THE **ASQ GLOBAL STATE OF QUALITY 2**
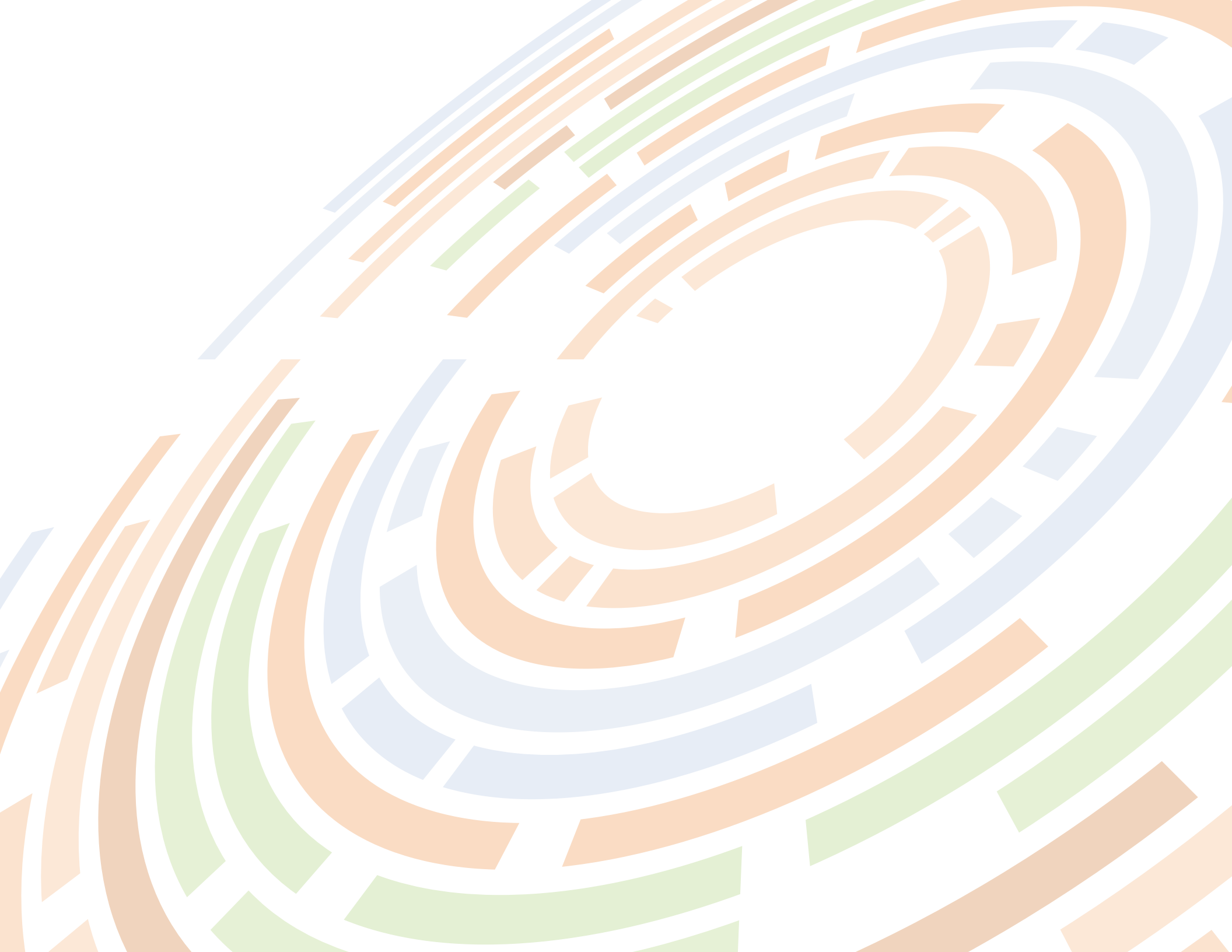
RESEARCH

DISCOVERIES **2016**

APQC®

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The Global Voice of Quality®

A Message From ASQ CEO

Bill Troy

Welcome to the ASQ Global State of Quality 2 Research Report, "Discoveries 2016."

This report, complemented by a set of Spotlight Reports already available, builds upon the inaugural Global State of Quality initiatives of 2013. ASQ once again partnered with APQC to create a comprehensive, global, and quantitative view of the state of the quality and continuous improvement industry, practices, and profession by providing data and insights you can use to benchmark your own organization.

With this iteration of the Global State of Quality Research, we sought to provide even deeper analysis and gauge progress since 2013, including current gaps and opportunities. This year's report, Discoveries 2016, covers topics like the continuing, even expanding influence of the Qustomer® (first coined in the 2013 report) as well as data on trends in industry standards, training systems, and governance structures, including similarities and differences across nations and regions. Discoveries 2016 advances the 2013 research by exploring the relationship between quality and business strategy.

We offer you views into the use of quality to drive profitability, the ties between quality/continuous improvement and business strategy, and the financial impact of quality. We explore the impact of quality setbacks and of knowledge retention and transfer. Importantly, early on in this report you'll see our work to define "world-class quality organizations," by assembling characteristics and factors that set organizations apart, all derived from the data.

We trust you will find value in the research, trends, and information across the global markets, industries, and sectors. ASQ's Global State of Quality 2 will initiate interest, attract attention, and create conversation—even controversy, within and beyond our community and across the globe. Our aim is to deepen the world's understanding and appreciation for the expanding, evolving role and impact of quality.

This research would not have been possible without the unwavering support of the ASQ Board of Directors. Further, we thank the ASQ Global State of Quality 2 Advisory Panel for their advice, insights, and guidance. We are grateful for the financial and strategic contributions of the 2015-16 project sponsors, including Gold-level sponsors, FedEx Corp. and The Boeing Company, and several ASQ World Partners®.

Advisory Panel

Steven Bailey	*Principal Consultant and Master Black Belt,* DuPont (retired)
Andrew Baines	*Managing Director,* ASQ Global
Beth Cudney	*Associate Professor,* Missouri University of Science and Technology
Randi Dunn	*Director-QA,* Illumina
Gideon Roth	*Deputy Chair, International Affairs Committee,* Israeli Society for Quality
Roberto M. Saco	*Principal,* Aporia Advisors*; Adjunct Professor,* Miami Dade College
Paulo Sampaio	*Professor of Quality Engineering and Management,* University of Minho
Lars Sörqvist	*Vice President,* International Academy for Quality (IAQ)
Tiia Tammaru	*Chair of the Board,* Estonian Association for Quality

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Global State of Quality 2 Research Overview

As with the Global State of Quality Research: Discoveries 2013 report, the Discoveries 2016 report seeks to advance the world's understanding of quality and continuous improvement's role and impact in organizations worldwide, as well as what it can mean for businesses, communities, and society tomorrow.

Our key objectives for the research include:

- Examine the business impact of quality and continuous improvement,
- Identify challenges, gaps and opportunities, and
- Uncover new and compare/contrast previously reported trends in quality globally.

New to the 2016 report is the concept of world-class quality organizations. World-class organizations align their quality strategies, systems, processes, and resources to the overall business strategy and because of that close alignment have reaped the benefits of enhanced business performance. We outline the characteristics of those top-performing organizations and build a profile of a world-class organization.

This iteration of the Global State of Quality provides individuals and organizations with actionable data and insights that can be used to drive their own quality and continuous improvement efforts. With the addition of the world-class profile, Discoveries 2016 allows an organization to benchmark against other high-performing organizations that are successfully executing strategic and operational quality practices. Organizations can then leverage these findings to reassess and advance their business case for quality and continuous improvement.

In addition to this report, three Spotlight Reports have been produced to supplement this study. Each provides deeper analysis on a topic that warranted further investigation.

- KPIs Key to Successful Supply Chain
- A Trend? A Fad? Or is Big Data the Next Best Thing?
- Innovation and Quality Go Hand in Hand

Please visit **www.globalstateofquality.org** to review both the 2013 and 2016 reports.

Key Findings

During the analysis of the data, key themes and findings emerged from the ASQ Global State of Quality 2 Research. The structure of the Discoveries 2016 report is organized into five themes. Three of the themes for this year's report are new, and two themes (Qustomer and Culture) have been expanded upon from the Discoveries 2013 report.
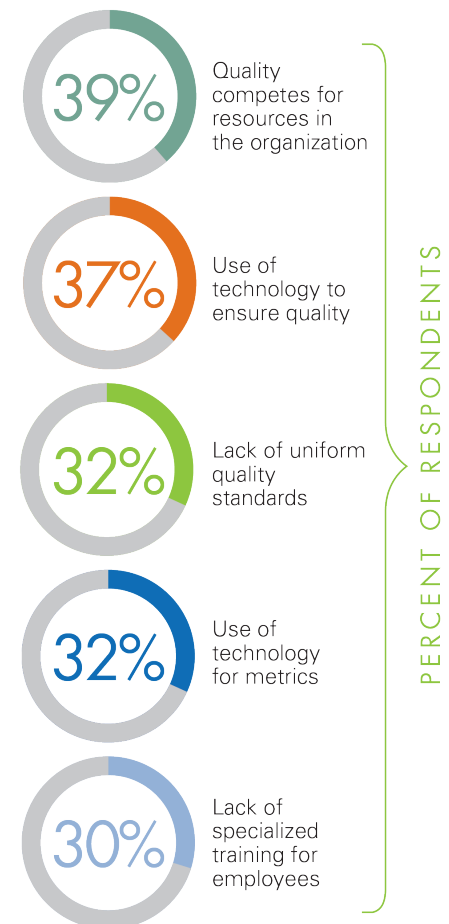
1 Quality: Strategic Asset, Competitive Differentiator
- Shift toward centralized governance
- Increased frequency of quality metric reporting

2 Business Performance Impact
- Quality has a direct impact on business performance
- Measurement and visibility of financial impact is limited

3 Accelerating "Qustomer"
- Concept of customer as the only one that can define quality is shifting
- Customers are still the primary influence on quality programs and business objectives

4 Setbacks: Controlled or Not
- Managing setbacks* continues to be an issue for organizations
- Many organizations lack measurement and visibility of setbacks' financial costs

5 Knowledge, Learning, and Culture
- Knowledge retention and training vary widely globally, as does perceived impact
- Types of training provided to employees is similar across industries

In addition to these key findings, 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.

We found three consistencies with the research conducted in 2013, all of which were called out then, including:
- There are significant differences in the use and application of quality practices between manufacturing-focused and service-based organizations (although the gap closed slightly in 2016).
- The size of an organization plays a smaller role than industry in the application of mature quality practices.
- There is no significant indication that the use of quality practices generally differs by region.

Top FIVE Quality Challenges Across Geographies

- **39%** Quality competes for resources in the organization
- **37%** Use of technology to ensure quality
- **32%** Lack of uniform quality standards
- **32%** Use of technology for metrics
- **30%** Lack of specialized training for employees

PERCENT OF RESPONDENTS

* For the purposes of this report, a setback is defined as a quality-related problem (e.g., product defects, service delays, recalls, etc.) resulting in a consequence(s) that impedes organizational success.

Research Timeline

June 2015

July 2015

November 2015

November 2015

April 2016

April 2016

May 2016

Survey developed with the help of Global Advisory Panel, ASQ, and APQC

Survey launched/ data collection initiated

#1

Spotlight #1 released

Data collection and analysis began

#2

Spotlight #2 released

#3

Spotlight #3 released

Global State of Quality Research 2 available

Demographics

The data and analysis included in this report represent a total of **1,665** survey responses. The highest-responding countries are listed in the chart. 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 that shows these two characteristics as significant factors of variance.

REVENUE AND COUNTRY BREAKOUT

	<100 M	100M to 1B	1B to 5B	5B to 10B	>10B	Total
Australia	15	9	3	0	2	29
Brazil	30	1	3	0	0	34
Canada	63	11	1	0	1	76
China	24	6	1	1	5	37
Czech Republic	22	2	0	0	0	24
Finland	66	24	8	2	1	101
Germany	40	16	5	1	2	64
India	53	7	3	3	5	71
Mexico	40	6	2	0	0	48
Netherlands	7	2	1	0	0	10
Other	220	26	13	3	10	272
Portugal	46	2	0	0	0	48
Spain	13	2	2	0	0	17
UAE	27	5	1	1	0	34
UK	8	3	1	0	1	13
USA	489	118	79	37	64	787
Total	**1,163**	**240**	**123**	**48**	**91**	**1,665**

Forty-one percent of respondents were from the service industry and 59 percent from manufacturing. In 2013, that number was closer to a 50/50 split, with 46 percent coming from service and 54 percent coming from manufacturing. Additionally, this year, a larger percentage of smaller organizations responded to the survey, as did a larger percentage of North American respondents. Smaller organizations were defined as those with annual reported revenue less than $100M. However, that does not dilute the responses and practices from other organizations. Additionally, similar to the 2013 report, there is not a distinct difference between the applied practices and quality performance.

The regions used throughout this report include the following countries (in order based on number of respondents):

North America: USA, Canada, Mexico, Trinidad & Tobago, Costa Rica, Barbados, Dominican Republic

South America: Brazil, Colombia, Peru, Guatemala, Ecuador, Argentina, Paraguay, Venezuela, Chile, Bolivia

Europe: Sweden, Finland, Czech Republic, Norway, Portugal, Spain, Switzerland, UK, Germany, France, Ireland, Hungary, Greece, Denmark, Belgium, Estonia, Slovakia, Netherlands, Slovenia, Austria, Italy, Romania, Latvia, Russia, Croatia, Georgia, Lithuania, Albania, Bulgaria, Iceland

Africa: Nigeria, Botswana, Ghana, South Africa, Algeria, Egypt, Mozambique, Sudan, Tunisia, Gabon, Kenya

Middle East: Qatar, UAE, Iran, Iraq, Saudi Arabia, Jordan, Kuwait, Oman, Turkey, Lebanon, Cyprus, Israel, Azerbaijan

ANZ: Australia, New Zealand

Asia: China, India, Bangladesh, Thailand, Malaysia, Hong Kong, Pakistan, Taiwan, Vietnam, Japan, Indonesia, Philippines, Singapore, Sri Lanka, South Korea

Demographics

Industry was another factor evaluated to identify differences among quality practices. The report primarily shows the variation between **manufacturing** vs. **service**, although some specific industry observations are also highlighted throughout the report.

Number of Respondents by Industry

Manufacturing

- Agriculture 35
- Automotive 116
- Aerospace 66
- Electronics 140
- Telecom 22
- Petroleum/Chemicals 90
- Industrial Products 266
- Utility 50
- Consumer Products/Packaged Goods 75
- Pharmaceutical 162

FOOD AND DRUG · DURABLE GOODS · HIGH TECH · INDUSTRIAL PRODUCTS · CONSUMER GOODS

Service

- Distribution/Transportation 16
- Financial Services/Banking 24
- Insurance 10
- Healthcare 84
- Services (general) 247
- Nonprofit 23
- Government/Military 164
- Retail/Wholesale 52

TRANSPORTATION & RETAIL · FINANCE & INSURANCE · GENERAL SERVICES

23 respondents did not provide an industry designation.

World-Class Quality Organizations

Along with size, regional, and industry views, this report includes observations of organizations with the strongest end-to-end quality practices. This enables an organization to see how its own program compares to comprehensive and robust quality programs, in regard to several characteristics. These characteristics were selected as representative of world-class quality practices, based upon the information collected in this study. They represent a comprehensive approach to quality management with visibility into investment, cost, and resulting performance, not just within the organization, but extended to suppliers.

