

WORLD QUALITY CONSULTING: DEVELOPING A CONTEXT

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SUMMARY

Quality has many dimensions. It can be discussed in terms of quality of goods, quality of services, quality of actions, quality of encounters, and quality of life. Likewise, quality can have many definitions based on what needs to be emphasized in a given situation. For examples, quality can be defined as conformance to requirements from a product control viewpoint, as fitness for use from the marketing viewpoint, or uniformity around target from the producer's viewpoint.

In providing quality consulting advice to a specific company in a specific country, one must develop a context by combining the necessary dimension and the appropriate definitions to generate a working model. This model, in turn, becomes a foundation for the effective application of quality science and strategies. It is possible that a single model may not be adequate for the purpose. In that case, we can develop multiple models.

In this forum, we explore the methods in developing quality context for different scenarios through multiple choice questions. Participants will answer the questions. Discussion will follow.

KEYWORDS

Quality consulting, problem-solving

INTRODUCTION

Quality efforts around the world follow two distinct scenarios. The first scenario is that any country or company develops an interest in quality because of the literature they encounter. Once a company's interest is sparked in the subject matter, it further investigates the topic. Most likely, it will pursue the original source and initially obtain advice from that authority. The second scenario has a different sequence. A specific company in a specific country develops a context of what is needed by the company or the country. This company will also research the quality ideas around the world. They are then able to put forth a context based question to this newly assimilated information. The question would be how can this new quality information help us solve our problems? The ultimate result is a need-based operational quality model.

The first scenario is more prevalent, whereas the second is less common. In the first scenario, what we are saying is what is good for the goose must be good for the gander. The second scenario is more strategic in nature, because what is good for one company or country may not work as well in another company or country. It is often argued that quality is universal, and therefore there is no need to make a distinction between the two scenarios. The author wishes to differ from this widely-held viewpoint and establish the clear case for the latter scenario. The first scenario is "horizontal" implying that the same idea applies anywhere. This school of thought is often titled - QUALITY IDEAS UNIVERSALLY APPLY. The second scenario termed

“vertical” meaning ideas must be selected and sequenced. It can be labeled as UNIVERSALITY OF QUALITY IDEAS MUST BE APPLIED TO THE CONTEXT. World quality advisors need to learn how to develop the context for any company or any country.

WHY ARGUE THE TWO SCENARIOS OF QUALITY ADVICE?

The first and foremost purpose of this interactive forum is to improve the quality of advice about quality; resulting in the avoidance of wasteful quality programs and initiatives.

The second objective is to increase the competence and credibility of the quality advice process itself.

To achieve these two purposes, we must learn to develop a context for any given company, country, or situation. Using this context, the quality advice will achieve intended results. Quality as a profession will benefit by the challenges of developing a context.

HOW DO WE DEVELOP A CONTEXT?

To develop a context, we need to determine what quality elements are less than adequate or missing altogether. This is done through a series of hierarchical topics in a question format. Each topic is broken down into many quality elements. Table 1 identifies the structure of this format with key topics and corresponding quality elements. The answers to these topical questions help us generate the context.

Once we identify the answers to these topics, we are in the position to advance the context for the given scenario.

To develop the context and corresponding working model successfully, the world quality advisor must understand two things: (1) what does each quality element mean and (2) how does it fit into the big picture.

This session is designed to entertain questions on the meaning of various quality elements and their place in the big picture. This interactive session will proceed as follows: 1) Participants take a multiple choice test on a topic, 2) Most appropriate answers are presented, 3) Participants self-score the test, 4) Incorrect responses are discussed, 5) Summary comments for the topic are presented, and 6) Participants move onto the next topic. At the end of the discussion, examples will be covered for typical scenarios.

The working models are dynamic. They must be revised periodically in light of the progress made and the technological advances that have occurred. However, the process of developing a context suggested in this paper will remain robust.

