business, and public and defense sectors. Furthermore, more than 200 of the country's leading companies are institutional members of the Society. www.isq.org.il



The Portuguese Association for Quality (APQ), founded in 1969, is a membership based nonprofit organization, recognized as a Public Utility Institution in 1984, and its purpose is to promote quality and business excellence in Portugal. APQ's mission is to add value to its members and to contribute to the sustained development of the Portuguese society, through creation and spreading of knowledge and promotion of innovative practices in the field of quality and business excellence. APQ headquarters is located in Lisbon and has four regional offices distributed in strategic areas across the country: Oporto (North), Faro (South), Azores and Madeira Islands. This allows a considerable geographic covering and, consequently, a greater approach to its members, organizations, other economic agents and the wider community. With about 1,600 members, organizations and individuals, APQ is widely recognized by its activity, both nationally and internationally. APQ has access to best practice organizations and benchmarking information in Portugal and tries to ensure that Portuguese organizations get access to the right information, tools and best practices. www.apq.pt



Created in 1992, the PGQP's mission is to promote the competitiveness of Rio Grande do Sul and to improve the quality of life through the pursuit of excellence in management and sustainability. The association involves more than 9,500 organizations, including private, public and third sector, and about 1.3 million people related to quality management. www.mbc.org.br/mbc/pgqp



The mission of our association is to assist in the development of people and organizations in Slovenia with modern principles of quality and excellence and promoting quality and excellence in all spheres of thought, in every citizen. We strive to promote values of cooperation, knowledge, responsibility, respect for diversity, and especially the joy of living! www.szko.si



The Chartered Quality Institute (CQI) is the UK's professional membership body for quality professionals, which exists to advance education and knowledge of the practice of quality in industry, commerce, and the public and voluntary sectors. The CQI has a professional membership of 10,000 committed to protecting reputation, reducing cost and driving improvement within organizations in all sectors in the UK. Its courses and qualifications provide the industry standard for quality professionals, training approximately 1,000 quality professionals every year.

www.thecqi.org



The Czech Society for Quality is a civic association joining together the wide spectrum of people and organisations acting in various areas of management systems, and at the same time it provides—not only to its members—top education in the area of management systems and quality management tools. At the present time its membership consists of more than 1,350 individual members and more than 160 collective members.

The Czech Society for Quality offers a wide range of courses, publications and workshops focused on the quality management systems (ISO 9001, ISO TS 16949), environment (ISO 14001), safety and the protection of health at work (OHSAS 18001), information safety (ISO/IEC 27001), food safety (HACCP, ISO 22000), benchmarking, project management, process management, CAF model, EFQM Excellence Model, metrology, statistical method, sampling and operation of laboratories.

www.csq.cz/en



The Russian Organization for Quality (ROQ) was established February 12, 2001 under the initiative of the State Standards of Russia. The main objective of this program is to bring together citizens and social organizations, enterprises and governments to help solve problems in the field of quality and competitiveness of domestic products and services. Industry committees of ROQ are representatives of more than 150 organizations, including industrial enterprises, scientific research institutes, universities and academies.

[http://www.university-directory.eu/Russian-Federation-\(Russia\)/Russian-Organization-for-Quality-ROQ.html](http://www.university-directory.eu/Russian-Federation-(Russia)/Russian-Organization-for-Quality-ROQ.html)



UAQ was founded as an all-Ukrainian public organization for building positive public opinion and policies in the sphere of quality. Its activity is directed at assisting national companies in improvement of the quality of the products and services and competitiveness in general. UAQ strictly follows the concept of total quality management, which is oriented at meeting expectations of all the stakeholders: consumers, employees, suppliers and society in general. UAQ is a leader of the civil movement for quality and perfection in Ukraine. www.uaq.org.ua



Created in 1990 by SAE Inc., PRI is a not-for-profit organization. It exists to advance the interests of the mobility and related industries through the development of audit criteria and administration of quality assurance, accreditation, and certification programs as well as related activities for the benefit of industry, government, and the general public. PRI works closely with industry to understand their emerging needs and offers customized solutions in response. www.pri-network.org



ASQ[®]

The Global Voice of Quality™

ASQ is a global community of people dedicated to quality who share the ideas and tools to make our world work better. With millions of individuals and organizational members of the community in 150 countries, ASQ has the reputation and reach to bring together the diverse quality champions who are transforming the world's corporations, organizations, and communities to meet tomorrow's critical challenges. As stewards of worldwide quality knowledge, ASQ is ideally suited to spearhead the unprecedented Global State of Quality Research study. ASQ is headquartered in Milwaukee, WI, USA, with national service centers in China, India, and Mexico. Learn more about ASQ's members, mission, technologies, and training at www.asq.org.



ASQ is joined by APQC, a 35-year-old nonprofit organization located in Houston, TX, USA. An internationally recognized resource for process and performance improvement, APQC helps organizations adapt to rapidly changing environments, build new and better ways to work, and succeed in a competitive marketplace. With a global focus on productivity, knowledge management, benchmarking, and quality improvement initiatives, APQC works with its member organizations to identify best practices, discover effective methods of improvement, broadly disseminate findings, and connect individuals. Founded in 1977, APQC is a member-based nonprofit serving more than 350 of the Fortune 1000 global companies and numerous government organizations worldwide. Learn more at www.apqc.org.