- Sees quality as a strategic asset and competitive differentiator
- Greater than $1 million in net savings from quality
- Measures the cost of remediation
- Increasing investment from quality
- Visible metrics on performance against customer needs

- Understands product/service performance through customer's eyes
- Standard reporting across the organization
- Trains suppliers in quality
- Comprehensive training offerings available
- Trains all employees in quality

Using these criteria to pinpoint organizations with the strongest end-to-end practices, the study identified **28 world-class organizations** [1.6 percent] out of 1,665 respondents. This group of world-class quality organizations represents a strong cross-section of industry and regional study participants.

Regional Breakout of World-Class Quality Organizations

57%
North America

25%
Europe

7%
Asia

4%
South America

4%
Africa

4%
Australia/New Zealand

9 Service
19 Manufacturing
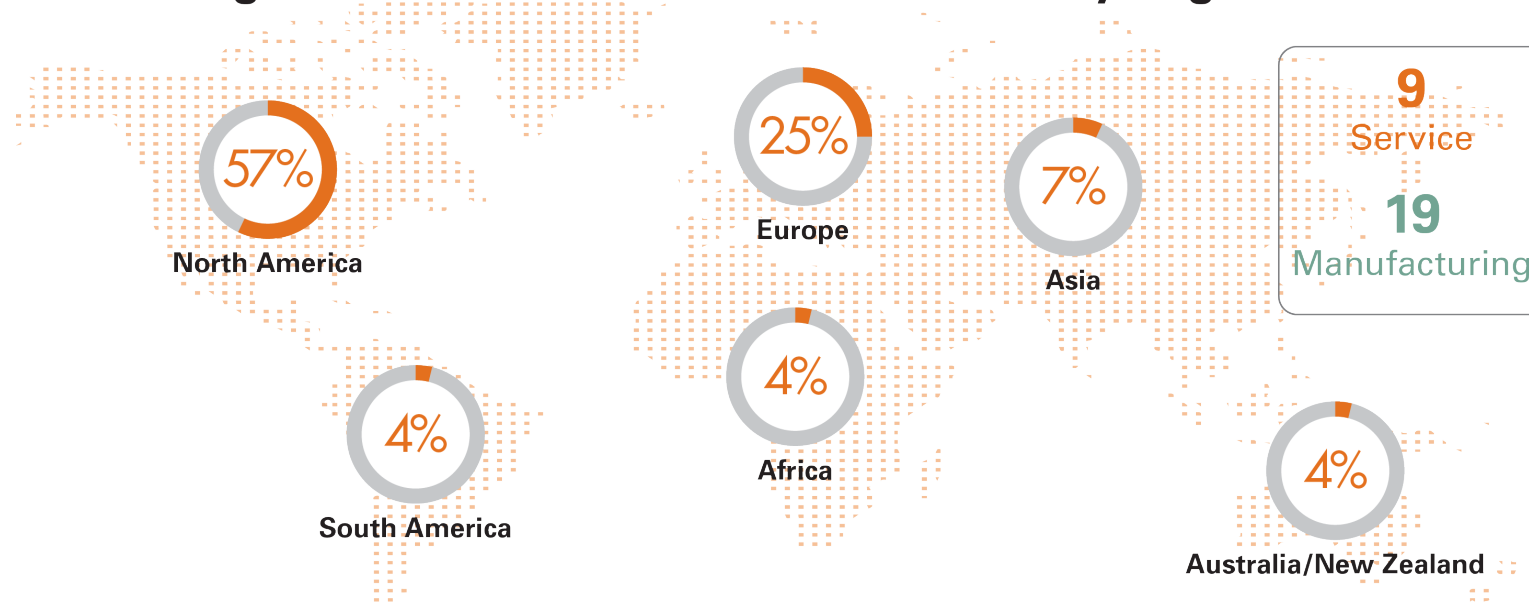
World-Class Quality Organizations

Comparing data representing the 28 world-class quality organization responses to the full sample (non-world-class), the following additional information categories and data points surfaced. The world-class profile is referenced throughout this report to highlight the gaps that exist between world-class and non-world-class organizations.

World-Class Quality Organizations' Business Focus

- 96% see quality as strategic asset and competitive differentiator—triple the non-world-class rate
- 85% promote challenging quality goals to drive high performance—double the non-world-class rate
- 80% more likely to use quality to drive profitability
- 57% see greater than $1 million savings—four times higher than the non-world-class rate
- 100% have increased investment in quality—almost double the non-world-class rate
- 80% more likely to use quality to spur innovation
- Almost twice as likely to have quality governed by senior leadership (C-suite)
- More than twice as likely to use each incentive type to reward meeting quality targets
- 71% involve customers in quality discussions—more than double the non-world-class rate
- Twice as likely to share customer feedback and intelligence across the organization

Measures

- 78% use quality measures as part of variable compensation—50% higher than non-world-class organizations
- 85% use measures for trend and/or predictive analysis—double the non-world-class rate
- 82% measure quality of their business processes—double the non-world-class rate
- 92% have most visible metrics on performance against customer needs—triple the non-world-class rate

Training

- More than twice as likely to train suppliers (tier 1, tier 2, and tier 3)
- 100% train all employees—more than double the non-world-class rate
- More than twice as likely to offer training on regulations
- More than three times as likely to offer training on customer experience
- Twice as likely to apply knowledge transfer techniques from retiring employees

Standards

- Four times more likely to be challenged by international quality standards being less than their standards
- Almost two times less likely to have quality-related setbacks
- Almost three times as likely to have standardized reporting across the organization

Technology

- More than twice as likely to leverage technology across the board to increase quality
- 100% use technology to improve quality awareness and results—50% higher than non-world-class organizations
- 71% use social media to gauge customer sentiment—more than double the non-world-class rate
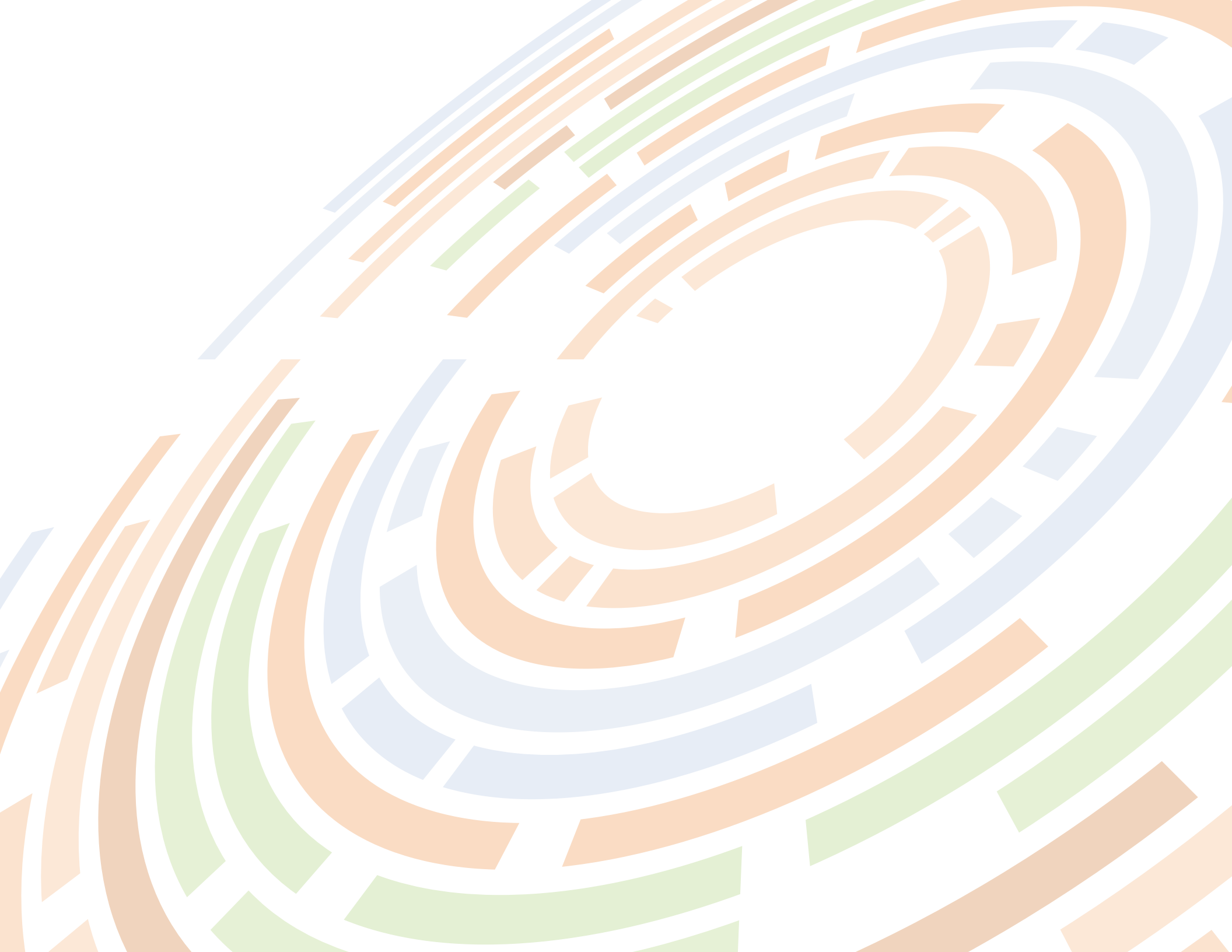- 73% use big data to improve understanding of customers' needs—more than double the non-world-class rate

THEME 1

Quality: Strategic Asset, Competitive Differentiator

One common challenge that organizations struggle with: How to govern and manage quality efforts to maximize their impact on core organizational outcomes.
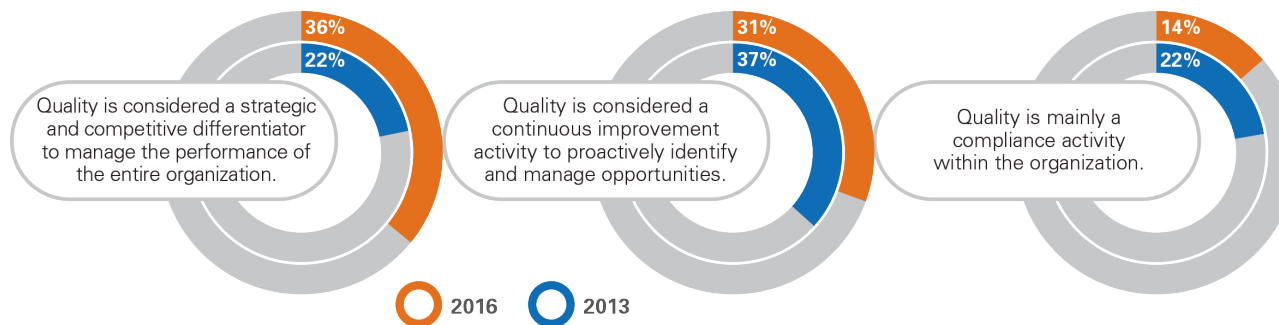
Quality: Strategic Asset, Competitive Differentiator

Of the organizations that responded, **36 percent** indicated that quality is considered a strategic asset, up **14 percent** from 2013. From how organizations use quality to drive profitability, to how quality is governed, organizations are becoming more proactive at using quality to drive organizational success. Why the continued trend toward quality being viewed as a strategic asset and competitive differentiator?

Once a solid foundation for quality assurance has been established, an organization can then seek more mature quality practices to leverage quality for the benefit of the customer. Quality can, therefore, fulfill its traditional roles but also be expanded to create customer value and enhance brand image, thus serving as a competitive differentiator. An organization that has reached world-class status has quality so deeply ingrained in its culture that there is no way to separate the organization from quality.

Given the increased visibility within organizations, there has also been an increase in leveraging quality to mitigate risks and solve problems when identified. This shift has also led to increased visibility for the quality function, which has led executive leadership to increase the frequency of reviewing quality measurements—no surprise if the role of quality is seen as directly tied to business strategy.

Shifting of Quality Measures and Frequency

	Annually	Quarterly	Monthly	Weekly	Daily
Senior Leadership		● → ●			
Business Unit Leadership			● → ●		
Department Leadership			● → ●		
Front-line Managers				● → ●	
Front-line Staff					● ●
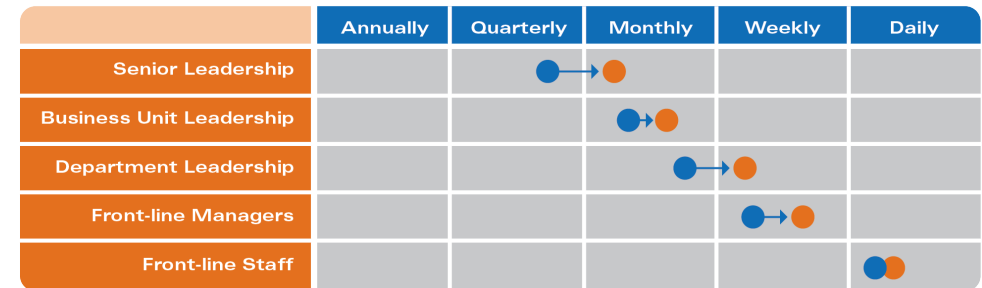
● Median of 2013 data   ● Median of 2016 data

Quality is considered a strategic and competitive differentiator to manage the performance of the entire organization.
36% 2016
22% 2013

Quality is considered a continuous improvement activity to proactively identify and manage opportunities.
31% 2016
37% 2013

Quality is mainly a compliance activity within the organization.
14% 2016
22% 2013

○ 2016   ○ 2013

> " *In today's complex business environments it is not enough to have quality—this is a sine qua non condition. To be in the market, companies must produce with high quality levels and, at the same time, innovate their products to exceed customers' expectations. By doing so, companies are continuously improving their processes to reach organizational excellence.* "
>
> **Paulo Sampaio**
> *Professor of Quality Engineering and Management,* University of Minho

Quality: Strategic Asset, Competitive Differentiator

A mature quality system focuses on proactively creating value rather than simply being relegated to compliance activities. By doing so, the quality function is seen as a strategic partner throughout the organization. Driving profitability through enhancing the brand, effectively using data, and providing an exceptional customer experience are among the benefits an organization reaps by fostering a mature quality culture. Not surprisingly, world-class organizations have been more effective, especially when it comes to innovation, use of data, and sustainability practices. The real question becomes, what combination of these elements allows a company to charge more for their product/service?

