



Repair Trends in Companies Using the TL 9000 Quality Management System

A Study Using the Repair Service Product Category

This paper is the seventh in a series using TL 9000 Performance Data Reports (PDRs) to illustrate industry performance. Previous topics include: On Time Delivery, Switching Problem Reports and Fix Response Time, Edge Routers, Wireless Return Rates, Simple and Complex (aka Smart phones) Wireless Devices, and Network Operator Quality Improvement. For this paper, the team chose to study Repair Services (Product Category 7.4). Many companies have moved to outsourcing

their repair services to contracted organizations. As one of the largest product categories, Repair Services is indicative of this trend.

The measurements examined in this study include: Number of Problem Reports, Problem Report Fix Response Time, and On Time Delivery of Service. The study examines the Industry Average for Repair Services for a two-year period from February 2011 to January 2013.

The Industry Average data point, in a particular month, is the composite average data for that measurement during the time window from all eligible data submitted. Industry Average performance data calculations are derived from data over a period of multiple consecutive months, which is referred to as smoothing. For Problem Reports, Fix Response Time and On-Time Delivery measurements, a six-month smoothing window is used. Reporting of the smoothed data starts after six months of data are available.

Number of Problem Reports

A Problem Report is a report from a customer that concerns a defect, requests an investigation and a resolution to remove the cause. For the repair industry, NPR4 is the only Problem Report measurement.

The Industry Average dropped dramatically from a high of 0.005 to a low of 0.0001. However, in April 2012, one registrant in the Industry Average dropped out. Therefore, the drop in the data in April 2012 is most likely attributable to a company with a large number of Problem Reports no longer submitting data.

From April 2012 through January 2013, while the number of participants submitting data did not change, the Industry Average continued to improve by 50%.

The data shows that at the end of 2011, for every 1,000 repairs about five had a problem reported. By the end of 2012, for every 10,000 repairs, only one generated a problem report.

These facts lead to studying the Worst in Class (WIC) Average (Figure 2). As can be seen, the industry average (Figure 1) improved despite little or no contribution from the worst performer, suggesting a broad-based industry improvement.

Figure 2 shows the NPR4 Worst In Class stayed within a range of 0.3 to 0.08. From February 2011 to November 2012, Worst In Class improved by 59%. In December 2012,

NPR4 Industry Average

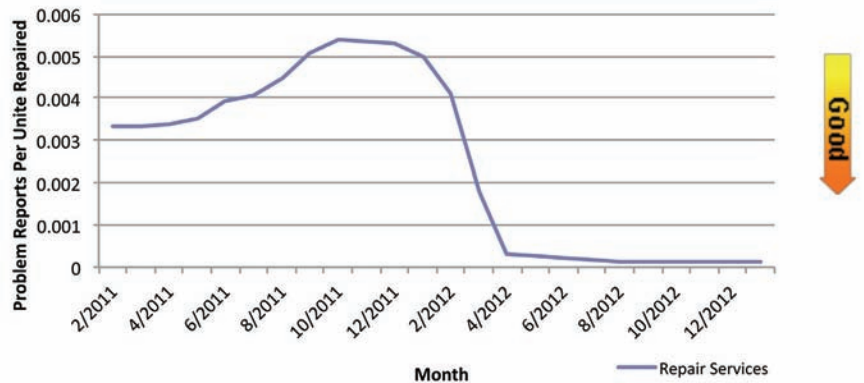


Figure 1 NPR4 Industry Average

NPR4 Worst In Class

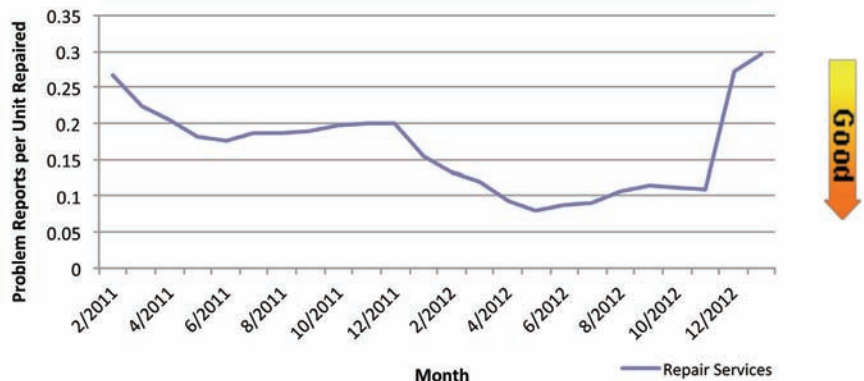


Figure 2 NPR4 Worst In Class

a new registration was added to the results and most likely became the Worst In Class. Comparing the Worst In Class chart with the Industry Average chart shows that the Worst In Class is not influencing the Industry Average significantly. Therefore, this again suggests that the overall population is improving.