Table 1 - Quality elements that determine the context

Topic	Topical Questions	Quality Elements
1	What is happening now?	<ul style="list-style-type: none"> • Infrastructure • Environment • Hierarchy of employee needs • Current quality attempts
2	What is their need with respect to quality?	<ul style="list-style-type: none"> • Perceived quality • Delivered quality • Produced quality • Grade of quality
3	What should we emphasize?	<ul style="list-style-type: none"> • Quality System • Quality Improvement • Quality Planning • Quality Control
4	Which strategy must be used?	<ul style="list-style-type: none"> • Black box versus focus on problems • System versus real problems • Short-hop versus long-hop
5	What results are we likely to alter at micro level?	<ul style="list-style-type: none"> • Quality (delivered, produced, grade, or perceived) • Productivity (speed, people) • Waste (material, time) • Cost (material, people, space)
6	What results are we likely to alter at macro level?	<ul style="list-style-type: none"> • Profitability • Environmental quality • Quality of life

The raw data gathered on quality elements should be synthesized to answer the four basic questions in a *yes* or *no* format: 1) Is market share a problem? 2) Is profit a problem? 3) Is customer satisfaction a problem? And 4) Is image a problem? There are 16 possible working models resulting from these answers. They are enumerated in Table 2.

Table 2 - Quality Improvement Working Models

No.	Is market share a problem?	Is profit a problem?	Is customer satisfaction a problem?	Is image a problem?	Improve
1	No	No	Yes	Yes	Delivered quality
2	No	No	Yes	No	Delivered quality
3	No	No	No	Yes	Competitive analysis and publicizing of quality attributes
4	No	No	No	No	Continue doing what you are doing

Table 2 - Quality Improvement Working Models (continued)

No.	Is market share a problem?	Is profit a problem?	Is customer satisfaction a problem?	Is image a problem?	Improve
5	No	Yes	Yes	Yes	Produced quality
6	No	Yes	Yes	No	Produced quality Delivered quality
7	No	Yes	No	Yes	Produced quality
8	No	Yes	No	No	Produced quality
9	Yes	No	Yes	Yes	Grade of quality
10	Yes	No	Yes	No	Grade of quality
11	Yes	No	No	Yes	Grade of quality, competitive analysis, and publicizing of quality attributes
12	Yes	No	No	No	Grade of quality
13	Yes	Yes	Yes	Yes	Create error-proof systems
14	Yes	Yes	Yes	No	Grade of quality Produced quality Delivered quality
15	Yes	Yes	No	Yes	Grade of quality
16	Yes	Yes	No	No	Grade of quality Produced quality

We will look at some examples to illustrate how to develop the context and corresponding quality improvement working models.

EXAMPLE 1

Our scenario begins with an engine manufacturer in a developing nation. The company is enjoying a large market share but would like to increase the market share by becoming global. The company turns out good profit. The delivered quality is reasonably well. It has a large service network to attend to field problems. The company's national image is good but the international image has never been tested. The company's product is marginal by international standards. The engine noise and emission do not meet the world standards. The company's response to the four questions is tabulated in Table 3.

Table 3 - Engine manufacturer's response to four basic questions

No.	Four basic questions	Yes/No
1	Is market share a problem?	Globally yes. Locally no.
2	Is profit a problem?	No
3	Is customer satisfaction a problem?	No
4	Is image a problem?	Globally yes. Locally no.

According to working model no. 11, the company should primarily improve grade of quality.

EXAMPLE 2

Let us take an electronic giant company in a developed nation. The company is enjoying a large market locally and globally. The company would like to expand the manufacturing facilities in other countries. The general feeling exists that profitability improvement needs focus. The delivered quality is reasonably well. The company is internationally reputable. The company's response to the four questions is tabulated in Table 4.

Table 4 - Electronic company's response to four basic questions

No.	Four basic questions	Yes/No
1	Is market share a problem?	No
2	Is profit a problem?	Yes
3	Is customer satisfaction a problem?	No
4	Is image a problem?	No

According to working model no. 8, the company should be improving produced quality.

EXAMPLE 3

The government in a developing nation shows an interest in quality. The country has inadequate infrastructure. Pollution levels are cause for alarms. The government-run services are expensive because of waste. A select few take advantage of the loop holes. The services have many delays and the public, in general, is not satisfied. There is a tremendous disparity in income levels. The country's response to four questions is analyzed in Table 5.

Table 5 – Government's response to four basic questions

No.	Four basic questions	Yes/No
1	Is market share a problem?	Yes, in the sense that a large number of people do not enjoy the quality of life.
2	Is profit a problem?	Yes, govt. offered services can run efficiently and cost less.
3	Is customer satisfaction a problem?	Yes, most of the time is spent in waiting for the services rather than enjoying the services.
4	Is image a problem?	Yes, with the exception of few isolated successes.