Using Quality to Drive Profitability

Category	World-class	Non-world-class
A focus on the customer experience	89%	63%
Effective use of data	86%	50%
Quality enhances our brand	82%	61%
Waste reduction	79%	53%
Sustainability	79%	44%
Innovation	75%	39%
New product development	71%	43%
Quality allows us to charge more for our product(s)	43%	23%
We do not use quality to drive profitability	7%	10%

Legend: ■ World-class ■ Non-world-class
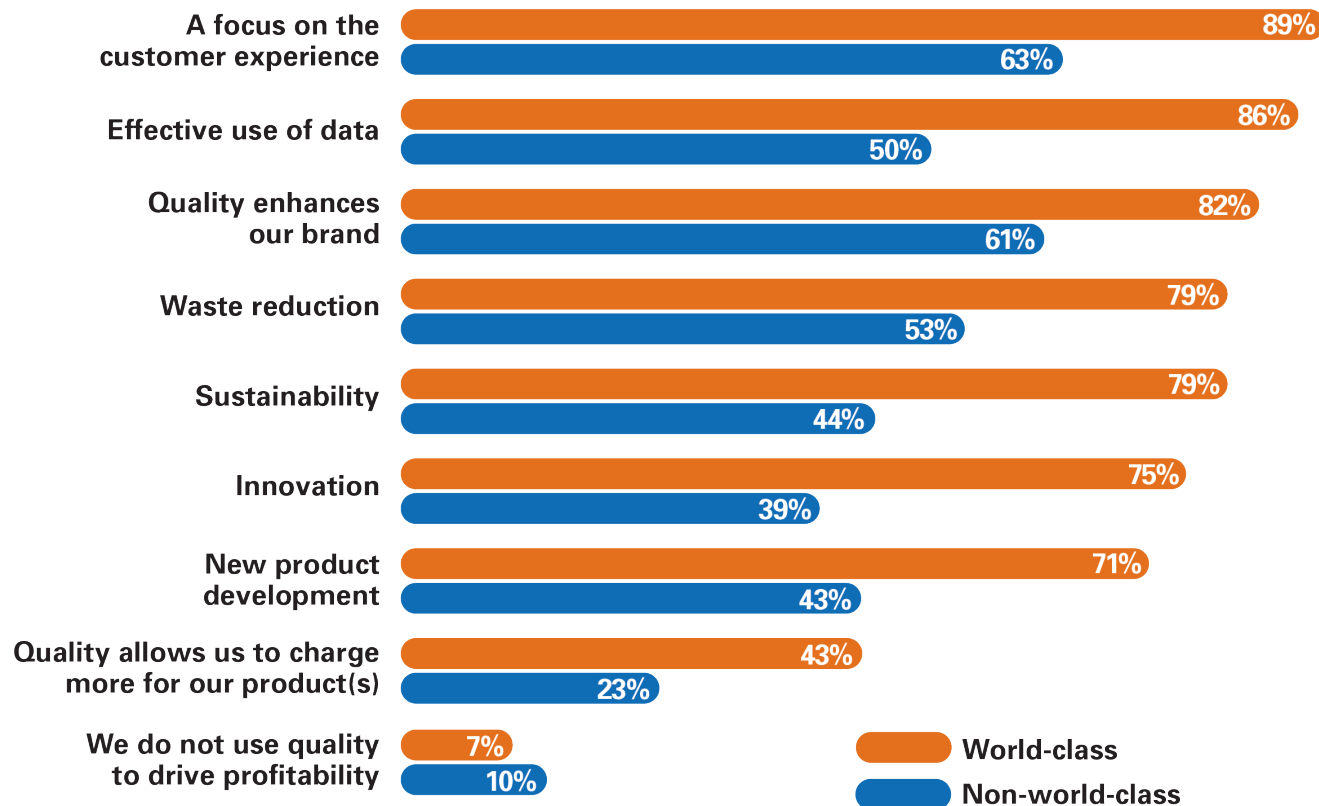
> "Understanding and driving reduction in the cost of non-quality, across all aspects of our enterprise, continues to be one of our biggest opportunities as a business."
>
> **Lindsay Anderson**
> *Quality Vice President*
> Boeing Commercial

Quality: Strategic Asset, Competitive Differentiator

How, then, do organizations use quality to drive profitability? Organizations can use quality measures to establish strategic goals that drive performance; measure business processes; support trending and/or predictive analysis that emphasizes pre-emptive decision making; and incentivize employee performance. The data shows that world-class organizations have a significantly stronger understanding of how quality impacts their business results and have thus been more e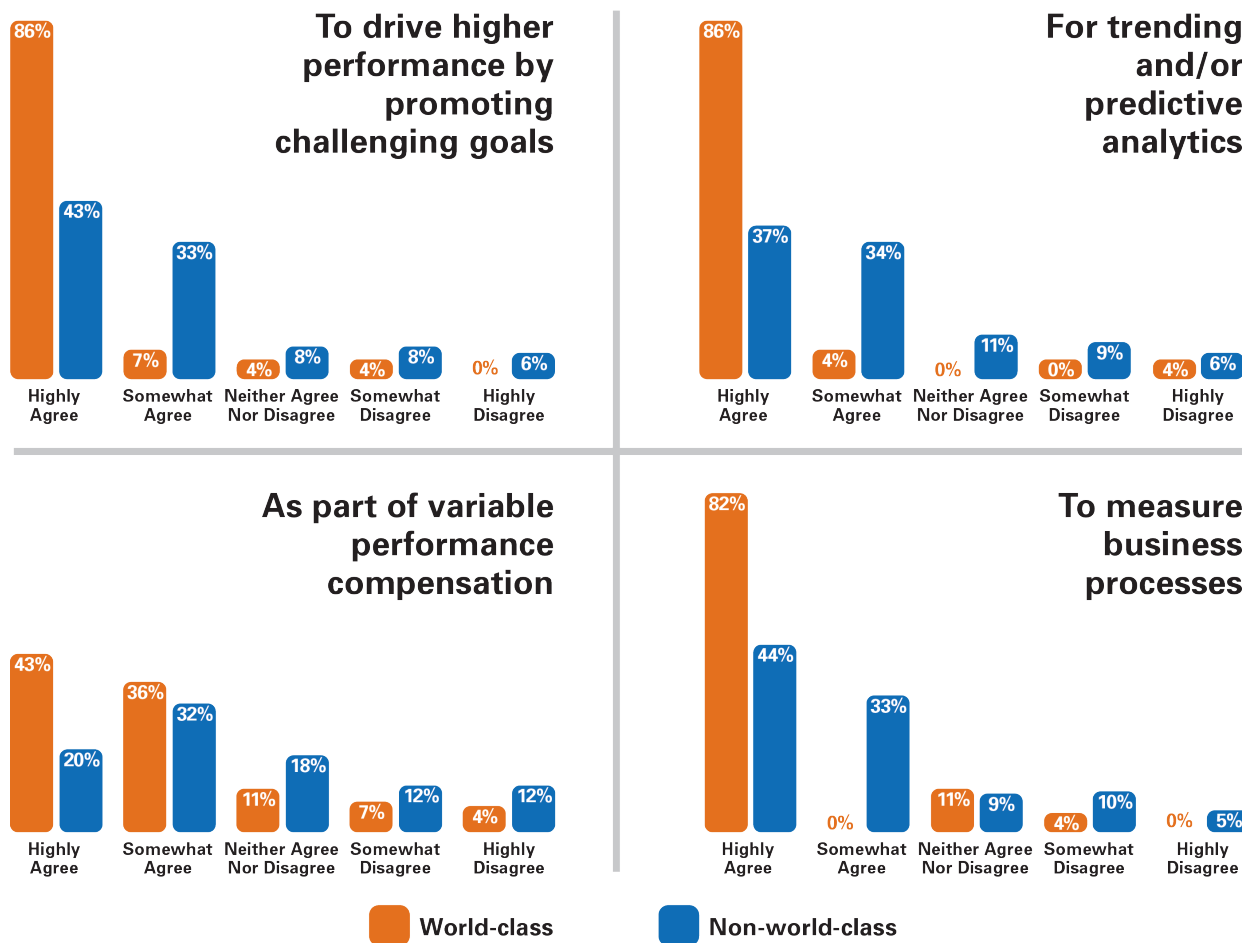ffective at incorporating quality measures that are tied to strategy. For non-world-class organizations, this gap presents an opportunity to catch up.

To drive higher performance by promoting challenging goals

	Highly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Highly Disagree
World-class	86%	7%	4%	4%	0%
Non-world-class	43%	33%	8%	8%	6%

For trending and/or predictive analytics

	Highly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Highly Disagree
World-class	86%	4%	0%	0%	4%
Non-world-class	37%	34%	11%	9%	6%

As part of variable performance compensation

	Highly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Highly Disagree
World-class	43%	36%	11%	7%	4%
Non-world-class	20%	32%	18%	12%	12%

To measure business processes

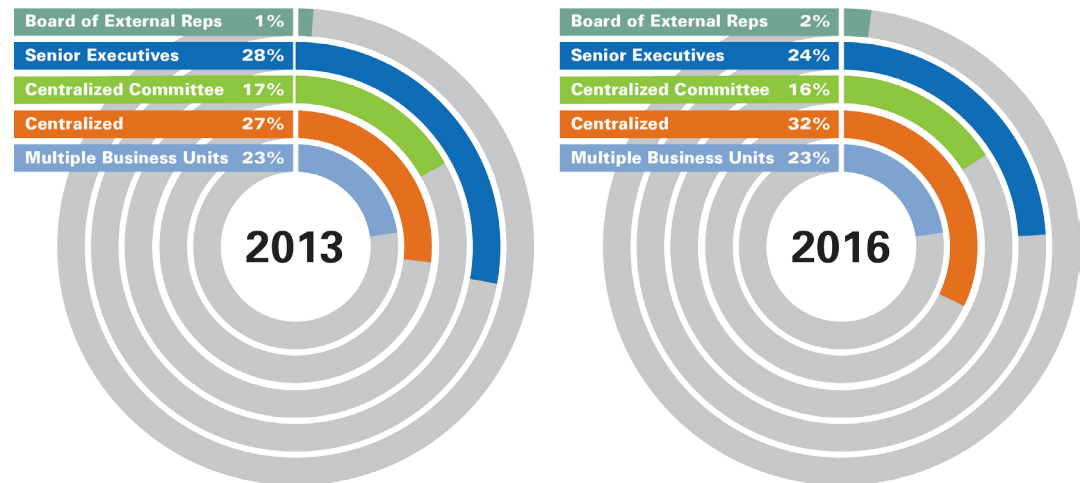|	Highly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Highly Disagree
World-class	82%	0%	11%	4%	0%
Non-world-class	44%	33%	9%	10%	5%

■ World-class ■ Non-world-class

Quality is considered a continuous improvement activity to proactively identify and manage opportunities.

APQC | ASQ

Quality: Strategic Asset, Competitive Differentiator

The way in which organizations structure their quality governance and management to maximize impact heavily influences an organization's quality culture; a culture that, when effective, can translate the intangible into tangible, thus using quality to drive profitability and enhance organizational performance. There is an overall shift toward a centralized quality governance. Consistent with the 2013 data, manufacturing organizations tend to use a central quality department to govern, whereas service organizations are much more likely to have senior executives govern quality. Does one model better suit a particular industry sector, or will the trend continue over time toward a centralized approach?
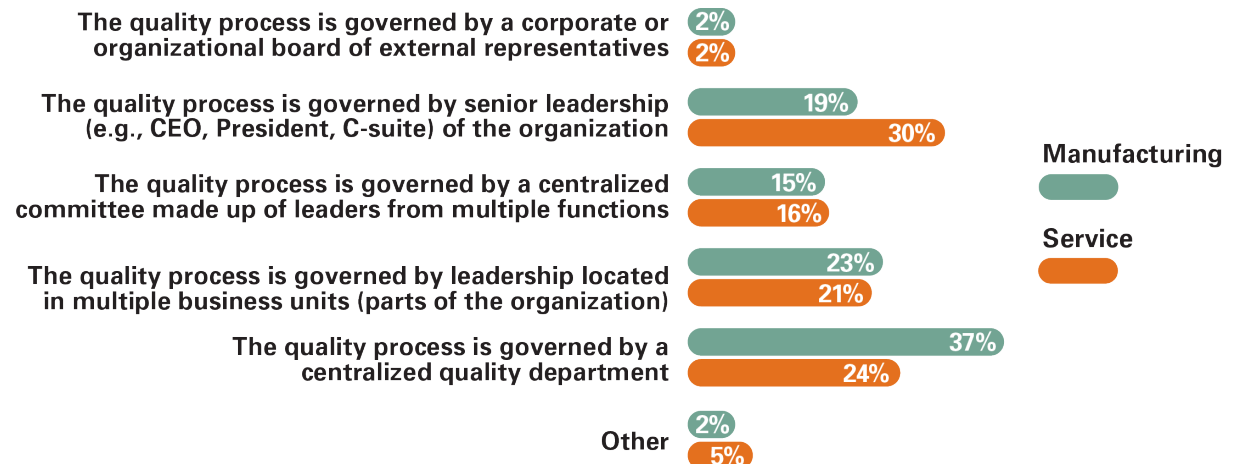
Governance of Quality Process: Over Time

2013

Board of External Reps	1%
Senior Executives	28%
Centralized Committee	17%
Centralized	27%
Multiple Business Units	23%

2016

Board of External Reps	2%
Senior Executives	24%
Centralized Committee	16%
Centralized	32%
Multiple Business Units	23%

Overall, **75%** of organizations have centralized quality governance, with a shift toward a centralized department since 2013.

Larger organizations have seen an increase of **35%** toward a centralized approach.

Governance of Quality Process: By Industry Sector

The quality process is governed by a corporate or organizational board of external representatives — 2% / 2%

The quality process is governed by senior leadership (e.g., CEO, President, C-suite) of the organization — 19% / 30%

The quality process is governed by a centralized committee made up of leaders from multiple functions — 15% / 16%

The quality process is governed by leadership located in multiple business units (parts of the organization) — 23% / 21%

