



■ Winter 2009

Automotive

E X C E L L E N C E

The Beauty of 5 Why

3L5Y & Product Development

Managing your QMS

**ASQ Auto Awards Banquet
at The Henry Ford**

Developing Your SME

Official Publication of the ASQ Automotive Division

WINTER 2009

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Upcoming Events

7th Annual Quality Symposium
Macomb Community College
University Center

March 9, 2009

2008 Automotive Division Awards Re-cap

Quality Leader of the Year – Marybeth Cunningham, Global Director, Excellence, Lean & Operations, Delphi Packard Electric/Electronic Architecture

Quality Professional of the Year – Dr. Rajinder Kapur, Supplier Development Engineer for Ford Motor Company

Koth Award Winner – Lou Ann Lathrop, Design Release Engineer, Engine Sensors

Cecil B. Craig Awards for Superior Papers published in the last year – 2 awards

John J. Casey for his paper “3L5Y Explained” and

Dan Reid for his paper “Developing the Voluntary Healthcare Standard”

Automotive

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ASQ AUTOMOTIVE DIVISION

VISION: To be the worldwide automotive industry's leader on issues related to quality

MISSION: To facilitate continuous improvement and customer satisfaction by identifying, communicating and promoting: • Quality knowledge • Management's leadership role • Industry Cooperation • Professional development • Recognition • Opportunities to network

CUSTOMERS: PRIMARY • Automotive division members • Automotive suppliers - all tiers • ASQ sections • Division sustaining members • Potential Automotive Division members

SECONDARY • Automotive original equipment manufacturers (OEMs) • Other ASQ divisions • Strategic alliances – SAE, AIAG, SME, ESD, ASI, organized labor • Community colleges/universities • ASQ headquarters/Board of Directors/General Technical Council

TERTIARY • Quality award initiatives (federal/state/local) • Standards activities • Automotive dealerships • International global markets • Aftermarkets/ service parts • Third party registrars • Recruiters/ consultants



This edition includes problem solving tools useful in any industry regarding 5-Why Problem Solving. The tool is explained in a logical approach and may be applied in any organization.

Applying the value of people within the organization, we've included articles regarding ASQ Automotive Division awards. Enjoy the photographs from the 2008 awards event and begin thinking of who you'd like to nominate in 2009!

Take a look at how to develop your subject matter experts (SME). The author reminds us that employees are important stakeholders within the organization.

Be sure to review the Automotive Study for ISO/TS 16949:2002. The article identifies key focus items for success with a quality management system.

I want to thank our past Vice-Chair Publications, Amy Lichonczak, for providing exceptional publications.

In our last edition, our new ASQ Automotive Division Chairperson, John Casey, encouraged automotive division members to focus on leadership. Members of our ASQ Automotive Division are leaders and teachers, who reach beyond their primary roles. They continue to share their knowledge in areas such as health care and academics. We must continue our efforts as quality leaders and educators during these challenging times. What better way to show the true culture of the automotive industry? To find out more about our expanding roles, please join us at the next ASQ Auto Paper Symposium. Be sure to visit our website at www.asq.org/auto.

I am looking forward to working with you!

Teresa L. Pratt
Vice-Chair Publications 2008-09
teresalpratt@aol.com

The ASQ Automotive Division staff would like to thank our advertisers and members who have contributed their time, efforts and articles during the past season. We hope that you have a safe, prosperous and exciting 2009!

Teresa L. Pratt
Editor - in -Chief



YOUR LEADERSHIP AND SKILLS ARE NEEDED NOW MORE THAN EVER

A Message to ASQ Automotive Division

By: John Casey

Dear ASQ Members,

Those that say it cannot be done should get out of the way of those that are doing it!

You may think that the concept above is crazy in some way, but as a group of quality professionals, we need to look at ourselves and the skills that we have and find the hidden gem in our situation. Let's face facts. First, we are in the most turbulent time since the Great Depression and there is financial strife everywhere. Second, people are getting laid off and hardships abound including people losing their homes. These are facts and they are certainly not fun to accept.

There are other facts that we forget and I'd like to remind us all about them. You are a quality professional and have skills and tools that drive up quality, with the best being first time quality. When you increase first time quality, you simultaneously increase productivity and financial performance. Your skills and your tools are EXACTLY WHAT IS NEEDED RIGHT NOW! This is a fact.

We also need to be reminded that quality is usually the route out of financial distress. Deming went to Japan after World War II and built the nations industrial bases around the concept of quality and continuous improvement. The quality movement was the catalyst for the country to emerge. This is a fact.

Look at the resurgence or decline of any major brand. Cadillac lost its image when it lost its quality and today Cadillac is back because they invested in quality. Mercedes did the same. Look at Hyundai, a few years ago it was considered a second class product but today it is climbing out of the hole, using quality as the ladder to get out.

You need to look at yourself as the catalyst and solution for today's problems. Look around your company. You will probably see people that are immobilized. They don't know what to do and many are playing a "Wait and see" game. They are looking for leadership and they are looking for a method.

You have in your hands, the power to lead. You are needed now more than ever. This could be your finest hour – if you have the courage to act and use your quality skills as your guide.

As we move into 2009, the year will certainly be challenging. The ASQ Automotive Board is working on some things that we think will help our industry and our people.

One of the larger costs for the industry is Health Care costs and ASQ Auto is working closely with the AIAG and various medical constituents to help utilize the quality tools to improve health and lower costs. We are dedicating the annual Paper Symposium to discuss the topic and provide ideas and knowledge that can help you and your company improve the health of us all.

Additionally, we are trying to extend our actions to help the health of our industry. We see solid approaches being taken at the OEM and Tier 1 level and I believe the larger organizations will weather the economic storm in some way. When you get to the Tier 2 Level, the resources are not as readily available and this key component of our team faces some severe pressure. If we don't have a solid Tier 2- N community, we cannot have a solid industry. This spring, we are holding a special Summit Meeting inviting leaders from the Top 40 Tier 1's and OEM's to hear some different ideas and discuss how we as a community can strengthen the Tier 2's.

We want to reach out and participate as a community to find better ways and collaborate for mutual gain. We all share the Tier 2's and we need them. I'd love to hear your ideas. Please contact me at jcasey@whitehallgroupllc.com if you have some unique approaches or interests in making our industry stronger.

The Beauty of 5 Why Problem Solving

John J. Casey

When I was a boy, my Grandmother used to read me nursery rhymes to both entertain and teach me about the world. There was one that has resonated with me for years that I'd like to share with you:

*For want of a nail the shoe was lost
For want of a shoe the horse was lost
For want of horse the warrior was lost
For want of a warrior the battle was lost
For want of a battle the kingdom was lost
All for want of a nail.*

This little poem displays the heart of 5 Why Analysis that is used by many in the automobile industry – especially the Japanese. Basically, 5 Why analysis is a fundamental approach to thinking, based on the logical linkage of events into a cause and effect analysis. This is a very simple process to explain. Look at a problem, then ask yourself “Why did this happen?” and repeat the process about five times and you will typically come to a root cause. In the poem above, the problem was the kingdom was lost. The series of Why questions leads you through the loss of the battle, due to a shortage of warriors, ultimately due to not enough nails in the hands of the blacksmith.

It's a simple process of logical connections. It is a method for problem solving that gets to some hard to identify causes and gives you the opportunity to see issues that have a leveraging effect on the overall process. That's the beauty. A simple process that gives you great leverage when properly deployed because it takes you to the root of the problem.

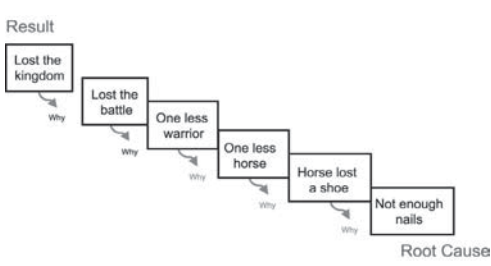
Our Over-reliance on “Sophisticated” Problem Solving

Across the industry today, you will hear about many advanced problem solving methods. Popular methods like Six Sigma approaches, Red X approaches, Kepner Tregoe and others have a definite place in our world. Some problems are extremely complicated and involve a number of interrelationships.

There are times that these tools are essential. We all know that if you organize the situation and combine it with properly collected data, precise solutions can be found.

However, most problems do not require this extreme level of structure and analysis. In fact, many people get intimidated by the statistics and data collection so they stop the problem solving analysis before they even start and tolerate the negative consequences.

One of the keys to having a great company is to get everyone involved in the improvement process. To improve, you need to overcome the constraints of today and make your world a better place. In reality you are problem solving. As explained in Jeffrey Liker's book “The Toyota Way”, the pinnacle of operational effectiveness comes from Toyota's emphasis on problem solving. Toyota sees this as the main driver of competitiveness – get everyone in the company working to solve problems. Their fundamental method is using the 5 Why approach. It's simple. It's logical. It's effective. Everyone can do it, especially people on the plant floor.