According to working model no. 13, the country should be creating error-proof systems and investing in methods of reducing the disparity of income.

EXAMPLE 4

The large automotive company enjoys a steady market. Profitability is high because of a downsized workforce and not necessarily due to price and cost difference. Delivered quality is reasonably satisfactory but the warranty programs are rising in costs . Suppliers are feeling price pressures. Lots of advertising money is spent in maintaining the high image. The company's background is arranged as responses to four questions in Table 6.

Table 6 - Automotive company's response to four basic questions

No.	Four basic questions	Yes/No
1	Is market share a problem?	No, it has been steady in past few years.
2	Is profit a problem?	Yes, because downsizing and supplier control is not the desired way of making money.
3	Is customer satisfaction a problem?	Yes, but not at a very high level.
4	Is image a problem?	Yes, in the sense that the advertising budget is too high.

According to working model no. 5, the auto company should be improving produced quality.

EXAMPLE 5

A small consulting company provides management services. The company's market share is small in spite of a good reputation among its own customers, The company desires to increase the market share. Profitability is very high because of the competency of its operations. Delivered quality is excellent as evidenced by the repeat business. The company's image is excellent but only among its own customers. The consulting company's background is arranged as responses to four questions in Table 7.

Table 7 - Consulting company's response to four basic questions

No.	Four basic questions	Yes/No
1	Is market share a problem?	Yes, in spite of excellent reputation of services.
2	Is profit a problem?	No. It is a very competent and lean operation.
3	Is customer satisfaction a problem?	No. Repeat business serves as evidence.
4	Is image a problem?	Yes. Because rest of the market is not aware in spite of excellent performance.

According to working model no. 11, the consulting company should be primarily performing competitive analysis and publicizing quality attributes.

CONCLUSION

Quality ideas are universal. However, when they are horizontally applied without a context, their usefulness is limited. In fact, the horizontal implementation of a quality idea can be wasteful. On the other hand, when quality ideas are applied vertically within a context, they can produce dramatic results.

To develop the context for any given company, a country, or a situation, the quality advisors must understand the quality elements themselves. In addition, the quality advisors must also comprehend the way in which the quality ideas fit into the big picture. Through interactions with the audience, we explore many quality elements that help us create a working quality improvement model. Ultimately, we reduce the model development to four basic questions that relate to grade of quality, produced quality, delivered quality, and perceived quality. To facilitate learning, we simplify the answers to these four questions as a simple *yes* or *no*. This results in sixteen different quality improvement models. Through examples, we create different scenarios to show how to develop the context and corresponding improvement models.

This paper makes two significant contributions: 1) A departure from the prevalent model of applying quality ideas horizontally worldwide and 2) A proposal for a model that builds on the knowledge of and interaction with a specific audience.

Interactive Questions
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This session is designed to entertain questions on the meaning of various quality elements and their place in a big picture.

The session is interactive and will proceed as follows:

- 1) Participants take a multiple choice test for a topic,
- 2) Most appropriate answers are presented,
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- 4) Incorrect responses are discussed,
- 5) Summary comments for the topic are presented, and
- 6) Participants move onto the next topic.

At the end of all topics, the synthesis will be created to generate some typical contexts.

INTERACTIVE QUESTIONS

Topic	Questions	Quality Elements
1	What is happening now?	<ul style="list-style-type: none"> • Infrastructure • Environment • Hierarchy of employee needs • Current quality attempts
Topic	What does each quality element mean?	How do quality elements fit into the big picture?
1	<p>Infrastructure means:</p> <ol style="list-style-type: none"> availability of transportation availability of water supply availability of clean air availability of energy all of the above 	<p>If a company attempts to imitate all the popular ideas around the world and is still unsuccessful in creating world-class results, you will guide this company to:</p> <ol style="list-style-type: none"> Invest in effective implementation of quality tools Encourage employees to document their efforts Examine and facilitate solutions to actual company problems Make “use of quality tools” as a part of job descriptions Make “use of quality tools” as a pre-condition to promotion
1	<p>When a company advertises one thing, but delivers something else, the company has:</p> <ol style="list-style-type: none"> Grade of quality problem Produced quality problem delivered quality problem Quality ethics problem Perceived quality problem 	<p>When infrastructure is lacking severely, the best way to initiate quality awareness is:</p> <ol style="list-style-type: none"> Make internal provisions as a substitute for infrastructure Start with a small output problem to illustrate priority of actions. Invite quality guru to give enthusiastic message about quality Start quality circle program
1	<p>Fundamental condition in initiating quality awareness is:</p> <ol style="list-style-type: none"> Emphasize process output controls Create and/or align quality system to ISO 9000 standards Emphasize process input controls Be attentive to employee’s physical needs Raise the level of process technology 	<p>When infrastructure is lacking severely, the results will most likely suffer from:</p> <ol style="list-style-type: none"> instability variation off-target instability + variation instability + off-target variation + off-target