The quality process is governed by a centralized quality department — 37% / 24%

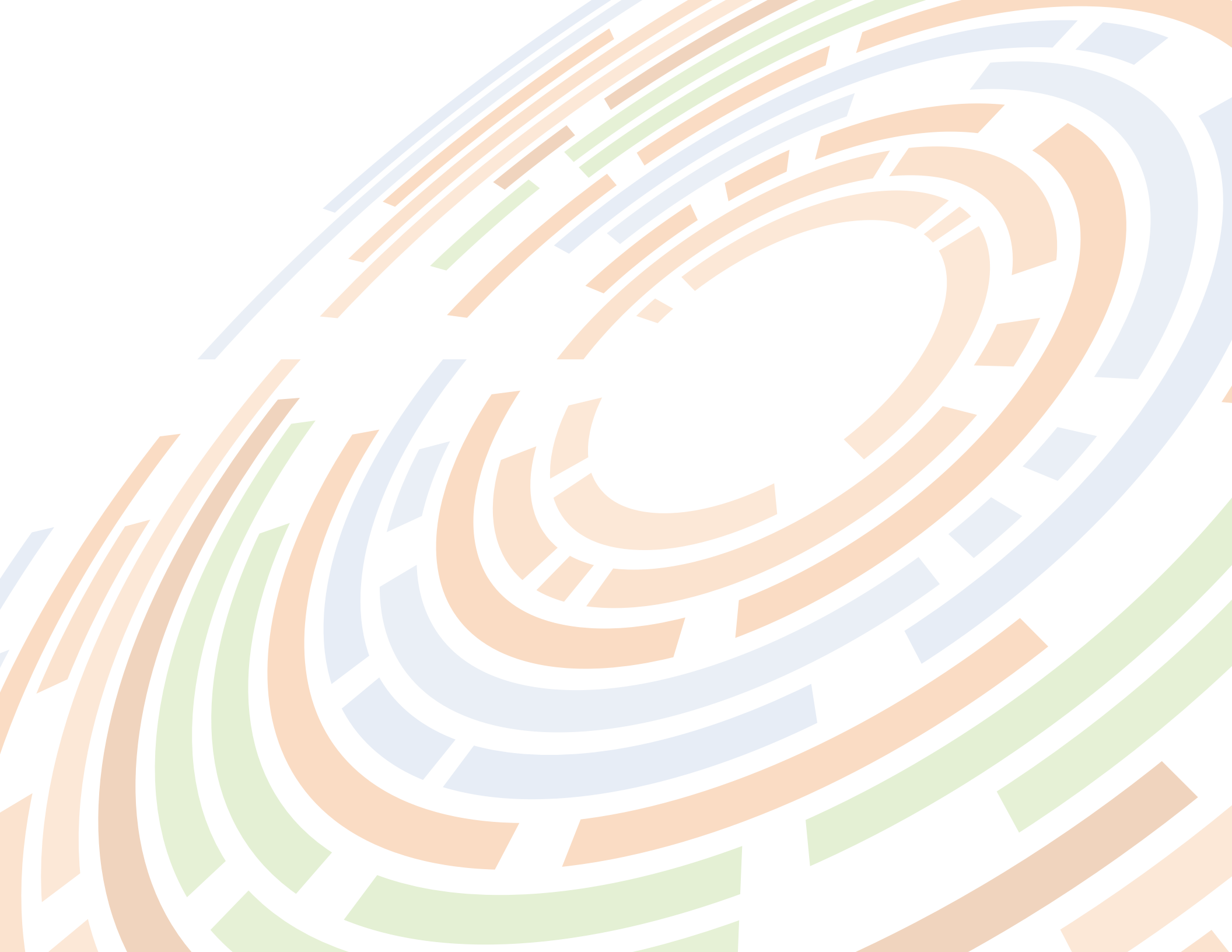Other — 2% / 5%

Manufacturing

Service

THEME 2

Business Performance Impact

Organizations struggle with an inability to quantify quality's financial impact on the bottom line.
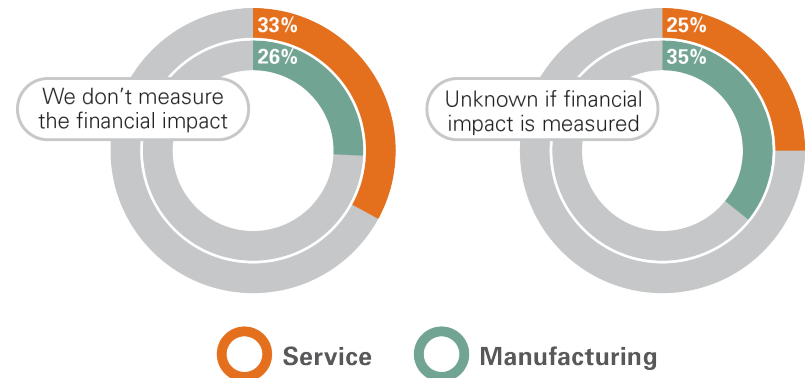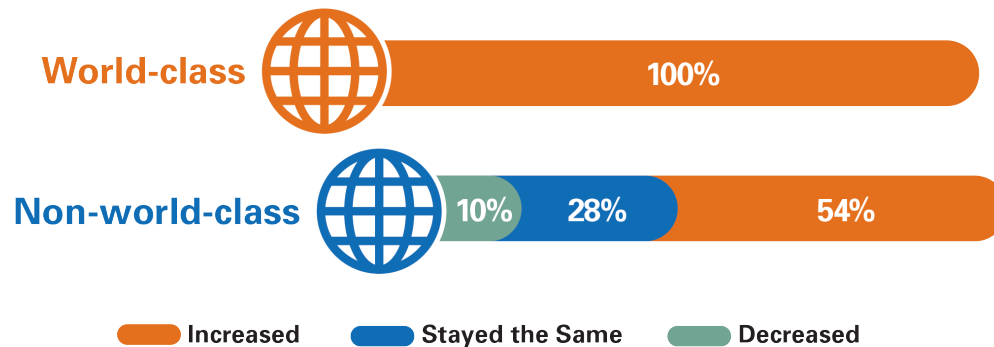
Business Performance Impact

While there is agreement on the correlation between quality and business performance, the gap in measuring that correlation and articulating it in financial terms points to an opportunity. As organizations mature in their quality and continuous improvement efforts, they are using quality more and more to drive profitability. Yet the data shows a disconnect between the activity and the measurement of how that activity has impacted business performance.

Most organizations are increasing their investment in quality. With that, we might expect to see greater visibility and measurement of the resulting financial impact. While world-class organizations are strong in this area, many organizations still lack visibility into the benefits from their spending. Having mature systems in place to effectively measure and then report the financial and other business impacts of quality can help justify the need for increased investment. That may be why 100 percent of world-class organizations reported an increased investment in quality in the last three years; these are the same organizations that measure the financial impact of quality.

Investment in Quality in Last Three Years

World-class — 100%

Non-world-class — 10% | 28% | 54%

- Increased
- Stayed the Same
- Decreased

We don't measure the financial impact — 33% / 26%

Unknown if financial impact is measured — 25% / 35%

- Service
- Manufacturing

Business Performance Impact

Measure Financial Impact
- 82% of world-class organizations measure the impact of quality
- 39% of non-world-class organizations do

This lack of measurement may be attributed to not having a common method for capturing the financial impact. Additionally, when it comes to setbacks, an organization's culture could discourage calling attention to remediation costs versus simply not having an ability to measure.

Financial Impact of Quality
- 57% of world-class organizations see an increase of more than $1 million in annual impact
- 13% of non-world-class organizations see an increase of more than $1 million in annual impact

Measuring Performance
The benefits to using standardized measures throughout various levels of the organization 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.

As was the case in the 2013 Discoveries report, service organizations are starting to adopt more traditional manufacturing quality-oriented metrics, such as first-pass yield, defects per million, and percent compliant (to specifications defined by customers or regulations).

Since the 2013 research, three years later, there has been a 5 percent increase in service organizations reporting their use of first-pass yield, a 7 percent increase in their use of defects per million, and percent compliant was unchanged at 83 percent of service organizations using this metric. The use of these manufacturing quality-oriented metrics allows service organizations to measure themselves across a broader range of performance criteria. Although the increase in the use of these measures is positive, many organizations have yet to fully implement a robust set of quality-oriented metrics.

> "*Organizations often measure numerous aspects of product and service quality. However, the linkage between quality and financial performance is often not made. This limited view of the financial impact can reduce the importance for driving quality improvements.*"
>
> **Dr. Beth Cudney**
> *Associate Professor*
> Missouri University of Science and Technology

60% of organizations say they **don't know** or **don't measure** the financial impact of quality.

Business Performance Impact

Mature quality organizations are focusing on innovation as part of their quality strategy to drive profitability. As highlighted earlier, world-class organizations leverage quality to spur innovation at significantly higher rates. The data suggests that organizations spur innovation mostly through the use of quality tools and through creating open and collaborative environments with a focus on idea sharing. The biggest gap between world-class and non-world-class is in the use of monetary rewards for ideas.

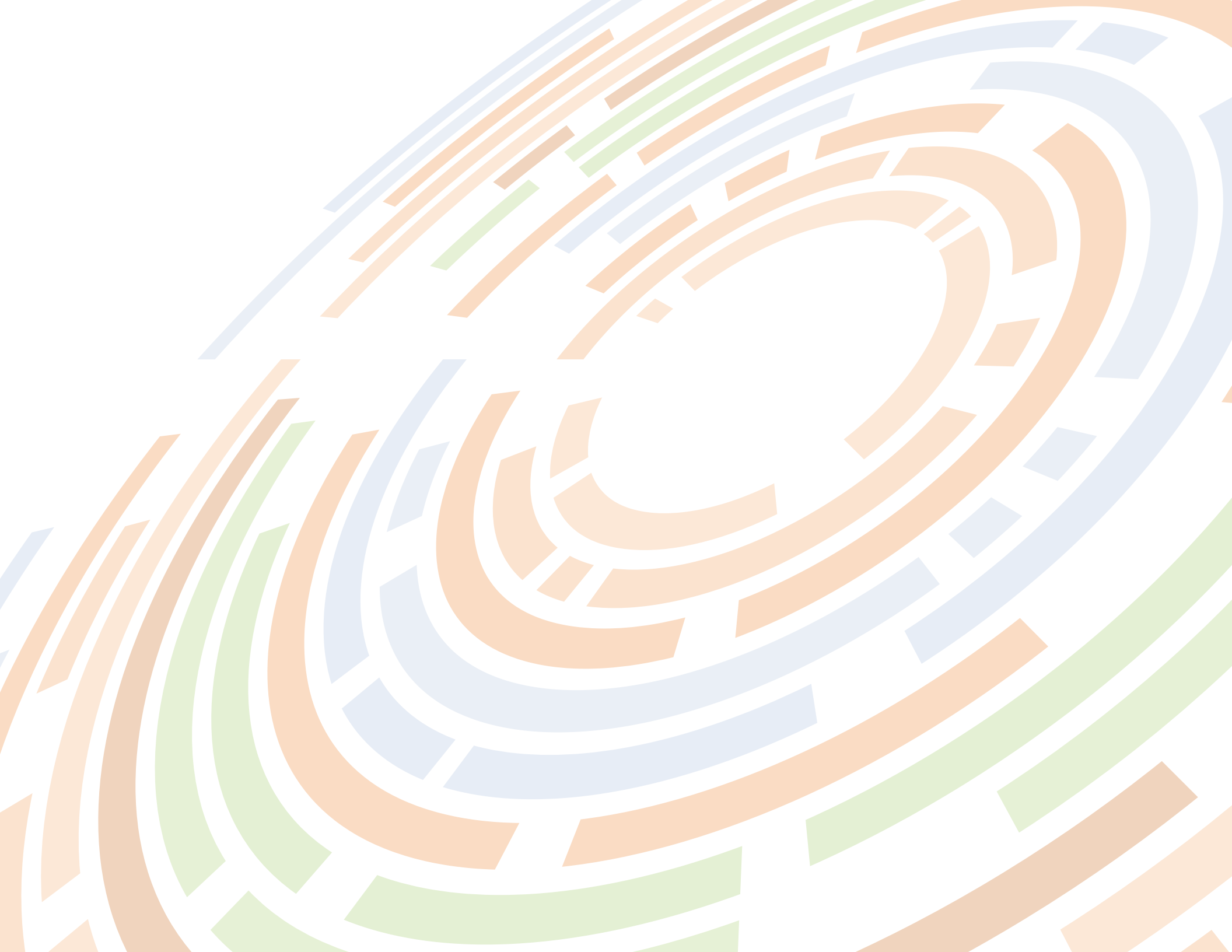## Approaches to Spur Innovation Through Quality

93%
55%
Use quality tools to develop innovative solutions

50%
29%
Use internal crowdsourcing*

82%
54%
Use collaborative environments with a focus on idea sharing

36%
14%
Use external crowdsourcing

50%
16%
Offer monetary rewards for ideas

◯ World-class   ◯ Non-world-class
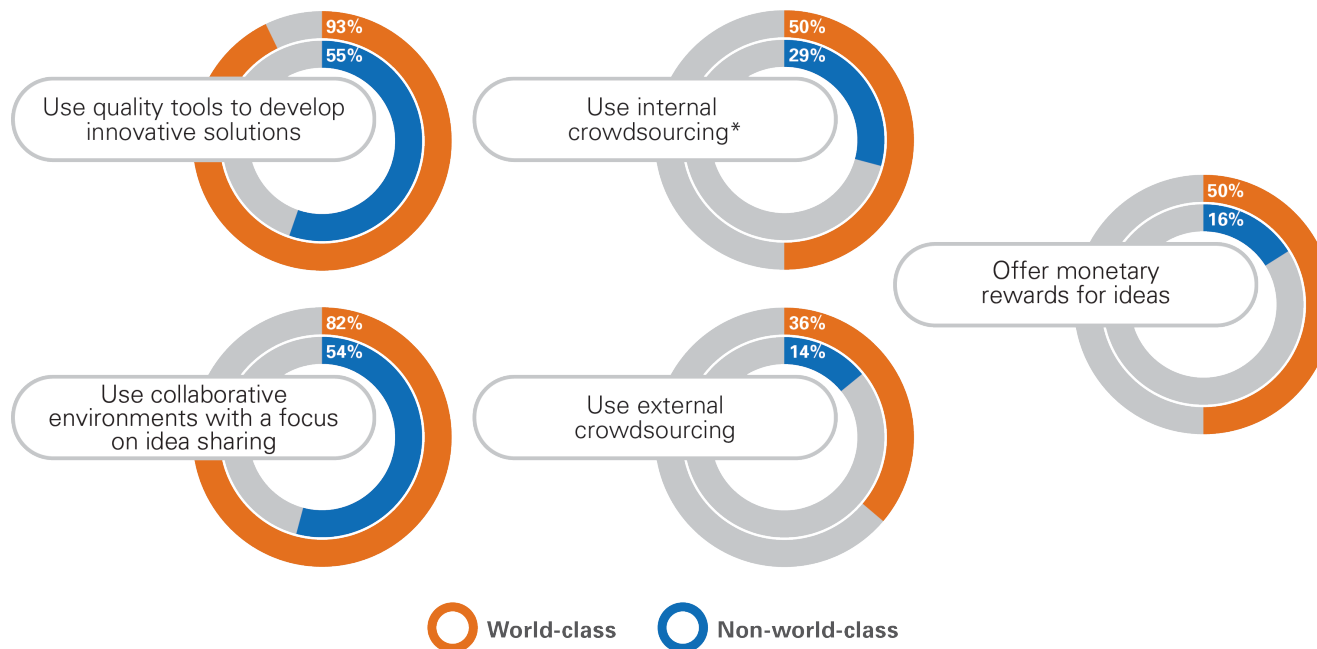
North America **(13%)** and Europe **(12%)** are less likely to use external crowdsourcing to drive innovation.

" *Our definition of quality as a strategy has been expanding. It is no longer just focused on delivery reliability and customer service. It is the total customer experience and includes value creation through product and technology innovation, speed-to-market, corporate citizenship, and sustainability.* "

Grayson McClain
Director of Quality and Customer Experience, FedEx

* Crowdsourcing is the process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people.
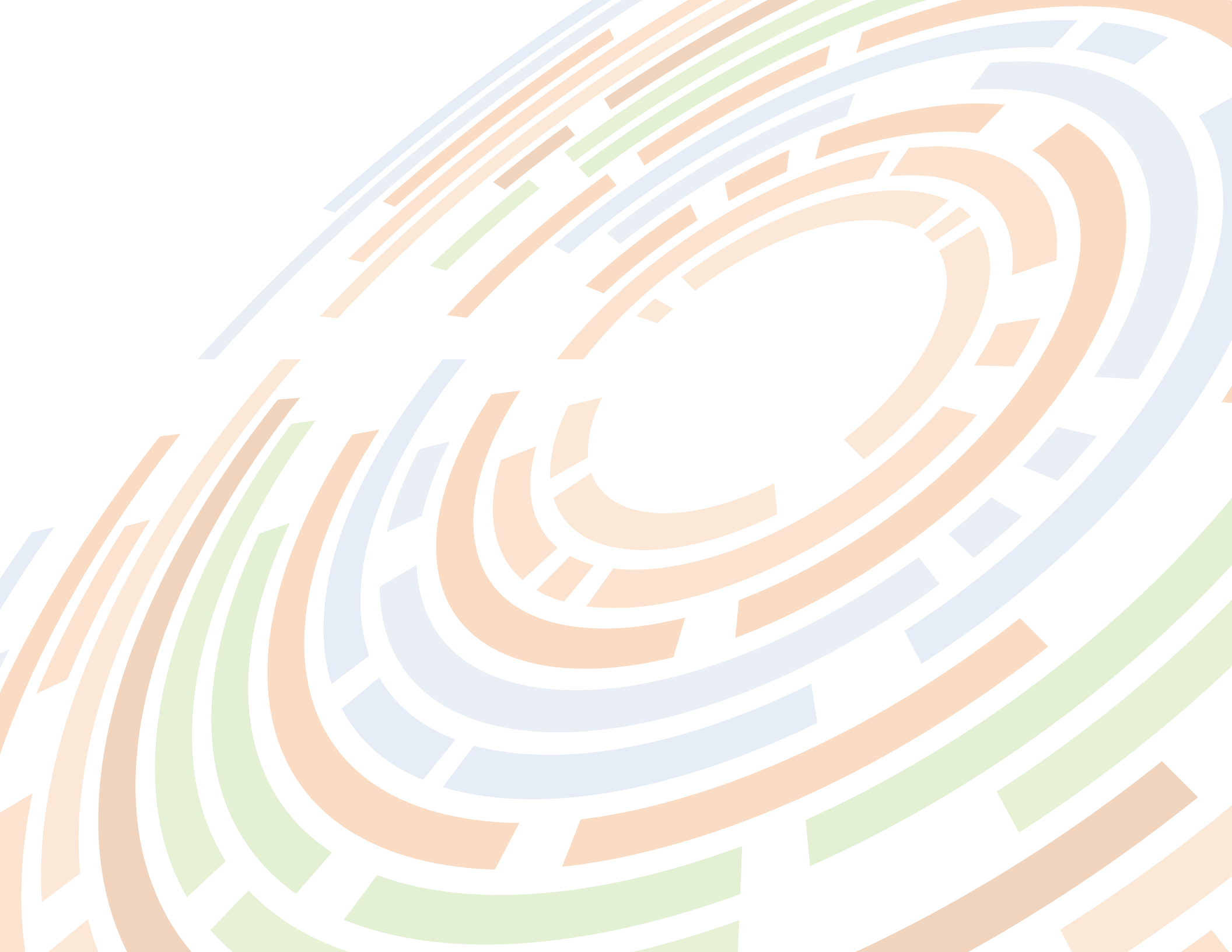
THEME 3