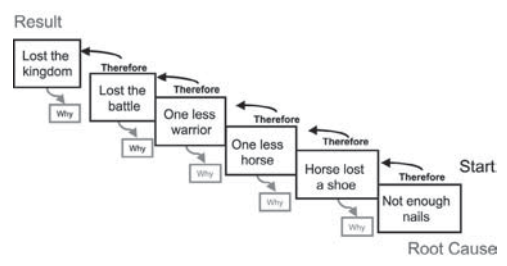


The Therefore Test.

When using the 5 why method, it is rather tricky to keep people's logic straight. Humans have an infinite capacity to think of things and often clutter their thoughts with extraneous information. While 5 Why is easy to explain, it is very hard to do because people often will bring in biased thinking or somewhat related information that is NOT on the critical logic path. They often get off on tangents and need a method to keep things in order.

The most effective method is to impose the “Therefore” test on the 5 Why. What you do is to read the 5 Why in reverse and insert the word “Therefore” between each step. If the stream of logic makes sense in reverse, then the logic is probably solid. In the Nail and the Kingdom poem, the therefore test was implied.

*The blacksmith did not have enough nails
- Therefore
The horseshoe could not be attached
- Therefore
The warrior could not get to the battle
- Therefore
The army was outnumbered
- Therefore
The battle and kingdom was lost.*



This simple test can verify the logic of the 5 Why and help people see where they are off on a tangent and give them an easy method to stay on track.

Going for the REAL GOLD – The Trifecta!

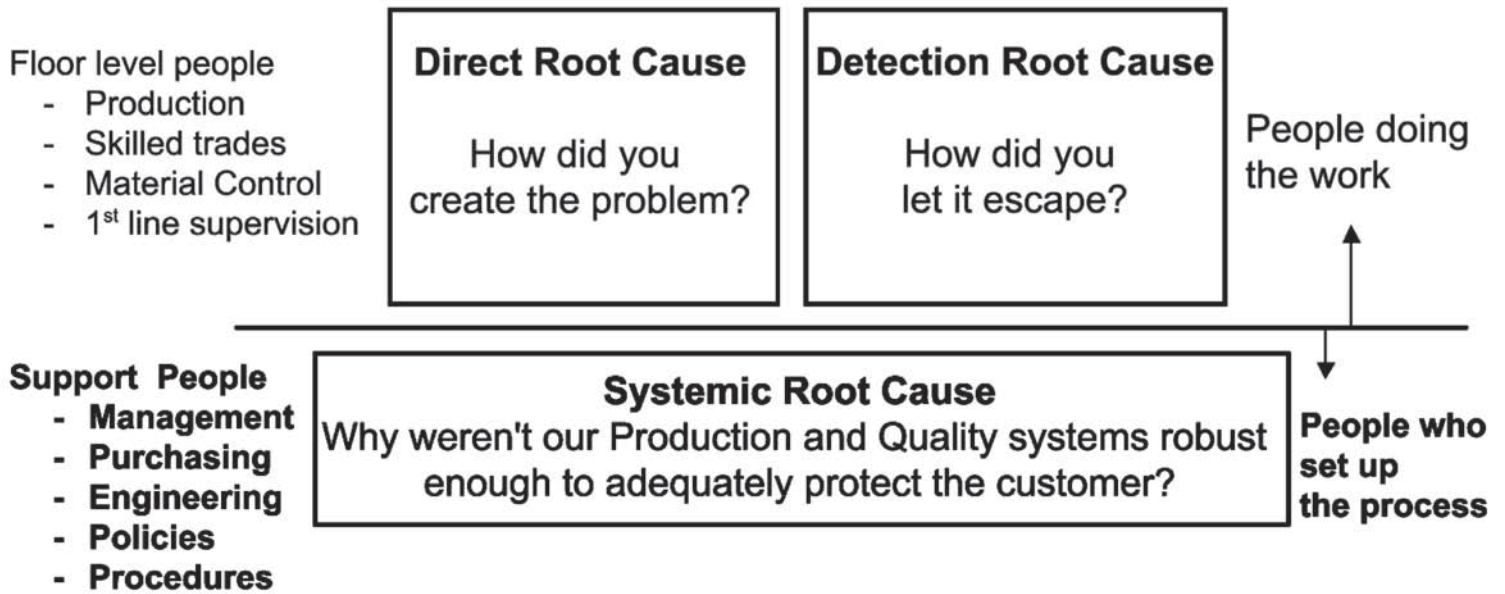
With all the discussion on horses and riders, using a horse racing example just seems to make sense. There is a popular betting approach where a much larger prize is awarded if the bettor selects 3 winners in different races – or hits a Trifecta.

In problem solving, a Trifecta is possible as well especially when customer complaints are involved in the problem. To get to the real gold, problem solvers of customer perceived problems need to seek root causes from three perspectives:

Specific Cause – Why was the customer complaint created?

Detection Cause – Why did our test methods not filter it out?

Systemic Cause – Why was the overall system weak in the first place?



The Specific Cause:

When most people think of problem solving, they think of the specific root cause. You have a discrepant part, some machine or process wasn't done correctly and Bingo, you have found the issue. As an example, if there is a rattle noise in your car, and you find a loose screw, then tighten it up and the rattle goes away, you have found the core of the problem. Most people perform this step very well. Find the issue, shut it off, save some money and become more competitive.

But there is more gold to be had. Great root cause analysis will dig past this symptom (loose screw) and look at the operation to tighten the screw and seek the core of the problem. It could be a worn tool bit, it could be a defective motor, it could be operator fatigue or a mistake. Your analysis would be well served to look for the true cause of the issue.

The Detection Cause:

Every company deploys means to check their work before it goes to the customer. If problems can happen (and they always can), the companies that do the best job at protecting the customer from problems will win in both the short and long term. The short term success is lower customer satisfaction costs – like rework, replacement and repairs. The long term benefits are enhanced reputation and increased customer loyalty. While shutting off the cause of the problem is great, there is "Double Gold" if you analyze your inspection and detection methods to determine how the problem escaped.

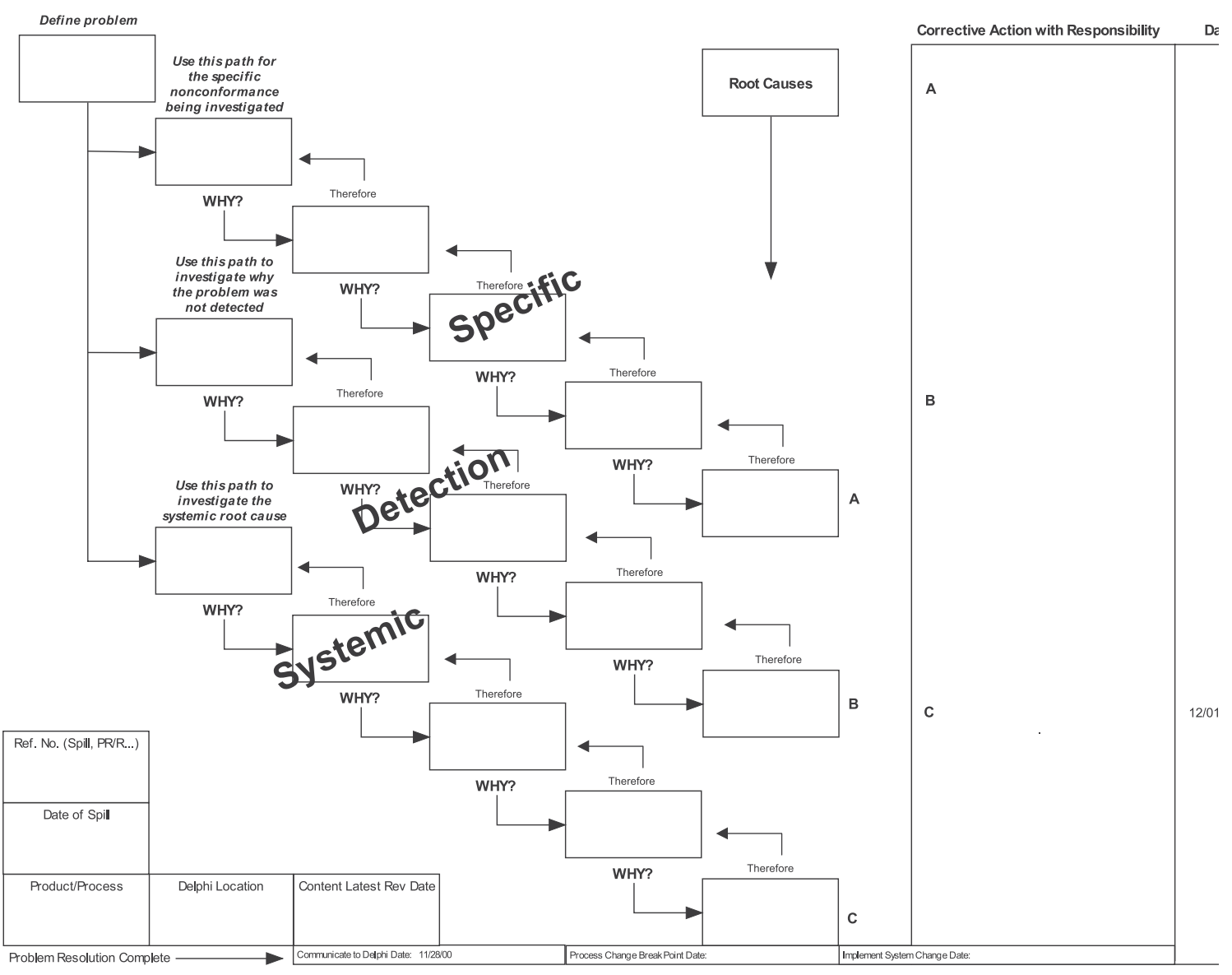
There are four aspects that repeatedly surface as holes in the detection system. The first, the process is just not looking for the specific defect. Either the forecast failure was overlooked or considered not to be possible in the planning phase. This detection failure category is best described as a failure in the detection SCOPE – the system is not looking.