While not shown, the NPR4 Best In Class (BIC) was perfect for the entire two-year period.

Fix Response Time

An agreement between the customer and supplier determines the allowable Fix Response Time for any Problem Report. The Fix Response Time is defined as the percentage of problem reports resolved (i.e., re-repaired) within the allowable window.

The FRT4 Industry Average trend line, in red on the chart in Figure 3, improved from a low of 89% to a high of 95% showing a steady positive trend over the two-year interval.

Over the report period, the FRT4 Best in Class remained perfect at 100%. This indicates the best in class companies fixed all the problem reports on time.

In Figure 4 the FRT4 Worst In Class trend line improved from 41% to 80% which demonstrates a dramatic improvement in this repair sector. Notice that as the Industry Average improved in Figure 3, the Worst In Class also improved as shown in Figure 4. This suggests that the Worst In Class Problem Report Fix Response Time had a significant influence on the Industry Average.

Overdue Fix Response Time

Overdue Problem Reports are those that are not closed in the allowable window as defined by the service agreement. Overdue Fix Response Time measures the percentage of those Overdue Problem Reports that are closed each month.

Figure 5 shows Overdue Fix Response Time (OFR4) for repair. The average improved from 83% to 92%, demonstrating a 53% improvement in the number of overdue problem reports that remained open each month. Additional data was also evaluated that showed OFR4 Worst In Class was consistent at approximately 30% and the OFR4 Best In Class remained perfect at 100%. On Time Service is the percentage of service deliveries accepted on the customer requested date. Figure 6 shows the OTS Industry Average trend improved from 88% to 94%. With over 10

FRT4 Industry Average

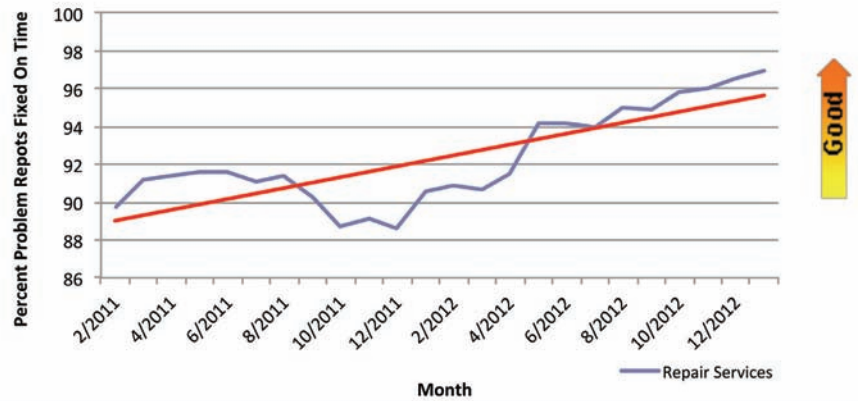


Figure 3 FRT4 Industry Average

FRT4 Worst In Class

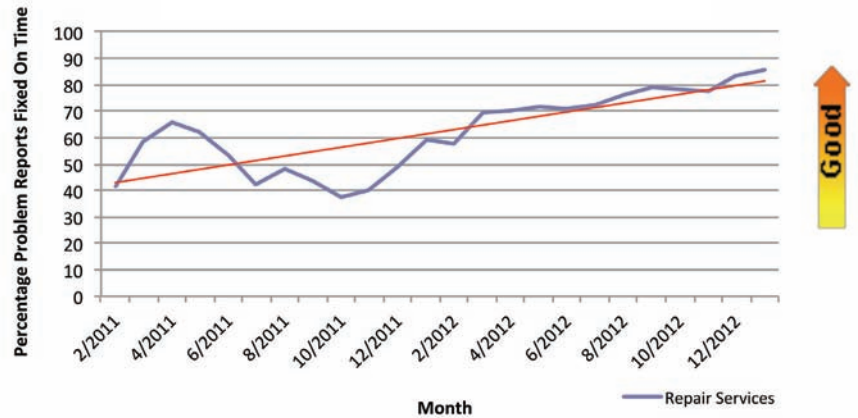


Figure 4 FRT4 Worst In Class

Overdue Fix Response Time Industry Average

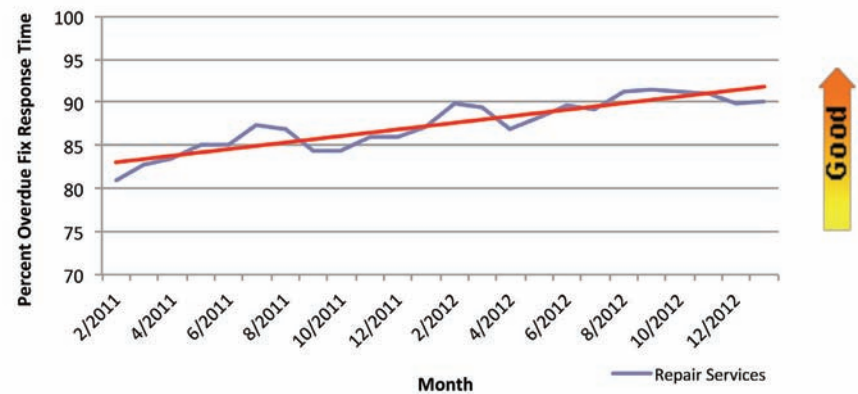


Figure 5 Overdue Fix Response Time Industry Average

million line items, this increase is very significant for the industry since it means that late deliveries were reduced by 50% thereby improving customer satisfaction.