Accelerating "Qustomer"

While customers are still a key component of a quality strategy, they no longer solely define quality. Customers are playing a larger role in defining quality objectives, driving metrics, and creating new products and services.
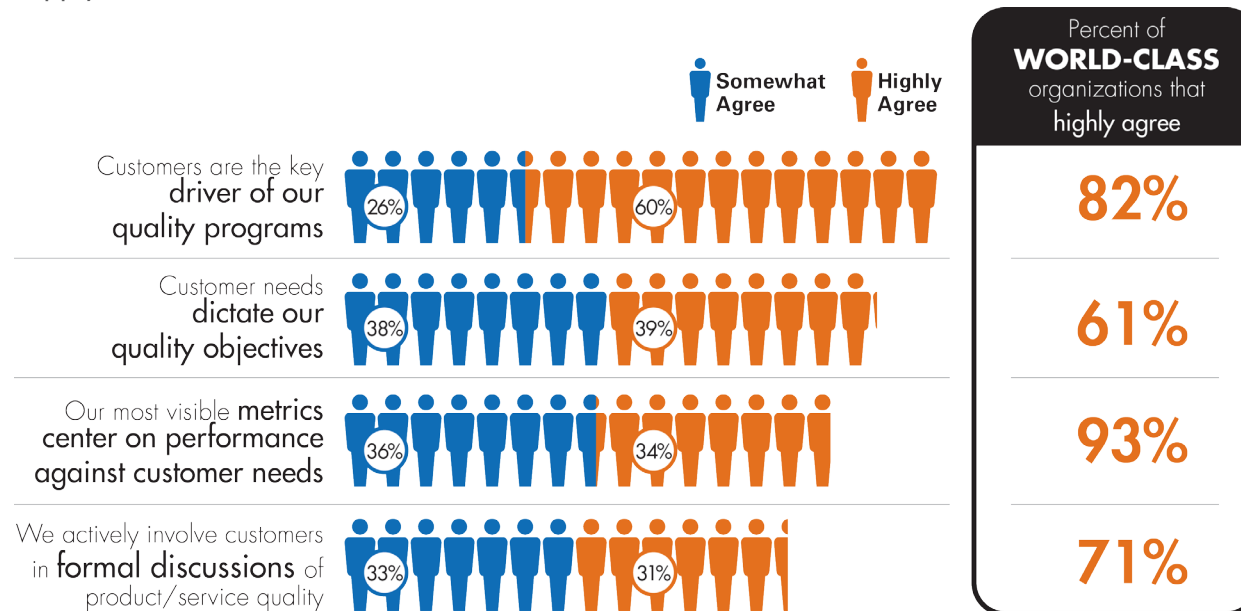
Accelerating Qustomer®

As organizations mature in their quality strategies so does the level of customer integration, as superior quality requires high levels of customer involvement (internal and external) throughout the entire life cycle of an organization's activities.

Quality and the **customer** are closely aligned in successful organizations, such that the two concepts are becoming one—hence the term **Qustomer**.

More than three-quarters of the responding organizations indicated that customers' needs are key drivers of their quality programs and objectives. In any case, organizations must continue to foster closer relationships with their customers, not only the end consumer, but also throughout the entire supply chain.

Somewhat Agree | Highly Agree

Percent of **WORLD-CLASS** organizations that highly agree

Statement	Somewhat Agree	Highly Agree	Percent of World-Class
Customers are the key driver of our quality programs	26%	60%	82%
Customer needs dictate our quality objectives	38%	39%	61%
Our most visible metrics center on performance against customer needs	36%	34%	93%
We actively involve customers in formal discussions of product/service quality	33%	31%	71%

Even with the focus on the customer, the concept that the customer is the only one who can define quality is shifting. In the 2013 Global State of Quality report, 56 percent of the responding organizations replied that "the belief is that the customer is the only person qualified to define what quality means." That percentage has now dropped to 43 percent. This may be driven by the realization that quality of back-office activities—which may not be directly visible to customers—can significantly impact business performance and compliance. Or, could the use of big data be providing organizations with useful insights? Hence, a balance between the customer and internal quality needs must be reached.
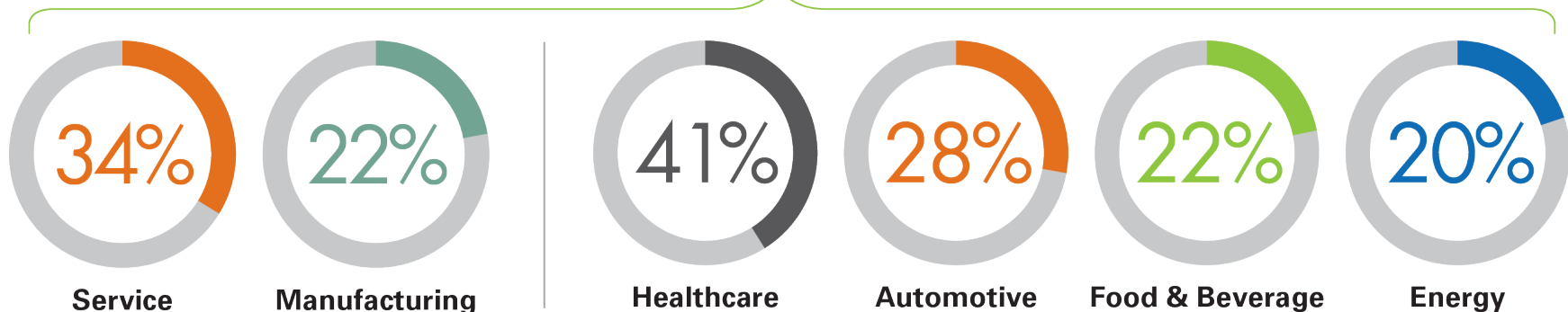
Accelerating Qustomer®

How can organizations forge closer ties with their customers?

Sharing information transparently with customers is one way to enhance the customer-supplier relationship. Greater than 60 percent of organizations leverage "quality impact on customer experience" and "brand reputation to drive profitability." In an effort to engage with customers, two-thirds of organizations share product quality information with customers—but there has been a slight decrease in this sharing process, from 68 percent to 62 percent since 2013.

A proactive effort toward providing customer experience training for employees and supply chain partners can strengthen an organization's culture of quality as it relates to customer integration. More than a quarter of organizations surveyed train their quality teams in customer experience skills. Not surprisingly, this training is more prevalent in service-based industries, such as healthcare, where customers often see little middle ground when it comes to satisfaction: The service is either great or poor.

Customer Experience Training
(PERCENT OF RESPONDENTS THAT PROVIDE)

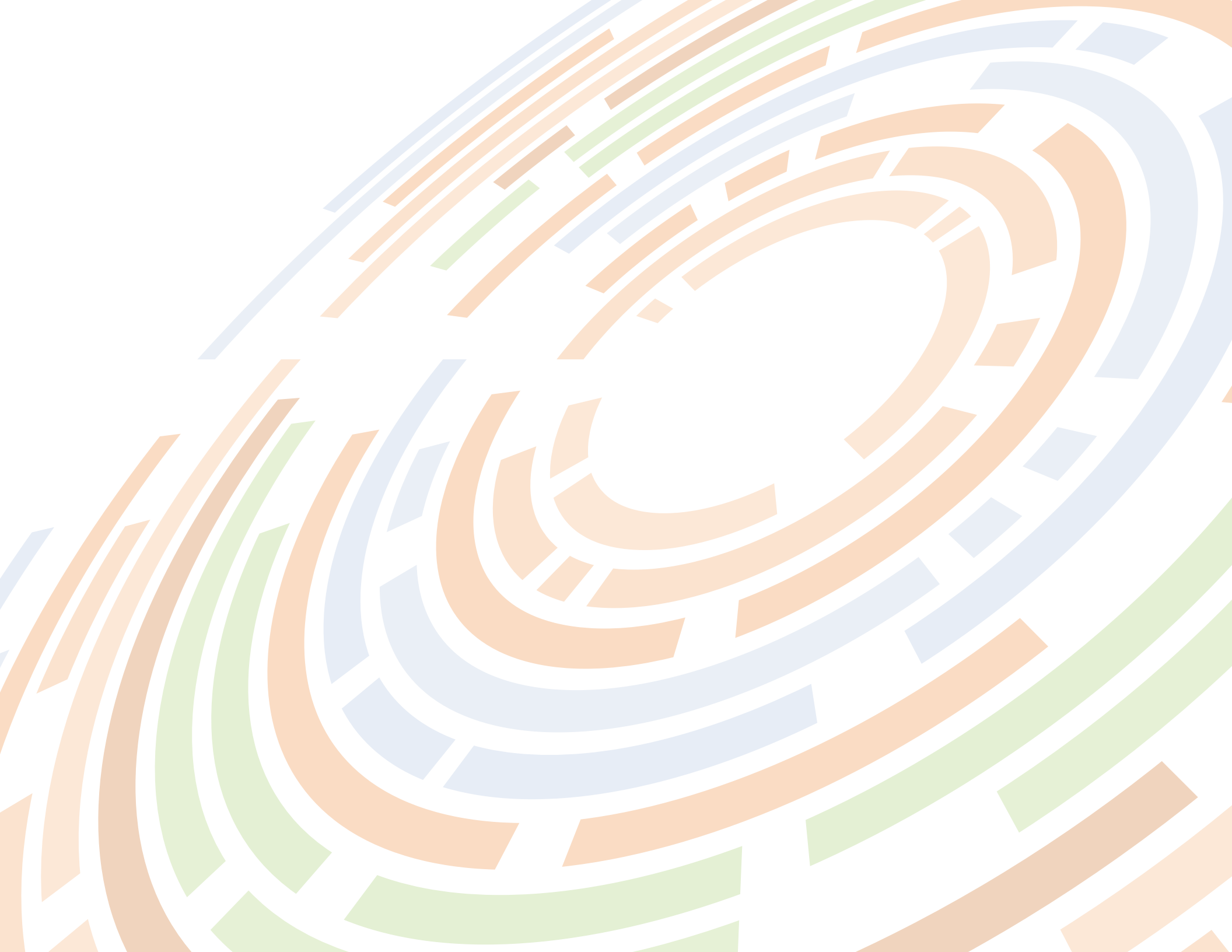| 34%	22%	41%	28%	22%	20%
Service	**Manufacturing**	**Healthcare**	**Automotive**	**Food & Beverage**	**Energy**

APQC | ASQ

Accelerating Qustomer®

Opportunities exist to increase the quality of employee interaction with customers. On average, less than a third of organizations provide training in customer experience. When looking at customer experience training geographically, interestingly, the data is relatively consistent—except for Africa, where customer experience training is minimal. The data overall points to opportunities for organizations worldwide to assess their current efforts around customer experience training and seek ways to accelerate their efforts in this space. Better trained staff can drive higher satisfaction rates and, in the process, can improve the perceptions of product and brand quality.

Regional Focus
Customer Experience Training

Africa	ANZ	Asia	Europe	Middle East	North America	South America
16%	37%	32%	32%	31%	24%	24%
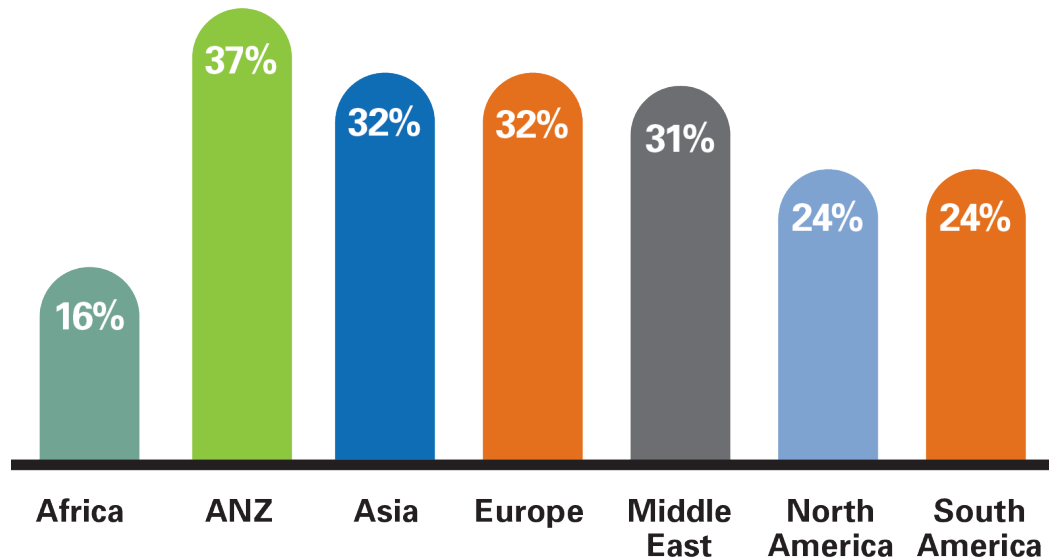
> " *Product release cycles are so fast and agile, fueled by rapid innovation and strong market competition. This is breaking the typical business mindset of, 'We ship when we are ready and/or when there is a market.' It is ever so important to understand customer expectations and experiences near real-time, as they form the common denominator of the overall quality strategy of a company. Quality and customers are always intertwined, and with the current innovation- and technology-advances-driven market, it's super-critical to ensure that quality is not just about reducing defects and costs, but drives innovation and customer experience management coupled with business excellence— everything leading to culture of quality!* "