As a closely related category, the second issue is one of detection tool CAPABILITY, or specifically, are tools and methods in place to reliably detect and see the issue. Many times there is no cost effective method to identify the discrepancy and the business has accepted the risk of a defect getting to the customer.

The third repetitious detection failure involves some type of detection By – Pass. This occurs when inadequate discipline is in place to force every product through a capable detection device. The checking unit was capable and ready, people just did not have adequate DISCIPLINE to use the system and protect the customer.

The last common detection failure is one of ESCAPE and this is the most disheartening. These are situations where a discrepant part is properly identified by the detection system and for some reason, the known bad part was placed into the flow to get to the customer. The bad part "escaped" its quarantine.

While there are other causes for the detection system to fail, these four categories comprise well over 80%.



The Systemic Cause – THE SOLID GOLD

Extending the 5 Why process into the systemic arena is where huge leverage occurs. In the systemic leg, the problem solver is looking at the overall management and development system which created the production and detection system and looks at “Why was the process that we handed to the production operators not adequately robust?”

We are looking at the management system. We are looking at the development system, both product design and process design. We are looking at the Plant Management system and how they ensure discipline within the system.

When you look at the systemic leg and find a true root cause – and fix it, you create massive leverage for the company because the fixes can be spread across your lines and plants today as well as lessons learned for future programs. This is massive leverage. This is the heart of the Toyota process. This is where true competitive advantages come.

When you look at a problem, have the determination to walk by the quick fix. Be the King in the Kingdom. Would you like to lose your kingdom and your life because of a nail? I doubt it. Have the strength to nail down the problems.

About the Author

John J. Casey is Director of Supply Chain Development for the Whitehall Group of Troy, Michigan and can be reached at jcasey@whitehallgroupllc.com. John is serving as Chair for the 2008-2009 ASQ Automotive Division council.

3L5Y Analysis and the Product Development Process

by Samuel Frank with material supplied by John Casey

Analysis extends focus from reacting to individual issues to fixing the processes that cause them.

WHAT IS 3 LEGGED 5 WHY ?

The 3 Legged 5 Why (3L5Y) analysis consists of three easy-to-explain steps.

SPECIFIC CAUSE

Why was the customer complaint created?

DETECTION CAUSE

Why did our test methods not filter it out?

SYSTEMIC CAUSE

Why was the overall system weak in the first place?

These three straight-forward steps not only provide insight into the specific problem being studied, they result in a better understanding of the overall business plan and its effect on the customer in a specific situation. Correcting one business process issue may result in avoiding 10, 20, or 100 similar product issues.

One additional positive aspect is that many of the basic premises of the approach are likely already used in most organizations. 3L5Y simply acts as an extension of these problem solving tools.

3L5Y changes the focus from reacting to individual issues to fixing the processes that cause the issues in the first place.

WHY USE 3 LEGGED 5 WHY ?

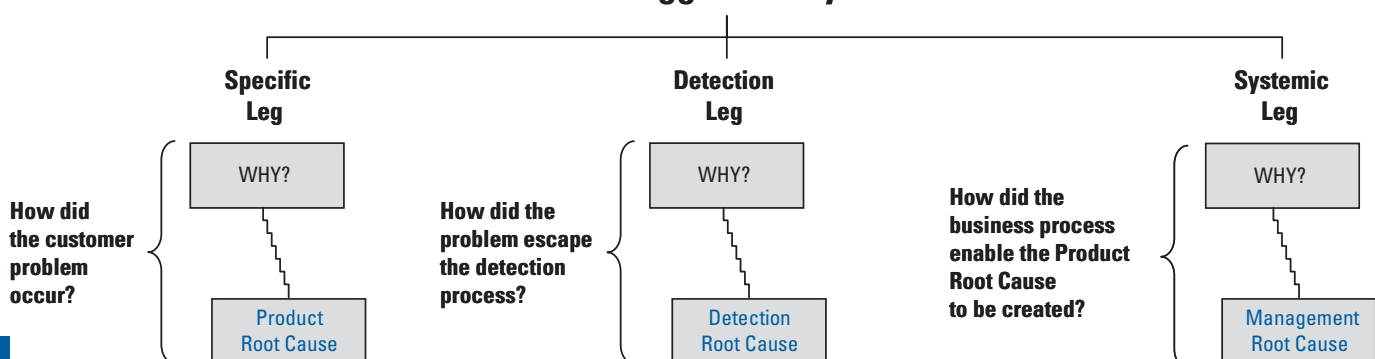
Across the industry today, many advanced problem solving methods are in use. Popular methods such as the Six Sigma approach are widely used and highly effective in determining the product root cause behind an issue. By organizing the situation and combining it with properly collected data, precise solutions can be found.

However, finding the correct product root cause is only part of the solution. If a product issue has occurred and has reached the customer, a breakdown has occurred with the methods (or lack thereof) used to detect the issue. More importantly, a specific aspect of the business process allowed (or caused) the product issue in the first place. It is these additional root causes (detection and business process) that provide the final pieces to truly understanding the cause of a customer issue.

Widely used by industry leaders, the straight-forward 3 Legged 5 Why analysis allows an organization to leverage its expertise in finding product root causes to determine the detection root cause and business process root cause associated with the original customer issue. Not only are the original issues fixed, the corresponding detection system and management system gaps that allowed the issue to occur in the first place are identified and resolved.

What happens if the detection and business process gaps aren't closed? Simple - the organization supplies itself with an ever-replenishing flow of product issues to solve.

3 Legged 5 Why



John Casey discussed 3L5Y in an article entitled *Why Did This Happen? A Lesson in Problem Solving*. His article is reprinted here.

3L5Y EXPLAINED

When I was a boy, my Grandmother used to read me nursery rhymes to both entertain me and to teach me about the world. There was one that has resonated with me for years that I'd like to share with you today:

*For want of a nail the shoe was lost
 For want of a shoe the horse was lost
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It's a simple process of logical connections. It is a method for problem solving that gets to some hard to identify causes and gives you the opportunity to see issues that have a leveraging effect on the overall process. That's the beauty - a simple process that gives you great leverage when properly deployed because it takes you to the root of the problem.

“SOPHISTICATED” PROBLEM SOLVING

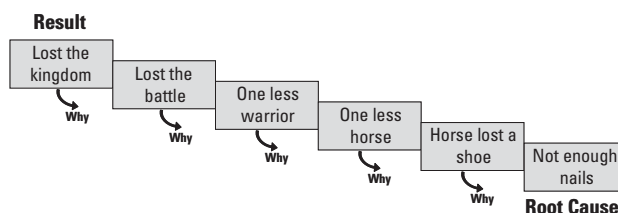
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There are times that these tools are essential. We all know that if you organize the situation and combine it with properly collected data, precise solutions can be found. However, most problems do not require this extreme level of structure and analysis. In fact, many people get intimidated by the statistics and data collection so they stop the problem solving analysis before they even start and tolerate the negative consequences.

One of the keys to having a great company is to get everyone involved in the improvement process. To improve, you need to overcome the constraints of today and make your world a better place. In reality you are problem solving.

In Jeffrey Liker's book, *The Toyota Way*, he explains that the pinnacle of operational effectiveness comes from Toyota's emphasis on problem solving.

Toyota sees this as the main driver of competitiveness – get everyone in the company working to solve problems. Toyota's fundamental method for accomplishing this is through the 5 Why approach.



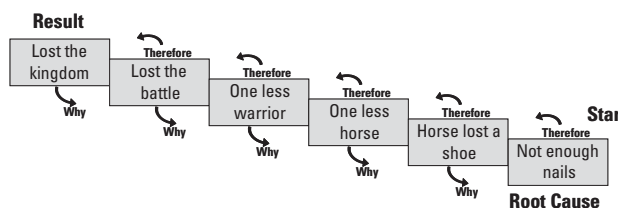
It's simple. It's logical. It's effective. Everyone can do it.

THEREFORE TEST

When using the 5 Why method, it is rather tricky to keep people's logic straight. Humans have an infinite capacity to think of things and often clutter their thoughts with extraneous information. While 5 Why is easy to explain, it is very hard to do because people often will bring in biased thinking or somewhat related information that is NOT on the critical logic path. They often get off on tangents and need a method to keep things in order.

The most effective method is to impose the “Therefore” Test on the Five Why logic stream. Try reading the 5 Why in reverse and inserting the word *therefore* between each step. If the stream of logic makes sense in reverse, the logic is probably solid. In the Nail and the Kingdom nursery rhyme, the therefore test was implied.