On Time Service

In Figure 7 the On Time Service Worst In Class showed a relatively stable trend suggesting that this trend is not a significant influence on the improving Industry Average. This Worst In Class trend coupled with the Industry Average trend shows that the repair product category as a whole is improving.

Figure 8 showed stable and excellent performance centering around 98% for On Time Service Best In Class. Note that while Best In Class improved and the Worst In Class degraded slightly, the Industry Average became significantly better, showing an improving trend for the overall population.

Summary

The repair industry showed positive improvement in repair service delivery and repair service quality from February 2011 through January 2013. While the number of participants submitting data did not change from April 2012 through January 2013, the Problem Report Industry Average improved by 50%.

The FRT4 Industry Average trend line improved from a low of 89% to a high of 95% showing that customers of TL 9000 registered Organizations can have confidence that their Problem Reports will be fixed on time. The Overdue Fix Response Time (OFR4) Industry Average improved from 83% to 92%. The On Time Service Industry Average trend improved from 88% to 94%.

Companies that are registered to TL 9000 use the data reviewed in this study to drive improvements. The Industry Average for Problem Reports, Fix Response Time and On Time Service all improved during the two-year study period. The NPR4, FRT4, and OFR4 Best In Class remained at 100% for the entire study period. The On Time Service Best In Class showed an improvement of 1% for an already good trend centering around 98%.

TL 9000 registered companies have the competitive advantage of monthly benchmark data available to them to compare their performance to industry averages and best in class performance and use that information to drive continual improvement. Customers of repair organizations that are TL 9000 registered will benefit from improved repair service quality and delivery.