Kanthassamy (Kandy) Senthilmaran
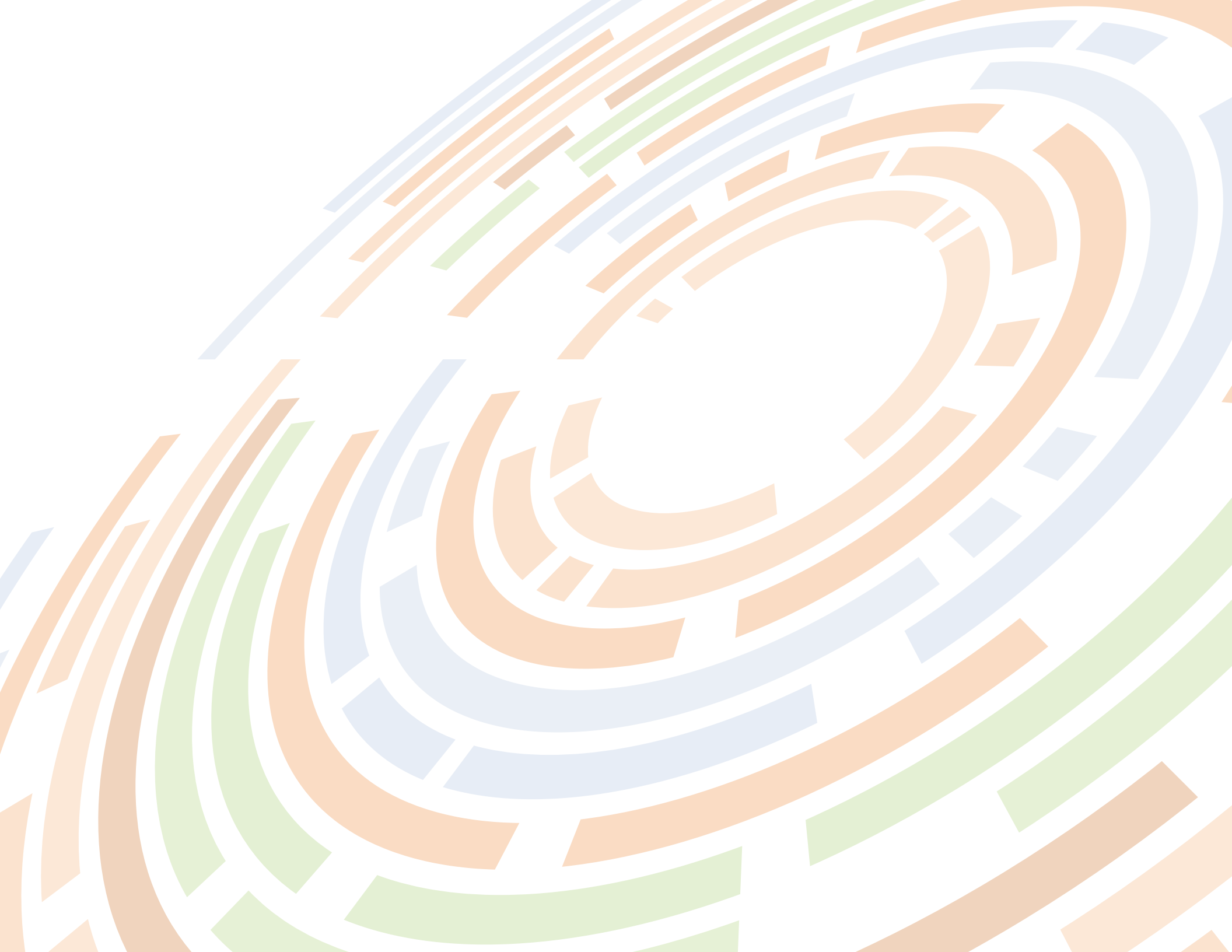*Director of Customer and Partner Experience*
Microsoft

THEME 4

Setbacks: Controlled or Not

While the goal of quality is to eliminate setbacks altogether, organizations must identify and resolve quality-related issues at the earliest opportunity to lessen the impact on the organization and customers.
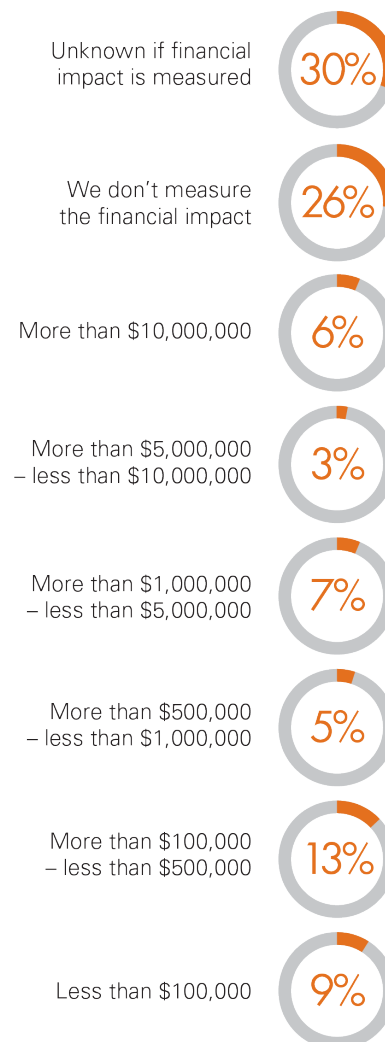
Setbacks: Controlled or Not

Measuring the financial impact of quality is necessary to understanding how quality drives profitability through such things as innovation, customer experience, sustainability, etc.; however, the financial impact of quality also must include the financial and non-financial impacts of setbacks.

As we saw in the financial impact discussion, **100 percent** of world-class organizations and **more than half** of the non-world-class organizations saw an increase in the total investment in quality. This includes money for technology, training, equipment, and personnel. Of that same group, **56 percent "don't know" or "don't measure"** financial impact on the bottom line, which specifically ties back to theme 2 (Business Performance Impact). **Almost half** of them (41 percent) don't know how much they are spending on remediating any quality-related setbacks.*
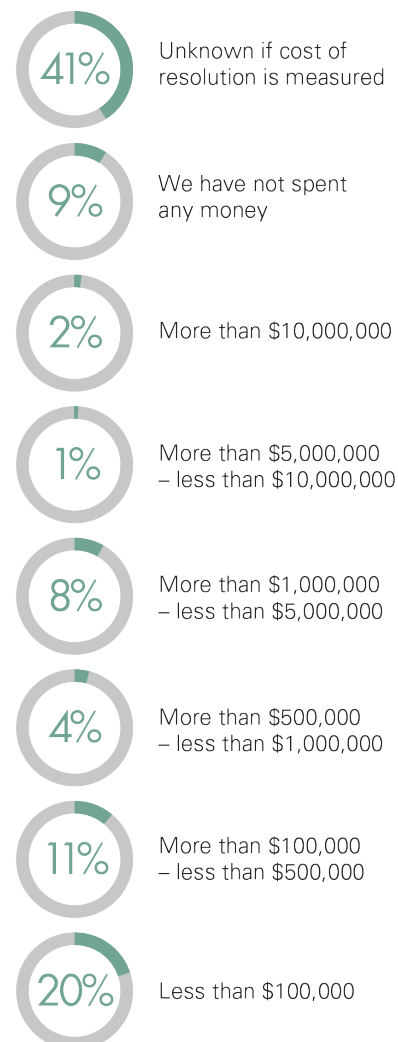
> ## World-class organizations have **half the rate** of quality setbacks as non-world-class organizations.

* For the purposes of this report, a setback is defined as a quality-related problem (e.g., product defects, service delays, recalls, etc.) resulting in a consequence(s) that impedes organizational success.

Positive Impact to Profit

Label	Value
Unknown if financial impact is measured	30%
We don't measure the financial impact	26%
More than $10,000,000	6%
More than $5,000,000 – less than $10,000,000	3%
More than $1,000,000 – less than $5,000,000	7%
More than $500,000 – less than $1,000,000	5%
More than $100,000 – less than $500,000	13%
Less than $100,000	9%

Cost of Resolution

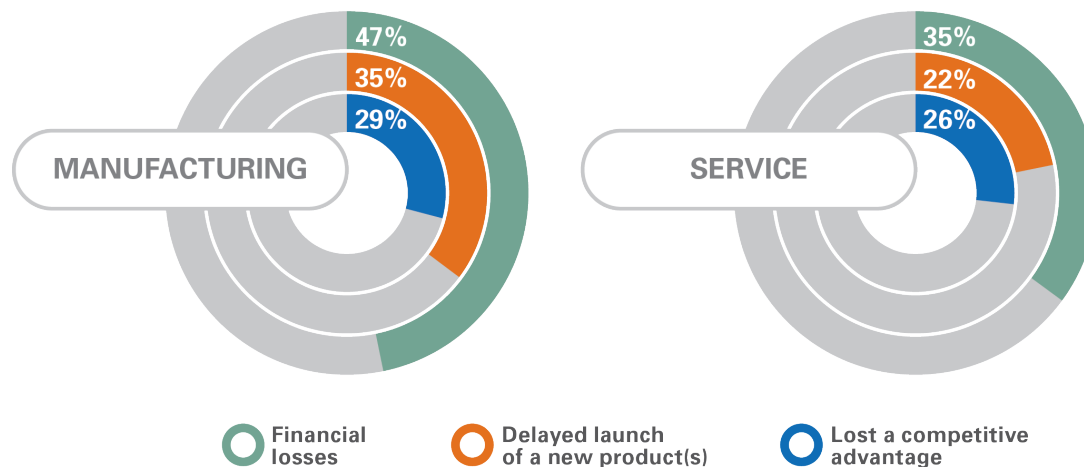| Value	Label
41%	Unknown if cost of resolution is measured
9%	We have not spent any money
2%	More than $10,000,000
1%	More than $5,000,000 – less than $10,000,000
8%	More than $1,000,000 – less than $5,000,000
4%	More than $500,000 – less than $1,000,000
11%	More than $100,000 – less than $500,000
20%	Less than $100,000

APQC | ASQ

Setbacks: Controlled or Not

All organizations reported some quality-related setbacks. More than 40 percent indicated that most of their setbacks are related to product defects and a poor understanding of what quality really is.

When examining the impact of these setbacks, the leading effects are financial (42 percent), delay of a product launch (29 percent), and loss of a competitive advantage (28 percent). The delay of a product launch or the loss of a competitive advantage can have a huge impact on how a customer views an organization, and also creates the risk that the organization will lose the customer.

More than 35% of the organizations indicated that their setbacks resulted in service delays, overall inaccuracies, poor data quality, and supplier-related setbacks.

45% of non-world-class organizations say they have a poor understanding of quality management and implications as a setback. The figure dropped to 25% for world-class organizations.

Setbacks' Impact on the Organization

MANUFACTURING
47%
35%
29%

SERVICE
35%
22%
26%

○ Financial losses   ○ Delayed launch of a new product(s)   ○ Lost a competitive advantage

" *The quality of our product and the safety of those who fly on our products or war fighters that utilize them are fundamental to our business. An efficient quality system that allows us to continually improve will be our differentiator.* "

Lindsay Anderson
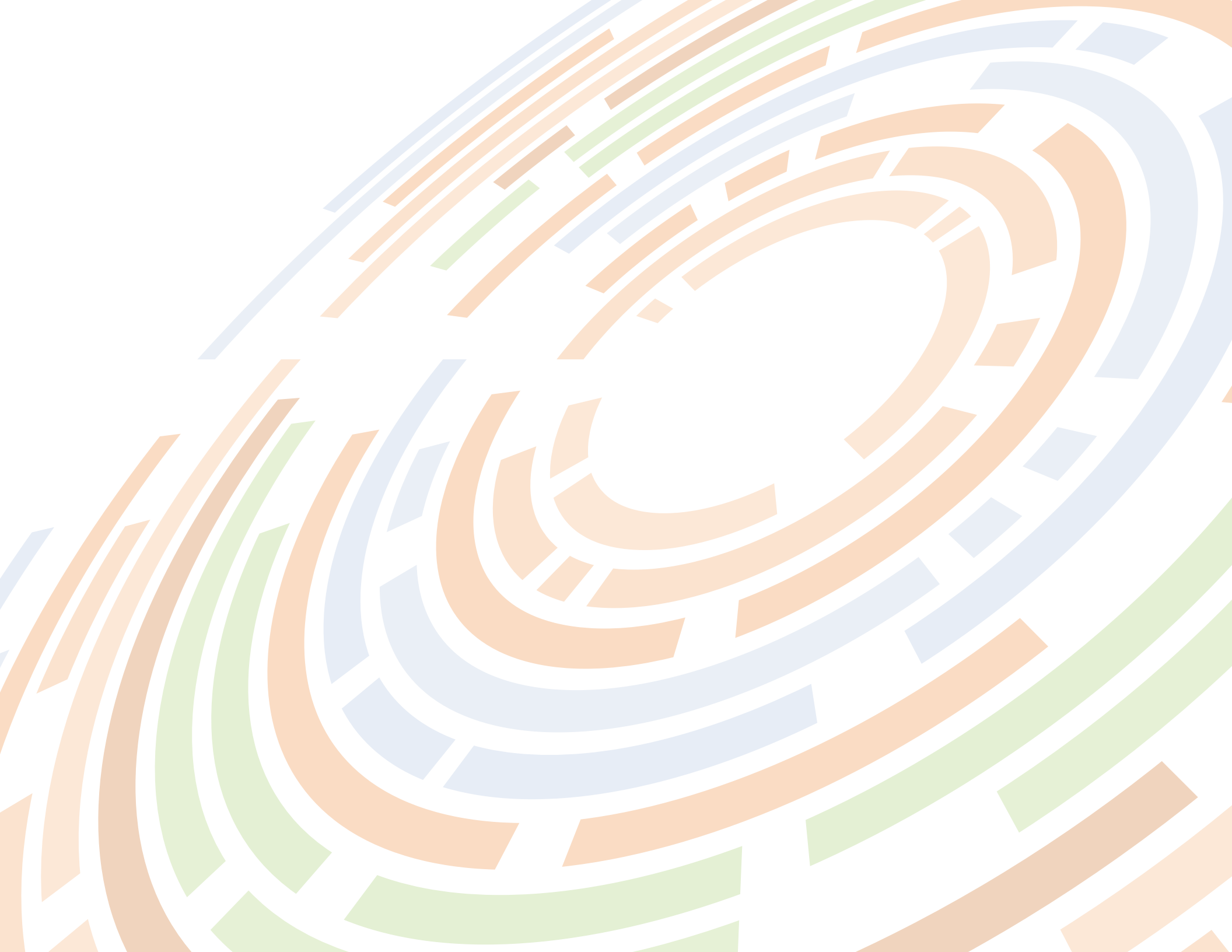*Quality Vice President,* Boeing Commercial

THEME 5

Knowledge, Learning, and Culture

Effective knowledge management is necessary to sustain and improve quality as the organization evolves with changing customer expectations, markets, and technologies.
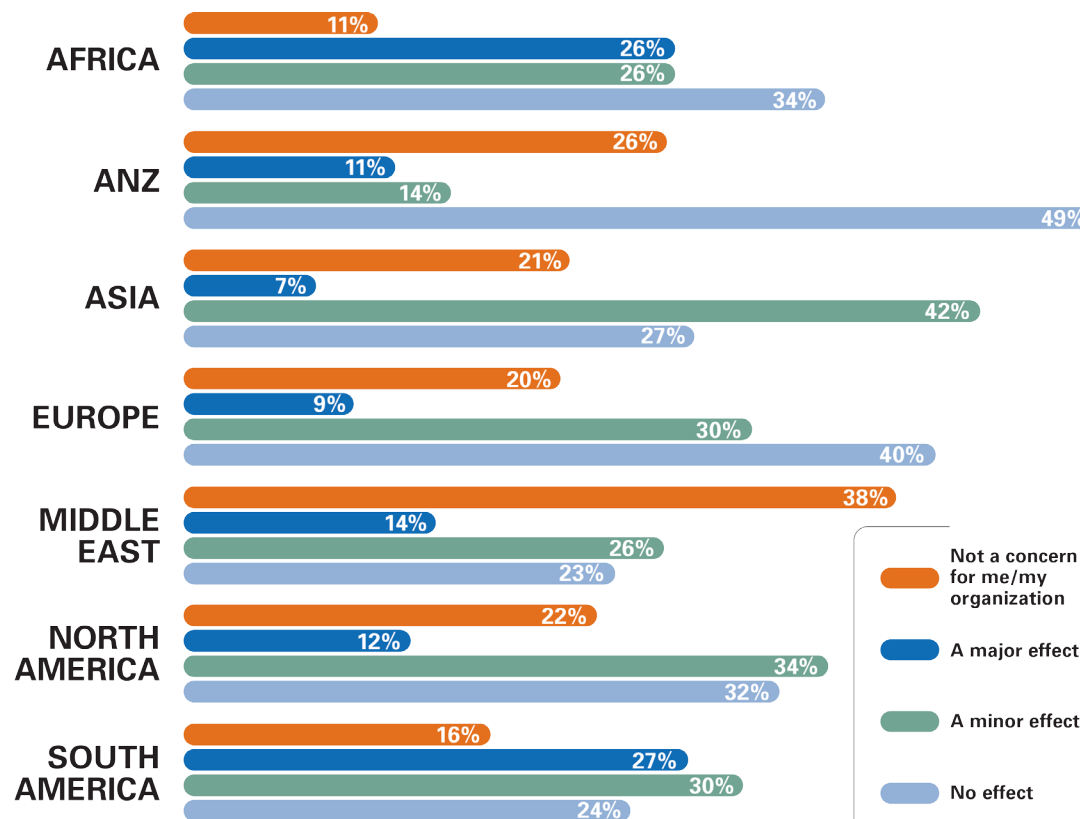
Knowledge, Learning, and Culture

How does an organization ensure that it has the competencies and experience to effectively leverage quality as a strategic asset and competitive differentiator?