*The blacksmith did not have enough nails, therefore
 The horseshoe could not be attached, therefore
 The warrior could not get to the battle, therefore
 The army was outnumbered, therefore
 The battle and kingdom was lost*



This simple test can verify the logic of the 5 Why and help people see where they are off on a tangent and give them an easy method to stay on track.

THE TRIFECTA – 3 LEGGED 5 WHY

With all the discussion on horses and riders, a horse-racing example seems to make sense. There is a popular betting approach where a much larger prize is awarded if you are able to select three winners in different races – the Trifecta.

In problem solving, a Trifecta is possible as well, especially when customer complaints are involved. To get to the real gold, problem solvers of customer perceived problems need to seek root causes from three perspectives:

SPECIFIC CAUSE

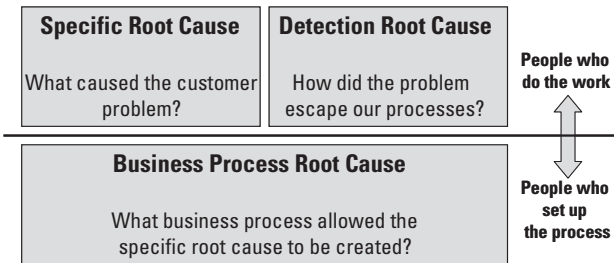
Why was the customer complaint created?

DETECTION CAUSE

Why did our test methods not filter it out?

SYSTEMIC CAUSE

Why was the overall system weak in the first place?



SPECIFIC CAUSE

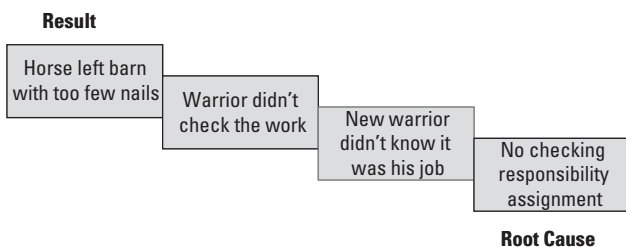
When most people think of problem solving, they think of the specific root cause. You have a discrepant part. Some machine or process wasn't done correctly and you think you have found the issue. For example, if there is a rattling noise in your car and you tighten a loose screw, you have not necessarily found the core problem because the rattle went away.

Great root cause analysis will dig past the symptom (loose screw) and look at the operation to tighten the screw to get to the core problem. It could be a worn tool bit a defective motor, operator fatigue, or a mistake. Your analysis would be well served to look for the true cause of the issue.

DETECTION CAUSE

Every company deploys means to check their work before it goes to the customer. If problems can happen (and they always can), the companies that do the best job at protecting the customer from problems will win in both the short and long term. The short term success is lower customer satisfaction costs – like rework, replacement and repairs.

The long term benefit is enhanced reputation and increased customer loyalty. While shutting off the cause of the problem is great, there is double gold to be had by analyzing your inspection and detection methods to determine how the problem escaped. For example, in the case of the kingdom, the following Detection Leg results.



There are four aspects that repeatedly surface as holes in the detection system. First, the process may not be looking for the specific defect. Either the forecast failure was overlooked or considered not to be possible in the planning phase. This detection failure category is best described as a failure in the detection scope – the system is not looking.

Second, you must ask yourself whether the tools and methods are in place to reliably detect and see the issue (capability). Many times there is no cost effective method to identify the discrepancy and the business has accepted the risk of a defect getting to the customer.

Third, ask yourself whether there has been some type of detection bypass? This occurs when inadequate discipline is in place to force every product through a capable detection device. The checking unit was capable and ready but people did not have adequate discipline to use the system and protect the customer.

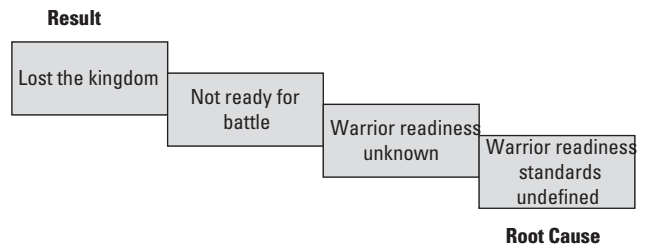
Last, ask yourself whether there has been an escape? These are situations where a discrepant part is properly identified by the detection system and for some reason, the known bad part was placed into the flow to get to the customer. The bad part essentially escaped quarantine.

While there are other causes for the detection system to fail, these four account for well over 80 percent of the problems.

SYSTEMIC CAUSE

Extending the 5 Why process to the systemic arena is where huge leverage occurs. In the systemic leg, the problem solver is looking at the overall management and development system that created the production and detection system. The problem solver asks, "Why was the process that we handed to the production operators not adequately robust?"

We must look at the management system and the development system, including both product design and process design. We must look at the plant management system and how discipline is instilled into the system. In the case of the kingdom, the following Systemic Leg results.



By examining systemic issues and finding a true root cause – and fixing it, you'll create massive leverage for your company as fixes spread across all plants and are incorporated into future programs. This is massive leverage. This is the heart of the Toyota process. This is where true competitive advantages come.

When you look at a problem, have the strength to pass up the quick fix. Be the king in the kingdom. Would you like to lose your kingdom and your life because of a nail? I doubt it. Have the strength to nail problems down.

3L5Y AND PRODUCT DEVELOPMENT

Based on an understanding of 3 Legged 5 Why analysis, how can this problem solving method be applied to correcting product development business process issues? A sample case study is included below to demonstrate the application of the analysis to a product development issue.

CASE STUDY – TOASTER WARRANTY

Blackwell Inc is the 3rd-largest supplier of kitchen appliances in North America. In the past three years, the company grew profits by 15 percent a year by providing customers with reliable products that met and exceeded the customer's expectations. This trend of reliability ended when warranty data was presented at the monthly quality review.

After several months of slightly elevated warranty attributed to the introduction of a new premium product, the toaster division saw a double-digit increase in warranty on a recently introduced line of toasters. The team explained that based on a Blackbelt project the elevated warranty was due to a faulty spring on the ejection mechanism. Due to the new toaster being able to toast thick-sliced bread and bagels, the spring responsible for lifting the product out of the toaster was not strong enough. A stronger spring had been released and the issue was closed.

The quality team was concerned with the implications of a quality spill in the highly-competitive home appliance market. Proactive Quality was tasked with following up with an in-depth 3 Legged 5 Why investigation to verify the issue would not reoccur – not just in the toaster division, but across the nine other profit centers of Blackwell Inc. The team started with the following questions and leveraged the Blackbelt study to fill in the pieces.

SPECIFIC LEG What is the problem in customer terms?

To start the investigation of the Detection Leg, the 3L5Y team started with the following statement:

DETECTION LEG State that the issue escaped the detection process.

Once this statement was established, the team followed the methodology of asking "Why?" repeatedly and checking their findings with the Therefore Test. However, one critical question did come out of the Detection Leg: "How do you know when to cross over to the Business Process (Systemic) Leg"? Reviewing the methodology, the team found the filter to use:

"Why's" that are controlled by the people that do the work belong in the Detection Leg. "Why's" that are controlled by the people that set up the process belong in the Business Process Leg.

After determining the Detection Leg Root Cause, the team started the Business Process Leg with the following statement:

SYSTEMIC LEG State the Detection Root Cause.

After stating the Detection Root Cause, the team followed the methodology by asking "Why?" and checking their findings with the Therefore Test. The result of the analysis showed that the product development cycle did not require reliability validation of carry-over components, even if the components were to be used for new applications.

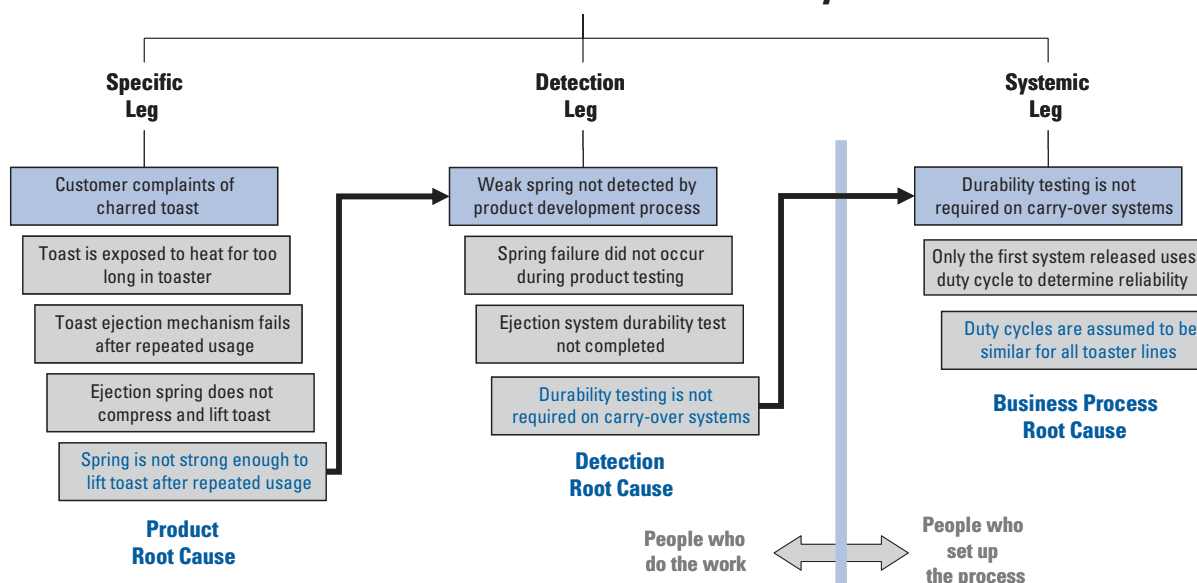
CASE STUDY RESULTS

Initially, this gap in component validation was fixed within the toaster division so all new applications with carry-over systems would be validated. Next, Blackwell checked the business process in the eight other profit centers of the company. By requiring validation of carry-over systems in new applications in the microwave oven and dishwasher divisions, Blackwell fully leveraged the business process root cause across the company and limited new issues in the other divisions.