On Time Service Industry Average

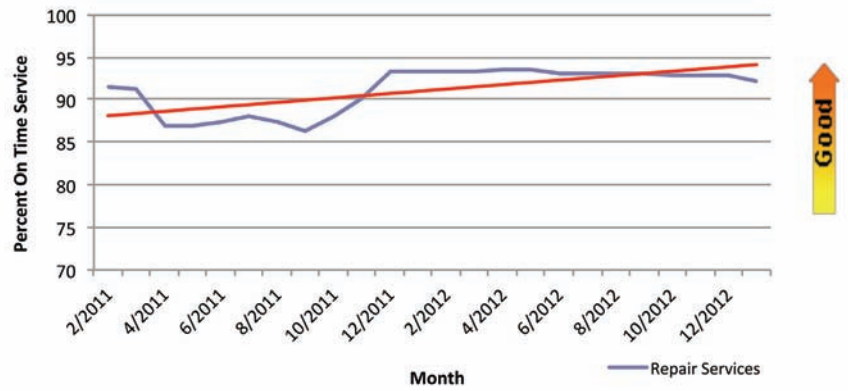


Figure 6 On Time Service Industry Average

On Time Service Worst In Class

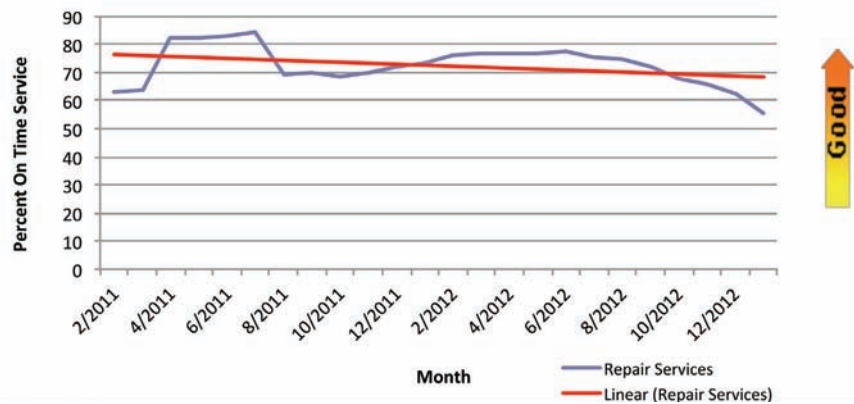


Figure 7 On Time Service Worst In Class

On Time Service Best In Class

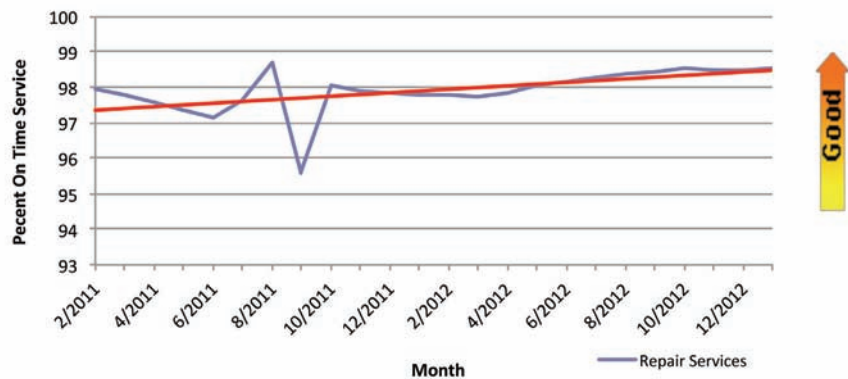


Figure 8 On Time Service Best In Class

What are PDRs?

QuEST Forum's TL 9000 Performance Data Reports (PDRs) provide industry benchmark statistics and trend data for over 110 product categories. Industry statistics include Best-in-Class, Worst-in-Class, Industry Average, and Monthly Average for each of the TL 9000 measurements in the product categories where sufficient data exists. To support useful benchmarking, the Best-in-Class, Worst-in-Class, and Industry Average results represent data over a sustained period of time (at least six consecutive months). The Best-in-Class and Worst-in-Class data points reflect performance from a single organization's data submission over that same sustained period. PDRs are compiled from monthly data submissions from all TL 9000 certified registrations, as required by the TL 9000 Quality Management System. QuEST Forum's TL 9000 Administrator manages the database, oversees operations and produces the PDRs. Processes are in place to ensure complete anonymity of data. Even the TL 9000 Administrator is not able to link data submissions with specific companies. The complete system has also been certified to the ISO 27001 Information Security standard. As part of their membership privileges, all QuEST Forum full and affiliate members can access the PDRs free of charge. QuEST Forum Liaison members and TL 9000 registered non-members can purchase PDR reports for one or more product categories

The Value of the PDRs

- Truly comparable data for over 110 product categories in the telecom industry
- Drawn from a centralized database of industry-wide measurements
- Fortifies and encourages development of meaningful and valuable measurements
- An invaluable source for benchmarking

How does the value of PDRs differ from PDR benefits?

One major PDR benefit is that PDR statistics can be used as an input for setting appropriate TL 9000 measurement targets and driving continual improvement. Others include:

- Having industry "best-in-class" data to use in benchmarking
- Helps identify and improve telecom processes, products, and services
- Standardized customer reports and assessments using TL 9000
- Provides a basis for vendor performance appraisals and comparison to industry standards
- Makes verifiable data on industry trends and performance available to regulatory and other entities

Measurement Input and Flow

The TL 9000 Quality Management System enables organizations to input measurement data and access industry statistic benchmarks and trends through the QuEST Forum web site. QuEST Forum has appointed The University of Texas at Dallas to manage the database, oversee operations, and produce the PDRs. This autonomous arrangement guarantees data integrity, security, and anonymity to all data contributors.

PDRs capture hardware, software, and service quality measurements for over 110 product categories. The product categories are constantly refined to reflect evolving technologies and new products. PDRs can be customized for language, product category, and reporting period.

QuEST Forum

Formed in 1998, QuEST Forum is a unique collaboration of information and communication technologies (ICT) network operators and suppliers across the world dedicated to improving operational and supply chain quality and performance. QuEST Forum unifies the global ICT community through the implementation of TL 9000, an ICT specific quality management system that is built on ISO 9001. Performance benchmarking and a broad array of common metrics support both the rapid industry adoption of new technologies and the consistent quality of communication networks around the world.

Why TL 9000

QuEST Forum pursues its goal of global ICT quality and industry-wide performance excellence through its TL 9000 standard. It accomplishes this goal in three ways:

- By defining system requirements for the design, development, production, delivery, installation and maintenance of ICT products and services and system that allows companies to track performance and improve results.
- By eliminating the need for multiple quality management standards, which reduces the cost of doing business and ultimately results in better products and services to consumers.
- By providing a consistent set of quality expectations to drive efficiency and performance across the global ICT supply chain.

Who benefits from TL 9000?

Buyers benefit from assured consistent quality across all products and services by using TL 9000 certified suppliers, along with significant cost savings of on-site inspections. What's more, the Registration Management System (RMS) provides regular performance data for analysis against industry benchmarks and objective product or supplier evaluations.

Suppliers profit by conformance to TL 9000 standards, thus validating the quality of product, services and customer care that they provide. It reduces the costs of quality audits and helps create customized performance reports for current and potential customers.