Any strong culture of quality includes a knowledge management strategy that protects against internal skills and knowledge drain. It is now more important than ever that organizations focus on building that culture internally, as well within the extended supply chain, and down to the customer.

Interestingly, there is a large regional variation in how organizations perceive the impact from lack of knowledge capture. Organizations in North America and South America feel the loss of retaining knowledge has a minor effect. The Middle Eastern respondents felt that this was not a concern at all. Most interestingly, 49 percent of Australian and New Zealand organizations felt that knowledge retention, or lack thereof, would have no impact at all on their organizations.

AFRICA
- Not a concern for me/my organization: 11%
- A major effect: 26%
- A minor effect: 26%
- No effect: 34%

ANZ
- Not a concern for me/my organization: 26%
- A major effect: 11%
- A minor effect: 14%
- No effect: 49%

ASIA
- Not a concern for me/my organization: 21%
- A major effect: 7%
- A minor effect: 42%
- No effect: 27%

EUROPE
- Not a concern for me/my organization: 20%
- A major effect: 9%
- A minor effect: 30%
- No effect: 40%

MIDDLE EAST
- Not a concern for me/my organization: 38%
- A major effect: 14%
- A minor effect: 26%
- No effect: 23%

NORTH AMERICA
- Not a concern for me/my organization: 22%
- A major effect: 12%
- A minor effect: 34%
- No effect: 32%

SOUTH AMERICA
- Not a concern for me/my organization: 16%
- A major effect: 27%
- A minor effect: 30%
- No effect: 24%

Legend:
- Not a concern for me/my organization
- A major effect
- A minor effect
- No effect

We are transforming our IT processes and capability to accelerate innovation and customer experience improvements. The end-state will enable a stable core of knowledge and processes, and greater freedom to innovate and adapt to customer and market needs around that core.

Grayson McClain
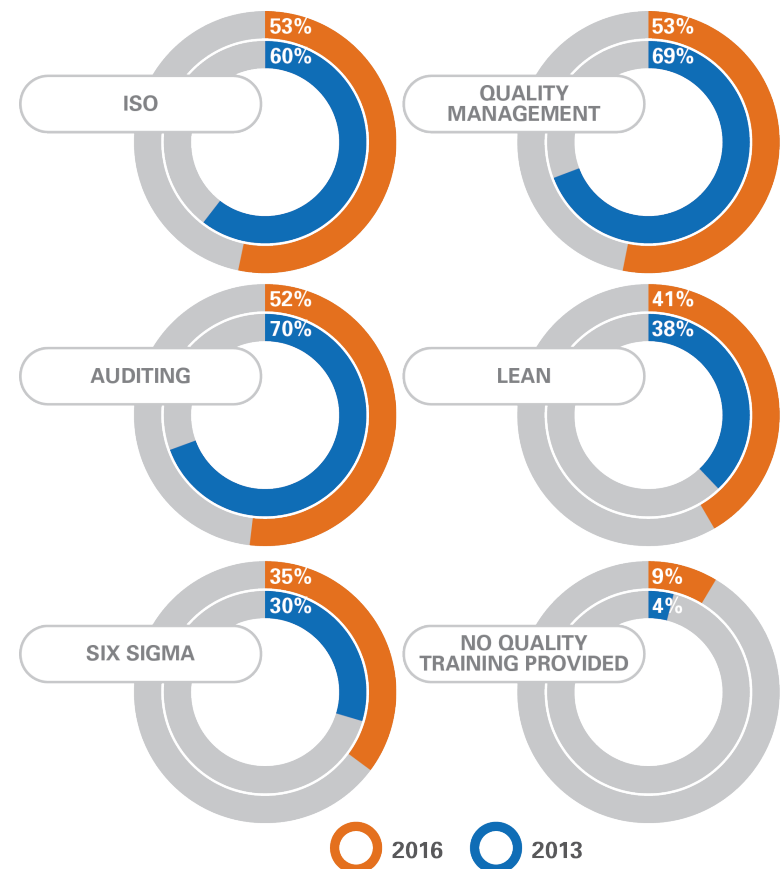*Director of Quality and Customer Experience, FedEx*

Knowledge, Learning, and Culture

Organizations can respond to concerns about knowledge loss through training and other forms of knowledge transfer. More than 40 percent of organizations believe retaining knowledge has an effect on their quality programs vs. no effect or impact on their organizations. Of that same percentage, 20 percent feel that knowledge loss has a major impact on their organizations. There are various reasons for this impact, all of which could lead to a degradation in quality, including:

- **Aging workforce**
- **Silver tsunami**—*wave of potential retirements ahead and the impact on a business; this knowledge loss affects the effectiveness of a quality program, including customer satisfaction and training*
- **Forced and natural attrition**

To help combat this knowledge loss, there has been an increased focus on training around improvement disciplines instead of just focusing on compliance activities, as was done in the past. There was a decrease in ISO, quality management, and audit activities and an increase in lean and Six Sigma training.

As themes continue to be intertwined, the lack of knowledge retention could also be tied back to leveraging quality as a strategic asset. This knowledge is priceless, and knowledge loss could lead to loss of a strategic asset or strategic positioning.

ISO — 53% / 60%

QUALITY MANAGEMENT — 53% / 69%

AUDITING — 52% / 70%

LEAN — 41% / 38%

SIX SIGMA — 35% / 30%

NO QUALITY TRAINING PROVIDED — 9% / 4%

○ 2016   ○ 2013

Approximately half of non-world-class organizations train those involved in quality activities vs. **71%** of world-class organizations.
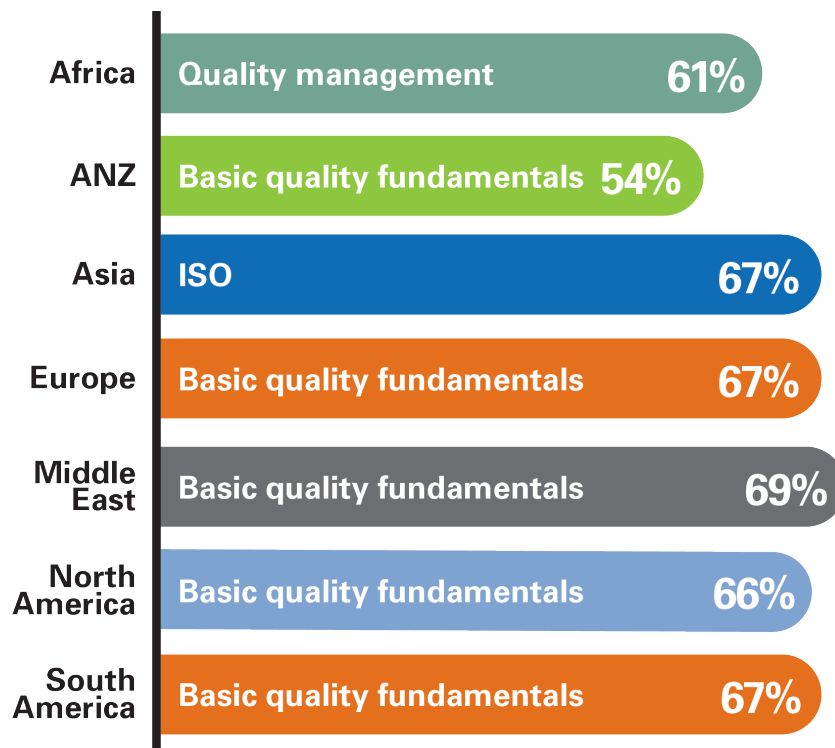
About 1/3 of non-world-class organizations provide training to individuals in other roles vs. **61%** of world-class organizations.

43% of non-world-class organizations provide quality training to all employees vs. **100%** of world-class organizations.

Knowledge, Learning, and Culture

Looking at training from a regional and industry perspective points to more similarities than differences. **Where key industries spend training dollars:** Types of training that more than 50 percent of respondents indicated were important, shown at right.

Top training types by region

Region	Training type	%
Africa	Quality management	61%
ANZ	Basic quality fundamentals	54%
Asia	ISO	67%
Europe	Basic quality fundamentals	67%
Middle East	Basic quality fundamentals	69%
North America	Basic quality fundamentals	66%
South America	Basic quality fundamentals	67%

Healthcare
- Basic quality fundamentals (69%)
- Quality tools (56%)
- Quality management (50%)

Automotive
- Basic quality fundamentals (81%)
- Quality tools (68%)
- ISO (66%)
- Auditing (64%)
- Quality management (62%)
- Lean (53%)

Food & Beverage
- Basic quality fundamentals (86%)
- Auditing (57%)
- ISO (55%)
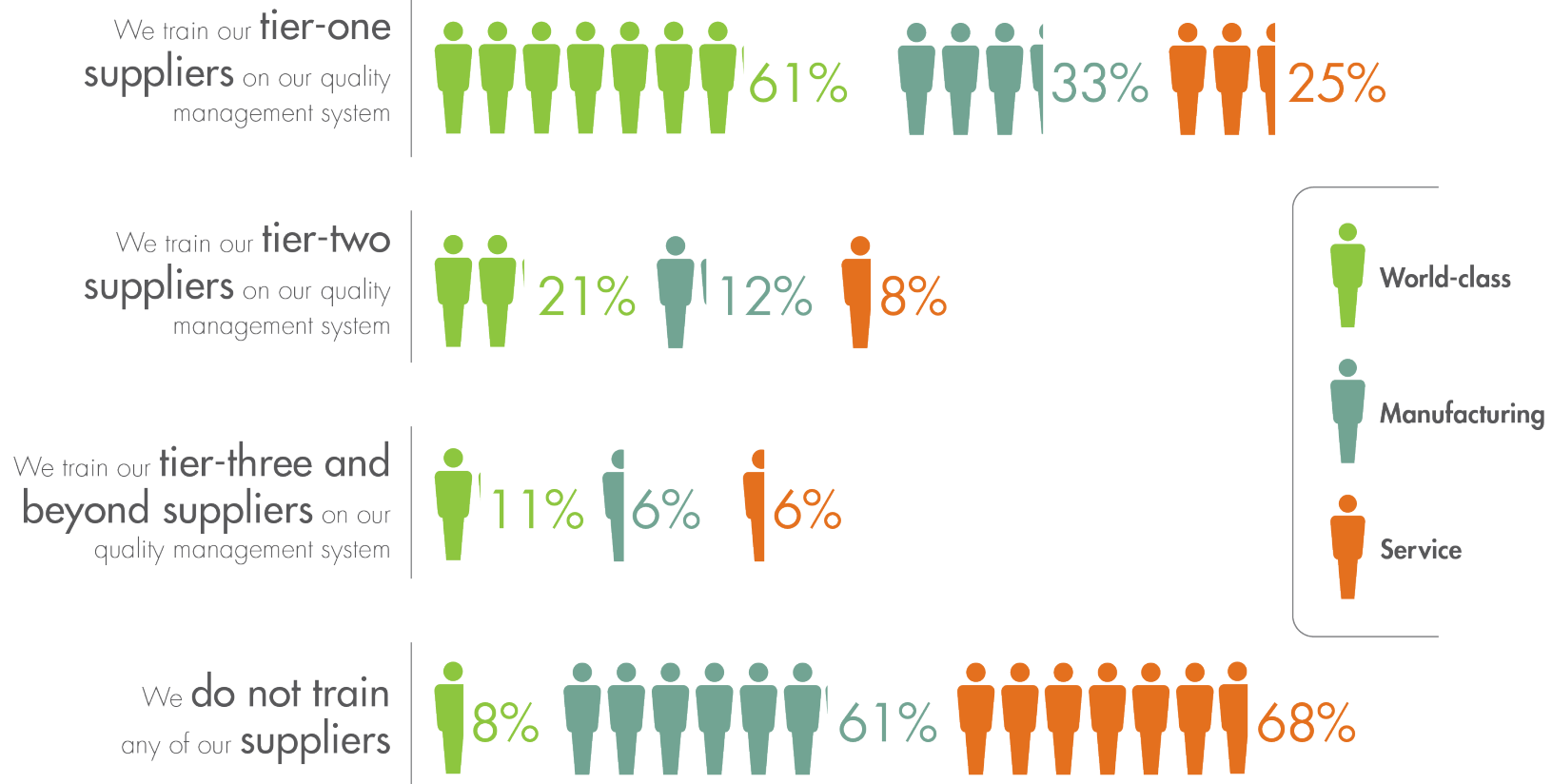- Quality management (55%)
- Quality tools (55%)

Energy
- ISO (71%)
- Basic quality fundamentals (63%)
- Auditing (59%)
- Quality management (59%)
- Quality tools (53%)

Knowledge, Learning, and Culture

To drive a culture of quality beyond just their own organization, leading companies are training tiers of suppliers. World-class organizations are training all suppliers almost twice as often as are manufacturing organizations; not surprising, in that suppliers are also customers and mature quality organizations have been effective at embracing and accelerating efforts addressing the Qustomer concept. The benefits of training suppliers and seeking a closer integration can be exponential in driving value and profitability throughout the supply chain.

Training of tier-two suppliers has **increased** **7%** since 2013.