CONCLUSION

By starting with one significant product issue, 3L5Y allows the individual to gain a deep understanding of the issue from a detection and business process standpoint. By identifying and solving the business process root cause behind the issue, hundreds, if not thousands, of product issues can be prevented in the future.

Blackwell Inc – Toaster Warranty



Ford Motor Company Hosts 2008 AWARDS BANQUET at The Henry & Eleanor Ford Fair Lane Estate

Jaynie Vize, Awards Chair, ASQ Automotive Division



Tour of the Henry Ford Estate (dining room & main stairwell)

Ford Motor Company was the Host Sponsor for the 2008 Awards Banquet held on June 17, 2008 at the Henry & Eleanor Ford Fair Lane Estate in Dearborn, Michigan. Eighty-five guests were on hand to acknowledge the achievements of six individuals who have contributed significantly to the success of their industry, their companies and their society.

Prior to the Presentation Ceremony, the Guests had an opportunity to tour the historic mansion with a docent and learn some of its legends. This was a fine opportunity for many to relive the "old days" and touch a bit of Automotive History and Memorabilia that isn't available elsewhere.



Serving Staff

The Fair Lane Serving Staff and the staff of Merchant's Fine Wines provided an excellent dining experience with Cocktails, Hors'doeuvres and Buffet that got everyone in the mood to heartily welcome our Keynote Speaker, Bennie Fowler, Group Vice President of Quality, Ford Motor Company, who was introduced by Cheryl Denman, Chairperson of the Automotive Division. Cheryl Denman welcomed everyone on behalf of the division and Ford Motor Company, our Host.

Bennie Fowler shared with us some pearls of wisdom regarding the value of individuals and their efforts in the overall achievement of success in the quality process and quality products that result in customer pleasure. His stories of experiences over his many years in the automotive arena reminded all the attendees of the valuable asset of individual efforts and the need to cultivate same!



Keynote Benny Fowler

At the conclusion of Bennie Fowler's presentation, Cheryl Denman presented him with a memento of appreciation on behalf of the Automotive Division.



Keynote Benny Fowler with ASQ Automotive Division Chair, Cheryl Denman

She also took this opportunity to present the Division Chair Gavel to John Casey, who takes the position for next year.



Current Division Chair, Cheryl Denman passes the gavel to 2009 Auto Division Chair, John Casey

Awards were presented by the Awards Chairpersons as follows:

The KOTH AWARD, for outstanding personal service in the promotion of the division and the American Society for Quality went to Lou Ann Lathrop, Design Release Engineer, General Motors Corporation, Global Power Train. Lou Ann has spent 24 years in Engineering, where she developed a passion for Quality in all of her work. She was past Chair (twice) of the Automotive Division and was very active on the National and Global scene of Quality for ASQ. She has led multiple initiatives to expand the Automotive Division by cultivating the development of ASQ Automotive Division teams in places like China, India and other emerging global markets. She has served as Publications Chair where she oversaw the publication of Automotive Excellence magazine. She has authored and presented multiple technical papers. She now serves as a Member of the Board of Directors of the American Society for Quality.



Koth Award Chair, Ally Hamood, presents award to Lou Ann Lathrop

Our QUALITY PROFESSIONAL OF THE YEAR AWARD was bestowed upon Dr. Rajinder Kapur, Supplier Development Engineer, Ford Motor Company.

A 25 year veteran of the automotive industry, Dr. Kapur has also served as Quality Director or Quality Manager of several tier 1 suppliers in Southeast Michigan. In these roles, he has been key in implementing QS 9000 and ISO/TS 16949 management systems.



Quality Professional of the Year Award Chair, Kush Shah, presents award to Dr. Rajinder Kapur

Dr. Kapur has been involved with the American Society for Quality for over 20 years, holding numerous positions in the Greater Detroit Section, including Chair, Vice Chair, Newsletter Chair and Education Chair. In his current position as Education Chair he is responsible for coordinating 9 different refresher certification courses and personally teaches a number of them. He is a Fellow with the American Society for Quality and is one of only six individuals who holds all 14 certifications awarded by the Society.

The QUALITY LEADER OF THE YEAR AWARD was presented to Marybeth Cunningham of Delphi Packard Electrical/Electronic Architecture, where she is the Global Director Excellence, Lean and Operations. In her over 20 years of experience in the automotive industry, particularly in affiliation with General Motors's Oldsmobile and Delphi divisions, she has held many positions, many involved with production and purchasing.

She was appointed Director of Quality Assurance and Reliability for North American in 1994, Director of Global Customer Satisfaction in 1996, Director of Global Production Control in 2001 and became Global Operations Director for Delphi Packard in 2006. Marybeth is an Athena Committee Board Member (a part of the Youngstown Ohio Chamber of Commerce), which annually awards an outstanding woman for her community service. She is also on the Board of Directors for the United Way.



Quality Leader of the Year Chair, Carol Malone, presents award to Marybeth Cunningham

The CRAIG AWARDS were designed to recognize outstanding technical papers in the area of Quality. This year the Automotive Division recognized two papers submitted, both for Superior Technical and Literary Achievement. These Awards are also accompanied by a token monetary honorarium.

They are as follows:

“3L5Y Explained” by John J. Casey
and

“Developing a Voluntary Health Care Standard” by Dan Reid



Craig Award Chair, Larry Smith, presenting awards to John J. Casey and Dan Reid.

Cheryl Denman thanked the sponsors for the event:

Diamond Sponsors, Ford Motor Company for sponsoring this event at the Ford Estate and American Supplier Institute for handling all of the reservations, supplying name badges, manning the registration table and for creating and providing the Banquet Programs.

Silver Sponsor, Macomb Community College for their support both for this event and the field of Quality Technology.

We also want to thank the Awards Committees for the many hours spent in screening and selecting the award winners. Should you have any suggestions for enhancing the celebration or if you have potential nominees for next year, please contact any of the committee chairs:

Jaynie Vize – Awards Chair

Chuck Tomlinson – Asst. Awards Chair

Kush Shah – Quality Professional

Larry Smith – Craig

Carol Malone– Quality Leader of the Year

Ally Hamood– Koth

Quality Leader of the Year Awarded to Marybeth Cunningham, Delphi Packard Electrical/Electronic Architecture



Quality of the Year Awarded to Marybeth Cunningham, Delphi Packard Electrical/Electronic Architecture

The ASQ Automotive Division Quality Leader of the Year Award is presented to the nominee that demonstrates outstanding contributions in the key characteristics of vision, customer focus, quality philosophy and defect-prevention.

The 2007 award was presented in June, 2008, to Marybeth Cunningham from Delphi Packard Electrical/Electronic Architecture. Her acceptance speech is presented here.

Thank you.

I am truly honored, and I was totally surprised I might add, by receiving this very prestigious award. I am much more used to giving awards than I am receiving them, so bear with me for a few moments. As I was thinking about what to say tonight I started thinking about the great people I have known and been exposed to related to quality. It surprised even me when I went back over my experiences.



The EDWARD DEMING Scholarship was awarded to Shannon Hunter from Oakland University, who was unable to attend the event.

I was selected to go to a two week training with Dr. Juran early in my career with General Motors, where I learned the importance of statistics, but also the famous 80/20 rule of analysis or the "important few and trivial many" - a philosophy I have found useful not only at work, but also at home.

I attended Crosby College right after his breakthrough book, "Quality is free" was recognized as a "gamechanger". The move from inspection to prevention was significant in manufacturing and he made us look at the role of management in the pursuit of Quality.

I had the very unique opportunity to spend a very concentrated time in the early '80s with Dr. Edwards Deming and a very small group of people including Beth Hubbard who is here tonight and Dave Krausch, who is a past recipient of this great award. Dr. Deming taught me several things. First, his theory that "Quality equalled the results of work effort divided by total cost" - something to remember even today as we try to justify doing things right from the beginning. Second, he spoke to us a lot about management "tinkering" with the system, a problem of unknowing people trying to do the right thing and making matters worse - I'm glad those days are behind us. Third, he gave us the 14 points of quality management which is still applicable in our environment today. And fourth, I always admired the fact that Dr. Deming, in his 80s at the time, always seemed to manage to sit between Beth and myself, who were in our 20s at the time. It certainly seemed to defy the laws of statistics how he randomly ended up between us everytime. Well, it was a great experience to learn from a master.

I have been trained in Red X Strategies through Shainin techniques and I have been certified and recertified as a Six Sigma Black Belt for 4 years now. I've talked about the difference between "big Q and little q" and I've attended seminars at Disney about "how Americans think" that taught us how to instill a belief in reduction of variance and standardized work in a culture of independence and "heroes".

In 1988 I came to Packard Electric, where I was fortunate enough to be exposed to the "Excellence culture". It resonated with me greatly because it brought all these learnings and the exposure I had to great teachers and philosophers regarding Quality

much clearer in my mind. These weren't different philosophies, they weren't talking about different things, they were talking about technical tools and, most importantly, beliefs about a way to manage business and also your life.

The Excellence culture is based in 7 absolutes- Focus on your customer, Performance Goal: Do it right the first time, every time, Method Innovation and Continuous Improvement, Feedback: your customer, People: caring, Style: Teamwork and Reward and Recognition. It all fits. Whether you are using Taguchi techniques, Six Sigma tools, Deming's Management principles or Crosby's prevention theories, it all comes together under those 7 absolutes.

I'm not a technical quality professional, but I do believe in statistical tools and variation reduction techniques and formal problem solving. These are key in improving our products and processes to ensure we meet, or exceed, our customers expectations. I also believe in the responsibility of management to set the tone and expectations of the organization, to build the culture of continuous improvement in everything we do and to create the environment where pride in one's work can thrive. "Mark of Excellence" or Quality is job one" are not just sales slogans, they are setting the tone and the culture for the people and organizations that design and build those products.

I would like to take a minute to thank some very special people here tonight. First, my oldest son, Jason Pallas, who just this past weekend received his master's degree from the University of Chicago. He has taught me to appreciate different views on life and to keep my eyes and my mind open to the possibilities and potential in art and creative expression.

To my husband, Chuck, who has supported me in my career and life and taught me about commitment, passion and intellectual challenges.

To my mom, who embodies graciousness, etiquette, poise and elegance. She taught me to embrace being a woman while stretching myself through new experiences and dreams.

To my dad, who has been my greatest mentor and advisor. He taught by example to never forget that it is only by hard work and positive strokes of fate that we succeed and that we should always be grateful to the higher power that guides us.

Shortly after I was told I had "won" this award, I was asked "What was my greatest accomplishment that I was most proud of?" I thought about that for a long time then thought about the words my Dad told me. "If you want to know how effective a leader is, never ask the people they work for because they can always be fooled with words and fancy PowerPoints - but ask the people they work with and who work for them - they will tell you the truth". I have no accomplishment I can take credit for, everything I have been a part of has been an effort of many people working hard to accomplish the task. But being nominated for this award by people like Terri Pratt and Jim Odom, who truly are Quality professionals and upon whom I rely and trust is truly the accomplishment I am most proud of.

Thank You.

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are Coming Soon

YOUR
COMMENTS
AND
ARTICLES
ARE
WELCOME

Contact
Teresa L. Pratt
Editor-in-Chief
teresalpratt@aol.com

Nomination Time

With the New Year comes the opening of nominations for our ASQ Automotive Division Awards, which will be presented at our Awards and Recognition Banquet in June of 2009.

You may have considered nominating someone in the past, or have nominated someone who may not have been chosen, only because their competition was equally outstanding. Now is the time to consider nominating or RE-nominating that individual you feel so strongly deserves recognition for their contributions to Quality. If you wish to nominate someone for the Quality Professional of the Year or Quality Leader of the Year, please use the forms following this article, or go on line and download a form at www.asq.org/auto then click on Awards in the left hand column.

Some of the awards we present annually are described below.

Quality Professional of the Year

The Quality Professional of the Year Award has been established to recognize individuals in the automotive industry who have made significant contributions in the following areas:

- Leadership or managerial skills in implementing continuous improvement in quality;
- Services provided to the community toward furthering the understanding of quality systems and techniques;
- Support and encouragement of new and innovative ideas leading to the never-ending pursuit of excellence;
- Demonstration of a high regard for team benefits and results.

(Nomination form at the end of this article)

Quality Leader of the Year

The Quality Leader of the Year Award was established to acknowledge and publicly recognize those leaders in the automotive industry, outside of the quality profession, who exemplify a commitment to the principles and disciplines of quality.

A quality leader may be described in a number ways, although certain key words come up frequently in trying to pin down a description. Those key words are: vision, customer-focused, quality philosophy and continuous improvement. A leader in the automotive industry may be described as one who has consistently demonstrated the vision to encourage and to universally apply a customer-focused code in every aspect of business.

(Nomination form at the end of this article)

William P. Koth Award

The Koth Award was established by the Automotive Division in recognition of the William P. Koth, A.O. Smith Corporation, for his many years of dedicated service to the division. The Koth Award is presented each year to a currently active Automotive Division member who has given outstanding personal service for the promotion of the Automotive Division and the American Society for Quality.

The nominations and presentation of the Koth Award are made by a committee composed of the last six Koth Award recipients and the Koth Award chair.

The Cecil C. Craig Award

The Craig Award was established by the Automotive Division in recognition of the many years of dedicated service to the division by Dr. Cecil C. Craig, a professor emeritus, Mathematical Department, University of Michigan. The Craig Award is presented annually to the best technical/management papers relating to quality and reliability, written by Automotive Division members.

The purpose of the Craig Award is to promote interest in, and encourage the writing of technical/management papers relating to quality and reliability. Send submissions to the Chair, Larry Smith, at lsmith@peoplepc.com.

For other nomination procedures, see the forms attached.

ASQ AUTOMOTIVE DIVISION QUALITY PROFESSIONAL OF THE YEAR AWARD

NAME OF NOMINEE: _____

ADDRESS: _____

TELEPHONE: _____

NUMBER OF PEOPLE IN COMPANY: _____ 150 _____ 150+

On attached sheet, provide concise, quantified information to support each of the four categories.

Requirement: Evidence demonstrating leadership or managerial skills in implementing continuous improvement in quality.

Measurement: The Nominee must have provided a significant contribution to a change in organizational structure or management methods, practices, policies, rules or performance measurement and reporting systems which resulted in measurable and continuing improvement in end user satisfaction, scrap levels, productivity, etc.

Requirement: Services provided to the community towards furthering the understanding of quality systems and techniques.

Measurement: The contribution to the community may be demonstrated by teaching; serving on committees, boards, etc. for ASQ or other related professional, educational organizations; or through publication.

Requirement: Evidence of support and encouragement or new and innovative ideas leading to the never-ending pursuit of excellence.

Measurement: Documentation must show the existence of a system that fosters continual measurable improvement in quality. Measures could be cost of quality, warranty, reduction of variation or increased customer satisfaction.

Requirement: Demonstrated high regard for team benefits and results.

Measurement: Documentation must detail situations where nominee was active in a team effort with significant results.

NOTE: Self-Nominations will not be accepted. It must be a Peer-Nomination.

YOUR NAME: _____

YOUR ADDRESS: _____

TELEPHONE: _____

Return by April 1, 2009 to Jaynie L. Vize
18147 Whalen Dr.
Clinton Twp., MI 48035
Tel (586) 792-7467 or email: jlize@wowway.com

For guidelines and electronic application form for this award, please visit www.asq.org/auto/awards/quality-pro.html

QUALITY LEADER OF THE YEAR ASQ AUTOMOTIVE DIVISION

NOMINATION FORM for YEAR 2009

NOMINATOR NAME: _____ MEMBER # _____

COMPANY NAME: _____

TITLE: _____

WORK PHONE: () _____ HOME PHONE: () _____

Best time to call if the selection committee needs more information: _____

NOMINEE: _____

TITLE: _____ ORGANIZATION: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

WORK PHONE: () _____ HOME PHONE: () _____

E-MAIL ADDRESS: _____

ROLE OF NOMINEE'S COMPANY IN THE AUTOMOTIVE INDUSTRY:
(supplier, consultant, manufacturer, etc.) _____

NOMINATING NARRATIVE: Highlight the specific accomplishments of the nominee including relevant gains he/she has made in quality in the past year. Quantify the results where possible and provide examples with supporting information on how the nominee demonstrates any or all of the key characteristics of vision, customer-focused, quality philosophy and defect-prevention oriented. (Use additional sheet(s), as necessary.)

Please return nomination form to: Carole Malone
Macomb Community College
14500 E. 12 Mile Rd.
Warren, Mi. 48088-3896
malonec@macomb.edu

For guidelines and electronic application form for this award, please visit www.asq.org/auto/awards/quality-leader.html

Developing Your S.M.E. (Subject Matter Expert)

Damon J. Davie

Damon Davie is a contract quality professional working and living in the state of Nebraska. A lifelong quality practitioner, Damon has held executive management positions in manufacturing, purchasing and quality engineering.