Supplier Training

We train our **tier-one** suppliers on our quality management system
61%   33%   25%

We train our **tier-two** suppliers on our quality management system
21%   12%   8%

We train our **tier-three and beyond suppliers** on our quality management system
11%   6%   6%

We **do not train** any of our **suppliers**
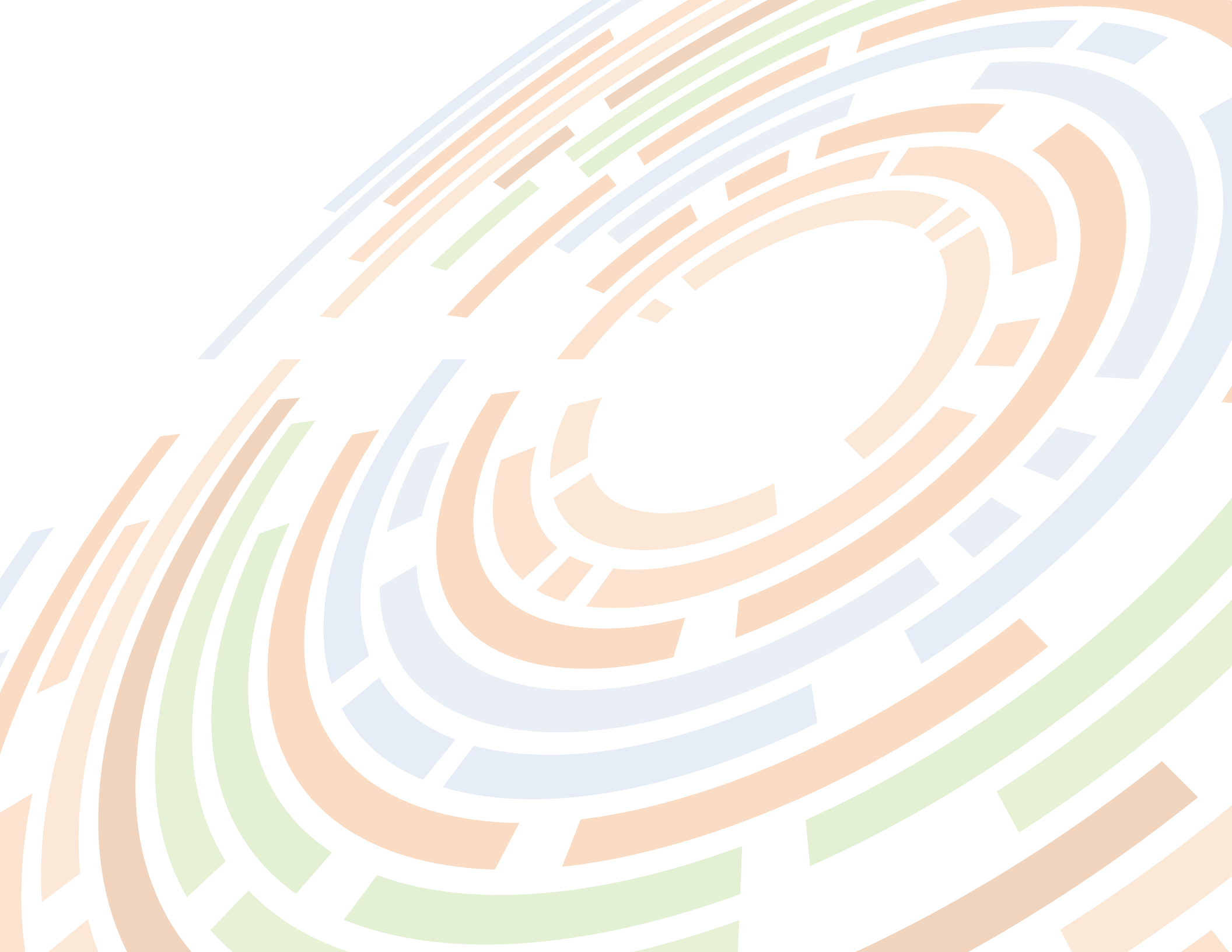8%   61%   68%

World-class

Manufacturing

Service

IMPLICATIONS

Organizations now have the ability to compare themselves to world-class quality performance

While less than two percent of participating organizations achieved world-class status, every organization now has a framework, data points, and path forward toward a world-class quality goal.

Furthermore, by 2020 we foresee less distinction between service and manufacturing organizations as well as increased awareness of the business impact of quality.

Implications and Opportunities: Back, Forth, and Now

On the opening page of this ASQ Global State of Quality 2 Research: Discoveries 2016, we welcomed you, the Global Quality Community, to a second-generation comprehensive, data-rich report.

Now, we pause to briefly highlight where we've been in these early years of discovery, where we are, and where we—and more importantly you—may want to go. This final section provides actionable insights into how you can use the data contained in this report as well as the additional research found on **www.globalstateofquality.org** to learn, understand, benchmark, and develop action plans for your organization.

Through the year-long research initiative, ASQ and APQC attempted to go deeper in some areas and lighter on others, by design and as encouraged by you and our Advisory Panel. We have and will continue to call out differences—progress and regress—identified since 2013. Take some time to digest and share the resource array.

In this report, we've revisited many of the Discoveries 2013 themes, including:

- Quality governance and management,
- Outcomes and measures,
- Competencies and training, and
- Culture.

Wholly new compelling data points, information, and observations have surfaced in this iteration of the research. Since the first report, a dramatic shift has occurred in how quality resources and departments are viewed within organizations. The top-performing organizations view quality as a strategic asset that helps competitively differentiate product and service offerings. As quality becomes more of a competitive differentiator, opportunity exists for organizations to measure the financial impact of quality on their business. Additionally, setbacks and challenges are always going to be part of the quality industry; however, minimizing those setbacks and capturing the lost efficiency and financial impact associated with them, seems to be a lost opportunity among many respondents.

We noted a shift in the role the customer plays within organizations. While the data indicates the Qustomers' importance and influence have increased since the inaugural report in 2013, the customer is—of course—not the solitary force defining what quality means. With a broader lens, we revisited the "Qustomer" concept (customer and quality) and the ties that affect organizational business goals and operational objectives. The insights provide good news as well as opportunities for improvement across all organizations.

Implications and Opportunities: Back, Forth, and Now

Another change detected in 2016 data is in the profession itself—management and leadership in competencies and culture. As leaders and professionals in quality and continuous improvement retire and the generational shift accelerates, tacit and explicit knowledge can literally walk out the door. Capturing that knowledge and training up-and-coming quality leaders will separate leading organizations from laggards.

Finally, Discoveries 2016 scratches the surface of world-class quality—what it is and what it takes to achieve. Just as in the Baldrige Performance Excellence Program (the most comprehensive criteria and approach to quality, improvement, and your path to world-class excellence), the journey never ends. No doubt the findings and observations we've begun to explore as world-class quality will elicit feedback, drive dialogue, and even cause controversy; all to be encouraged as we seek engagement from businesses, governments, and societies.

In that spirit and in closing, we offer our top 10 action list (on the following page) **to help your organization advance toward world-class quality.**

Implications and Opportunities: Back, Forth, and Now

10 Steps to World-Class Quality, 2016—2020

1. Evaluate to what degree your quality organization and senior executive management understand and leverage quality and continuous improvement throughout the enterprise, as a competitive differentiator and as a strategic asset.

2. Assess your organization's culture of quality to identify strengths and opportunities (see asq.org/culture-of-quality/assessment/).

3. Inventory the quality and continuous improvement measures your organization uses and the reporting frequency and degree of visibility or transparency for those measures. Then, enact steps to improve and accelerate the decision-making process based on critical metrics.

4. Measure and communicate expenses reduced and avoided through quality and continuous improvement efforts, as well as top-line revenue growth and customer loyalty gained.

5. Review the incentives your organization provides to drive quality performance. Improve and align incentives and rewards to recognize positive results, behaviors, and overall performance from the senior ranks to those closest to your customers and suppliers.

6. Create plans and programs and leverage technology to ensure knowledge is transferred and built upon so that wisdom and experience is shared, locally and globally.

7. Review the types of quality-related training your organization needs and any new competencies needed; assess gaps and opportunities to develop new skills and analytics; and tie these investments to the overall business operations and strategy.

8. Perform a thorough review to assess the intersection between the customer and quality (such as sharing feedback with the customer, metrics on performance against customer needs is shared internally, etc.) and identify gaps and opportunities.

9. Assess the quality processes and management systems between your organization and those throughout the supply chain and sourcing; prioritize gaps and opportunities; and develop a joint strategy to improve performance, short- and long-term.

10. Note the gaps between your organization and the world-class profile, and determine where you could better connect quality and continuous improvement plans, programs, and priorities—both today and tomorrow—to your:

   - Business focus and strategy,
   - Key measures,
   - Talent management and training,
   - Industry and management understanding, use, and compliance with standards, and
   - Technology, automation, and big data.

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Project Sponsors & Partners

Although this report primarily is the work product of ASQ and APQC, 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 and partners did the Global State of Quality 2 Research come to be and continue to be researched, reported, and evolved to better performance and results.

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Project Methodology

APQC's proven research and benchmark methodology was utilized for the Global State of Quality 2 project. This methodology is broken down into four steps:

PLAN

In the planning phase of this project, the key business processes and issues were examined across organizational lines (e.g., departments, functions, and geographies). Opportunities to improve a key business process were selected. During this process, we evaluated the Global State of Quality report from 2013 and made appropriate survey changes and adjustments.

COLLECT

In the collection phase, the key business processes and issues were examined outside of the organizations. The global best practices for a given process were identified across industries. From the research, specific organizations were identified for in-depth analysis. During the data-collection process, the Global State of Quality 2 spotlights were crafted and created.

ANALYZE

In the analysis phase, the collected data were analyzed for an in-depth understanding of why and how best-practice organizations execute the process to gain a competitive advantage. The best practices were evaluated to determine applicability. In the analysis phase, the comparison by region, country, and trends from Global State of Quality 2013 were completed.

ADAPT

In the adaptation phase, an implementation plan was created, with mechanisms to monitor and report progress. As needed, the benchmarking and research activity was recalibrated and recycled as part of a plan for continuous improvement. From Global State of Quality 2, all spotlights were available, and the report is available from ASQ.

For more information about the Global State of Quality, visit globalstateofquality.org where you can read more about the project, learn about ASQ and APQC, and download the reports, including three Spotlight Reports that provide a deeper analysis of topics covered in Discoveries 2016.

SPOTLIGHT REPORT: **KPIs Key to Successful Supply Chain**

Establishing meaningful key performance indicators for supply chain is essential to driving operational excellence. But every company is different and has different values, which means there is no set of KPIs that will work for all. Instead, companies need to tie their measurements to the drivers of their companies.

ASQ and its research partner APQC developed this Spotlight Report to highlight some of the KPIs that should be considered when developing metrics for your business. It includes a global view of supply chain and provides direction for organizations that don't have supply chain measurements in place.
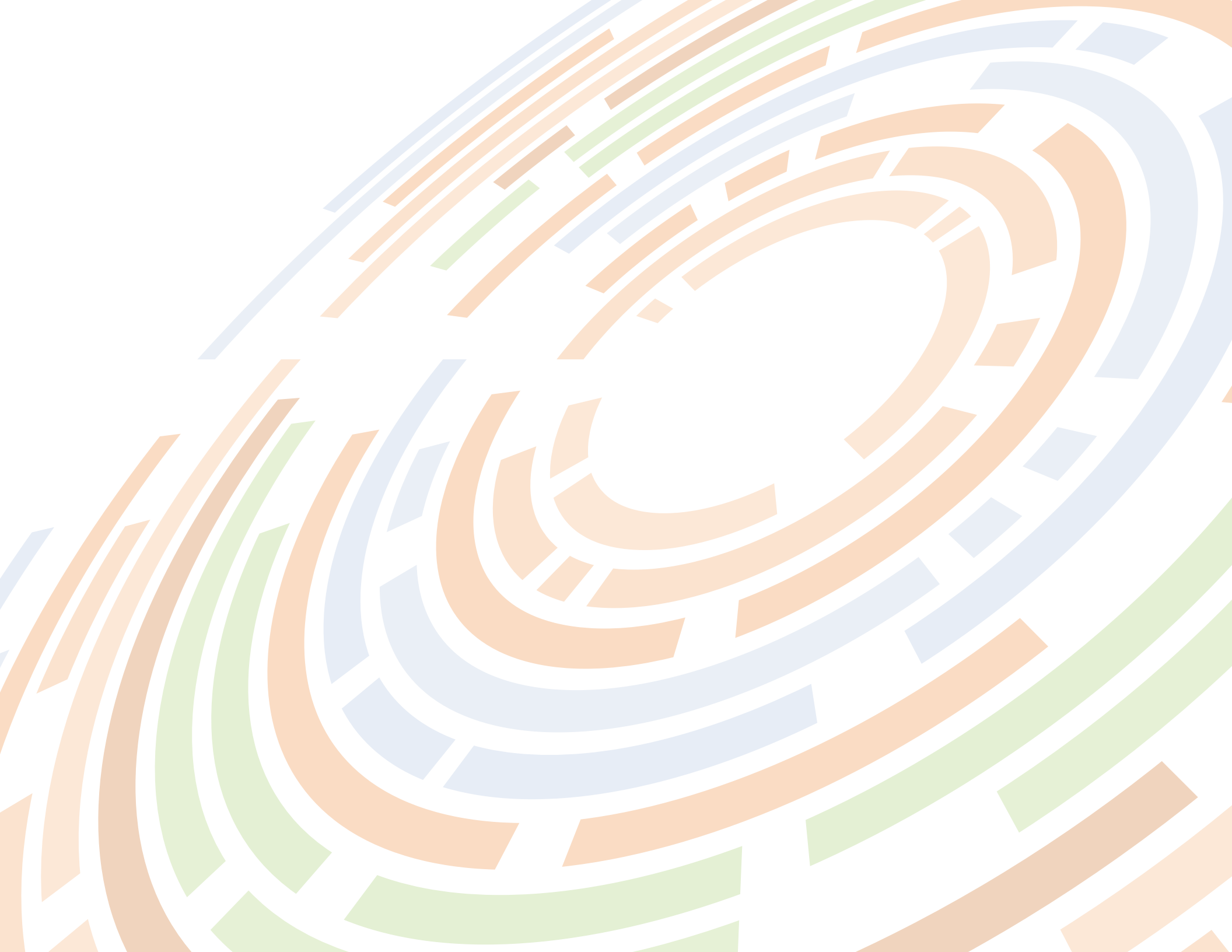
SPOTLIGHT REPORT: **A Trend? A Fad? Or Is Big Data the Next Best Thing?**

Big data can have a big impact on quality. Or can it? ASQ and its research partner APQC dove into the topic and interviewed two big names in big data: Elmer Corbin, director and project executive, client success at IBM Watson & Watson Health, and Silvia Veronese, director big data solutions, Hewlett Packard Enterprises Co.

Both Corbin and Veronese answer questions about how their organizations started working with big data, what they use it for now, and where it's headed in the future. They also provide insight for organizations wanting to start their journey in big data.

SPOTLIGHT REPORT: **Innovation and Quality Go Hand in Hand**

Innovation and quality are reliant on each other for success. After all, "innovation is fundamentally the act of doing things better, faster, more efficiently, or with greater quality," according to Scott Alexander, vice president of innovation at ROi—Resource Optimization & Innovation. ASQ and its research partner APQC interviewed Alexander about innovation and quality as well as how organizations can foster a culture of innovation and succeed. Furthermore, this question-and-answer designed Spotlight Report addresses the role of the customer in innovation and the positive impact innovation and quality can have on an organization's bottom line.

About ASQ & APQC

ASQ is a global community of people dedicated to quality who share the ideas and tools that make our world work better. With millions of individual 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. Celebrating 70 years in 2016, ASQ, with its world headquarters in Milwaukee, Wis., USA, operates regional centers in the U.S. and Canada, North Asia, South Asia, Latin America, and Middle East and Africa. Learn more about ASQ's members, mission, technologies, and training at **www.asq.org**.

APQC helps organizations work smarter, faster, and with greater confidence. It is the world's foremost authority in benchmarking, best practices, process and performance improvement, and knowledge management. APQC's unique structure as a member-based nonprofit makes it a differentiator in the marketplace. APQC partners with more than 500 member organizations worldwide in all industries. With more than 40 years of experience, APQC remains the world's leader in transforming organizations. Visit **www.apqc.org**, call **+1.713.681.4020**, or follow **@APQC** and learn how to Make Best Practices Your Practices®.