Many years ago, I can recall having a recurring dream about falling. I don't really remember where I was falling from...

or even how quickly the ground may have been coming at me. But I remember feeling excruciatingly helpless. Literally unable to slow down the inevitable yet still unable to grab onto something that could possibly break my fall. Its sheer helplessness in its purest form. Even today, I still find myself to be very apprehensive in high places. Even the escalators in the mall can be a little unnerving. I liken this feeling of helplessness to the daily condition of the average Operator in a manufacturing environment.



Now don't get me wrong.

This is not intended to be one of those "bleeding heart" articles that encourage manufacturing leadership to "look out for the little guys". But the "joe average" manufacturing operator of the world with limited education and a varying number of performance affecting personal issues at home, is in many cases single-handedly responsible for the manufacturing competitiveness of the United States of America. They are closer to American products than any Supervisor, Manager, or Engineer. Nevertheless, the "powers that be" in American industry have, in many cases, put the Operator in various workplace situations that enable negative attitudes that eventually lead to decreased competitiveness and increase operational costs.

Manufacturing labor in America in every manufacturing operation both big and small regardless of the commodity should be treated like SME's – Subject Matter Experts. They make the products that make the American economy move so they should be treated accordingly. Even more importantly, the effort involved in transforming your front-line staff to high-performance driven SME's can be a journey of enormous growth and discovery. Here are a couple of strategies that may assist your organization in the development of SME's:

Keep Score!

Almost every manufacturing operation in America knows how much or how many that needs to be made on a daily or monthly basis. But many Operators don't have a clue at the end of the day whether the team "won or lost". Was today a good day or a bad day? The same data that drives facility Management and Accounting could be simplified and translated into daily scoreboards displayed to your developing SME's. It encourages involvement and sparks creative curiosity and, when strategically integrated into Supervisory communications, becomes a valuable operational tool. Data simplicity and communicative integration is the key. You may want to challenge a cross functional team to design the board, assign a location, determine frequency, and periodic integration. Engineering and Operations should "tag-team" on the measurables to ensure that the data being quantified is used to make good business decisions. Remember the old saying, "If you can't measure it – you can't manage it."

Ask Why!

During the process of keeping the "score of the game", adjustments must be made to either secure the lead or mount a comeback (sorry for too many sports analogies). Therefore, the process of investigation or "asking why" must encourage continuous process improvement while discouraging Operator blame and "finger-pointing". Determining the true root cause of any process or product variance can be achieved much faster with the cooperation and trust of your front-line staff. An environment of distrust and blame almost always enables an environment where "hiding the banana" becomes a way of life to protect both the innocent...and the guilty. The outputs of this condition eventually affect bottom-line profitability due to increased product rework and additional material handling prior to shipment.

Equally, a positive environment is enhanced when Operators are included in the problem resolution process and will expedite corrective action and greater solidify preventive action. Develop your SME to take greater personal responsibility for quality and consistency.

Standardize Communication

An Operator that is conditioned to only "do what they are told" will create an environment of limited creativity and separation between organizational ranks. In addition, sensitive information can be misprocessed thus creating a negative "rumor mill". The rumor mill, much like cancer, can become a powerful yet elusive enemy unless it is extracted prior to it becoming malignant. Therefore, treating Operators and frontline employees as individual stakeholders in the success of the company better enables Operators to care more about the overall quality of products produced and appreciate the financial implications of poor quality. In addition, the lines of communication must be systematic and planned. A daily communications meeting may be better suited in manufacturing environment because of the frequency of production related data and information while a weekly meeting may be better suited for another type of operation. Another point of consideration points directly to who should be delivering information. The President/CEO delivering a pre-determined speech written by Human Resources can sometimes do more harm than good. A better approach may be for the President to "hit the floor" on a regular business day and discuss critical issues with a small spontaneous group of employees. The impact has the potential to be enormous!

Whichever methods you select, simply ensure that communications are delivered regularly so your developing SME can make informed business decisions that keep American companies competitive and keep them inspired to produce great products.



Critical Factors in Managing a Comprehensive Quality Management System

2007 Automotive Survey Summary Report

Sean P. Goffnet, Ph.D., CQPA, CSIT

Senior Member, American Society for Quality
Assistant Professor, Central Michigan University
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This report is based on a 2007 automotive industry study that examined certified quality management systems (QMS) used throughout the industry. An integral part of this study attempted to define the relationship between quality factors and mandatory requirements of the ISO/TS 16949:2002 standard. A survey instrument, encompassing quality award criteria and QMS certification principles, helped identify factors associated with work outcomes, such as audit readiness and effectiveness and customer satisfaction. This report concentrates on QMS audit readiness and effectiveness. Regression results showed several factors, including leadership and process management, as being critically important in predicting QMS audit readiness and effectiveness. This research offers an understanding of the factors that are critical in meeting the mandatory requirements of the industry-mandated standard – ISO/TS 16949:2002.

Introduction

Whether it is viewed as value-add or as a necessary evil, a registered quality management system is a must for most automotive organizations. Automotive suppliers are put in a position where they must comply with an industry-mandated quality standard if they expect to sustain and/or quote new business with their customers or OEMs. Most Tier-1 auto suppliers were supposed to register to ISO/TS 16949:2002 by the announced deadline of December 14, 2006. Some OEMs requested supplier conformance to the standard by 2004 (QMI, 2006).

When discussing ISO9001:2000 or ISO/TS 16949:2002, there is an overused expression that often comes to mind – “it is what it is.”

What is it?

In short, ISO/TS 16949:2002 is a global automotive industry quality management standard based on ISO 9001:2000 (AIAG, 2003; 2004), which mirrors the MBNQA in core values and quality management principles (e.g., customer focus, leadership, employee involvement, and process approach) (Leonard & McGuire, 2007). The ISO/TS 16949:2002 quality standard, published in March of 2002, “aligns existing American (QS9000), German (VDA6.1), French (EAQF), and Italian (AVSQ) automotive quality system standards... and eliminates the need for multiple certifications” (Karth, 2004, p. 336). The ISO/TS 16949:2002 standard is an extension of the ISO 9001:2000 standard, and it includes seven mandatory procedures that organizations must have documented: 1) control of documents, 2) control of records, 3) training, 4) internal audit, 5) control of nonconforming product, 6) corrective action, and 7) preventive action (QMI, October 4, 2006; Stamatis, 2004). The term “documented procedure,” as it appears in the International Standard, “means that the procedure is established, documented, implemented and maintained” (AIAG, 2003, p. 5). For example, according to ISO/TS 16949:2002, internal auditing of records, processes, and operations is a mandatory procedure, so there must be evidence of this practice (i.e., internal auditing) is at work in the system at time of official audit.

Internal audits are not the only mandatory event that carried over to the ISO/TS 16949:2002 standard. Third-party conformance audits are still mandatory. Third-party external audits check to see that organizations regularly conduct internal audits and that organizations comply with the rest of the ISO/TS 16949:2002 standard. Conformance audits focus on processes and procedures and look for positive results in terms of product quality, customer satisfaction, and delivery (AIAG, 2004; QMI, October 2006). It is obvious that a significant amount of time and effort must be put forth to maintain an effective, audit-ready quality management system, and the consequences and costs of nonconformance are just as clear.

What is critical?

While recognizing the enormous challenge that organizations face when attempting to achieve QMS certification and conformance, automotive organizations might find it advantageous to know if there are certain aspects of the business that are more significant than others when it comes to establishing and/or maintaining an effective, audit-ready QMS. A recent industry study examined this very idea.

In 2007, ASQ approved a survey of the automotive division in an effort to help identify critical factors associated with establishing and maintaining a registered quality management system. This report is based on a 2007 automotive study, which was administered to a sample of quality professionals from the American Society for Quality's Automotive Division database. The following report highlights some of the major steps and findings of the study.

Background

A web-based survey that measured quality management variables was administered to a sample of quality professionals from the American Society for Quality's automotive database, which contains a population of approximately 5,000 members. ASQ leaders from the automotive division assisted with sending an email invitation to all its members who subscribe to receiving ASQ emails. The web-based survey was directed toward quality professionals in the organization because they are recognized as the leaders in quality system assurance, planning, registration, implementation, and auditing. These data were then compared to work outcomes, such as having effective documented procedures and satisfying the customer.

Sample

The principal sample had a targeted response of 250 quality management professionals from the automotive industry. Controlling for industry helped assure that critical quality practices were present in each organization and that third-party audits took place. As a result, generalizability is limited to this group. The targeted response is conservative and in line with similar research response figures (cf., Adams, 1994; Ahire, Gholahar, & Walker, 1996; Black & Porter, 1996; Kaynak, 2003; Silas & Ebrahimpour, 2005; Wilson & Collier, 2000).

More than 200 automotive division members submitted surveys. Consultants, registrars, and academics were removed from the sample to stay in line with the original intent of focusing on manufacturers with registered quality systems. However, nearly 60 percent of respondents were either quality managers or quality engineers. More than 50 percent of the respondents had worked in the automotive industry for 16 years or more, and nearly 90 percent had worked in the industry for at least 6 years. Ninety-five percent had college experience. Thirty-five percent of respondents worked for large companies that employed more than 500 people at the respective location. Most people were reasonably knowledgeable in ISO/TS; less than 10% responded as having low to very low knowledge in this area.

Methods & Instrument

The study employed simultaneous and stepwise regression to empirically test whether certain variables found within the registered quality management system were predictors of specific work outcomes. The study employed a survey instrument, which was based on the MBNQA and ISO/TS 16949:2002 criteria. The instrument was validated via theory, expert opinion, and existing research.

The independent variables used in this study are noted factors of a model quality management system. More specifically, the study used composites that aimed to measure the 7 major categories of the MBNQA (Leadership, Strategic Planning, Customer & Market Focus, Measurement, Analysis & Knowledge Management, Workforce Focus, Process Mgmt, and Results), which are part of the system's foundation and operation (see Figure 1). Moreover, many of the same factors that are present in the MBNQA are also stressed in the ISO/TS 16949:2002 standard (see Table 1). Leonard and McGuire (2007) produced an article that illustrates the alignment between various quality management systems and the Baldrige award criteria.

The leadership composite variable, for example, consists of items related to executive responsibility, ethics, vision, setting objectives, participating in quality, and being accessible to interested parties, namely customers and employees (NIST, 2006, p. 15).

Process management, on the other hand, encompasses the design, management, and improvement of key work processes and business core competencies. Process management incorporates statistical techniques and functions to reduce and control variation and to improve processes (NIST, 2006, pp. 29-30). The award criteria guide, viewable at www.nist.gov, offers detailed information regarding each criterion.

The dependent variables used in this study are items that fall under the 7th category of the MBNQA (i.e., Results). Results, according to the MBNQA (NIST, 2006), include process effectiveness outcomes, which are a diverse set of results that include measures such as productivity, cycle time, and response time for emergency drills. The Baldrige criteria also state that appropriate measures of work system performance may include audits (NIST, 2006, p. 33). This study incorporated an audit readiness and effectiveness variable as a dependent variable representing a "process effectiveness outcome." This special composite variable or scale consists of questions related to the seven mandatory procedures of the ISO/TS 16949:2002 standard (see Table 1).

The scale asked respondents to indicate their level of agreement or disagreement with statements such as "We have a documented training procedure that is proven to be effective

in practice with regard to achieving trained competence of personnel" and "We have documented procedures that are proven to be successful in practice for all required customer oriented processes." Questions for all major variables were presented on a scale of one to seven. For most questions, a score of one reflected a negative response, as in strongly disagree or no emphasis, and a score of seven reflected a positive response, such as strongly agree or extreme emphasis.

Analysis & Results

The independent variables were entered into the model as predictors of the special QMS audit readiness and effectiveness dependent variable. The QMS composite variable served as a process outcome measure in terms of effectively meeting mandatory requirements. Results of the test between the independent variables and QMS audit readiness and effectiveness indicate that the overall model was significant ($p < .001$) as it predicts nearly 60% of the variance in QMS audit readiness. Backward stepwise regression (BSR) was utilized to clearly define the critical factors present in the system. BSR confirmed the initial regression results and showed that customer focus, process management, and human resources were critical and rounded out the significant variables retained at the 0.05 level of significance or better. BSR also showed leadership as approaching significance ($p < .10$). Table 2 summarizes the regression results.

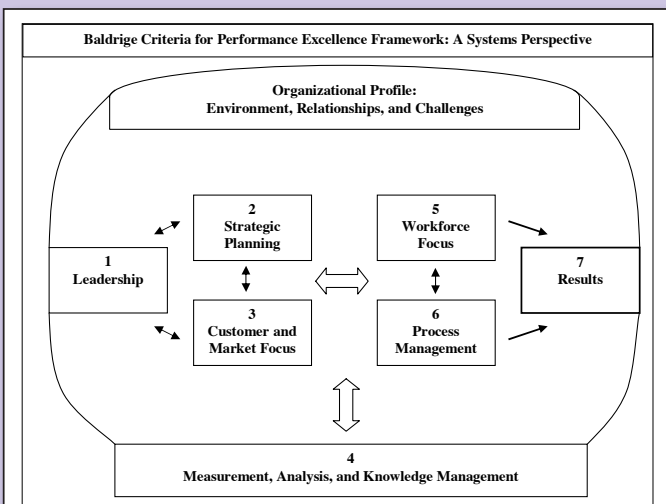


Figure 1. Critical Factors of the MBNQA (Excerpted from the Baldrige National Quality Program, (NIST, 2006), *Criteria for Performance Excellence*, p. 5)

Table 1.

Quality Factors and Mandatory Procedures in ISO Standards

| Eight Quality Management Principles* | Parallel Quality Factor** used in this particular study | Seven Mandatory Procedures* | Parallel QMS Perceived Audit Readiness & Effectiveness Items used in this study |
|---|---|--------------------------------------|---|
| 1. Customer Focus | Customer & Market Focus | 4.2.3 Control of Documents | Document Control (QQ1)*** |
| 2. Leadership | Leadership | 4.2.4 Control of Records | Records Maintenance (QQ2) |
| 3. Involvement of People | Workforce Focus | 6.2.2.2 Training | Training Procedures (QQ3) |
| 4. Process Approach | Process Management | 8.2.2 Internal Audit | Internal Audits (QQ4) |
| 5. System Approach to Management | Strategic Planning | 8.3 Control of Nonconforming Product | Control Nonconformance (QQ5) |
| 6. Continual Improvement | Process Management | 8.5.2 Corrective Action | Corrective Action (QQ6) |
| 7. Factual Approach to Decision Making | Measurement, Analysis, & Knowledge Management | 8.5.3 Preventive Action | Preventive Action (QQ7) |
| 8. Mutually Beneficial Supplier Relations | Process Management | | |

Note:

*Eight Quality Management Principles and Seven Mandatory Procedures were excerpted from *ISO/TS 16949:2002 Automotive Quality Standard*, retrieved 10/26/07 from QMI's information center at www.qmi.com/information_center/standards/iso16949/. Eight principles are also referred to in Sila & Ebrahimpour, 2002, p. 944

**MBNQA criteria (factor) that had the most apparent (direct or indirect) relationship with the ISO management principle was listed

***QQ1, for example, represents question 1 in the QMS audit readiness and process effectiveness scale

The results suggest that customer focus, process management, HR, and leadership are critical factors of quality. Any increase in these variable measures can have a significant and positive impact on meeting the mandatory requirements of the standard. The significant variables can influence QMS audit readiness and effectiveness.

Conclusions

The study proposed that critical quality factors would be positively associated with perceived audit readiness and process effectiveness. The regression model for this test was significant as several critical factors emerged. Process management, customer focus, HR, and leadership had a positive association with QMS audit readiness and process effectiveness. These items were the most critical in terms of successfully meeting the mandatory requirements of the standard. Additional analysis of the 2007 automotive survey data showed process management, leadership, and HR as having strong linkages to other organizational outcomes and work-related results, such as market share, customer satisfaction, employee job satisfaction, product quality and innovation. The generalizability of the automotive industry study findings, however, is limited to the group of quality professionals from ASQ's Automotive Division database. From a practical standpoint, automotive organizations might use audit readiness checks and effectiveness assessments to measure the perceived level of conformance with respect to the implementation and application of

mandatory procedures and processes. Organizations might consider making perceived audit readiness assessments routine if they see this as having some benefit to the organization. At the present, complete system pre-audits are an option recommended, but not mandated, by the standard. However, a pre-audit readiness check that focuses on key areas, namely mandatory procedures and customer-oriented processes and frequently reported items on scorecards, such as delivery, defects, and/or customer satisfaction, could perhaps benefit the organization by giving it a rapid systems assessment. Readiness checks could be coupled with internal audits, or they could be utilized separate from formal audits as standalone assessments. Failure to manage critical quality factors successfully may come at a cost of decreased performance, not just in terms of market share or customer satisfaction, but also in terms of meeting mandatory requirements of existing quality standards. For organizations in the automotive industry, compliance to the ISO/TS 16949:2002 standard can afford an organization sustainability stemming from new and continued business. Since meeting the standard is a mandatory outcome, organizations in the automotive industry must have an effective process that assures a compliant QMS that can help sustain its position in industry. Organizations need to maintain a comprehensive QMS focused on leadership, workforce focus, process management, and customer understanding and satisfaction, which are critical to success.

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Table 2.

Regression Analysis for Variables Predicting QMS Effectiveness/Audit Readiness (n = 172)

| Variable | QMS Effectiveness / Audit Readiness | |
|---------------------------|-------------------------------------|---------------------|
| | Simultaneous Regression | Stepwise Regression |
| | B | β |
| Leadership | .104 | .134† |
| Strategic Planning | .007 | |
| Customer Focus | .381*** | .393*** |
| Information | .057 | |
| HR | .165† | .179* |
| Process Management | .196** | .200** |
| F | 40.719*** | 61.527*** |
| R² | .597 | .596 |

Notes:

*** $p < .001$

** $p < .01$

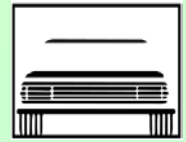
* $p < .05$

† $p < .10$



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- A **Job Fair** is also held in conjunction with the symposium to showcase the openings in the growing Healthcare area.



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- Monday, March 9, 2009
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