Topic	Questions	Quality Elements
2	What is their need with respect to quality?	<ul style="list-style-type: none"> • Perceived quality • Delivered quality • Produced quality • Grade of quality
Topic	What does each quality element mean?	How do quality elements fit into the big picture?
2	<p>Grade of quality means:</p> <ul style="list-style-type: none"> a. We produce good units b. Proportion of good units customer receives c. A level of specification that product meets d. Proportion of good units process makes that require no repair 	<p>Which one of the following most directly affects initial capturing of markets:</p> <ul style="list-style-type: none"> a. Grade of quality b. Produced quality c. Delivered quality
2	<p>Produced quality means:</p> <ul style="list-style-type: none"> a. We produce good units b. Proportion of good units customer receives c. A level of specification that product meets d. Proportion of good units process makes that require no repair 	<p>Which one of the following most directly affects the profits:</p> <ul style="list-style-type: none"> a. Grade of quality b. Produced quality c. Delivered quality
2	<p>Delivered quality means:</p> <ul style="list-style-type: none"> a. We produce good units b. Proportion of good units customer receives c. A level of specification that product meets d. Proportion of good units process makes that require no repair 	<p>Which one of the following most directly affects customer satisfaction:</p> <ul style="list-style-type: none"> a. Grade of quality b. Produced quality c. Delivered quality
2	<p>Quality means</p> <ul style="list-style-type: none"> a. Customer satisfaction b. Conformance to requirements c. Uniformity around target d. Fitness for use e. Condition of output f. All of the above 	<p>Which one of the following most directly affects the retention of the market:</p> <ul style="list-style-type: none"> a. Grade of quality b. Produced quality c. Delivered quality

Topic	What does each quality element mean?	How do quality elements fit into the big picture?
2	<p>Most appropriate definition of the quality while shipping the product is:</p> <ul style="list-style-type: none"> a. Customer satisfaction b. Conformance to requirements c. Uniformity around target d. Fitness for use e. Condition of output f. All of the above 	
2	<p>Most appropriate definition of quality while solving a problem is:</p> <ul style="list-style-type: none"> a. Customer satisfaction b. Conformance to requirements c. Uniformity around target d. Fitness for use e. Condition of output f. All of the above 	
2	<p>Most appropriate definition of quality while producing units is:</p> <ul style="list-style-type: none"> a. Customer satisfaction b. Conformance to requirements c. Uniformity around target d. Fitness for use e. Condition of output f. All of the above 	
2	<p>Most appropriate definition of quality which will keep bringing customers back is:</p> <ul style="list-style-type: none"> a. Customer satisfaction b. Conformance to requirements c. Uniformity around target d. Fitness for use e. Condition of output f. All of the above 	
2	<p>Most appropriate definition of quality for earning larger market share is:</p> <ul style="list-style-type: none"> a. Customer satisfaction b. Conformance to requirements c. Uniformity around target d. Fitness for use e. Condition of output f. All of the above 	

Topic	Questions	Quality Elements
3	What should we emphasize?	<ul style="list-style-type: none"> • Quality System • Quality Improvement • Quality Planning • Quality Control
Topic	What does each quality element mean?	How do quality elements fit into the big picture?
3	<p>A good quality system is:</p> <ol style="list-style-type: none"> Procedures are followed and desired results are achieved Procedures exist Procedures exist and they are followed Certified by ISO 9000 registrar 	<p>A company wants to increase its market share from 20% to 40%. Which element they must raise above norm to assist in this goal?</p> <ol style="list-style-type: none"> Grade of quality Produced quality Delivered quality Grade of quality and produced quality Increase marketing effort
3	<p>Which one of the following is most affected by ISO 9000 certification?</p> <ol style="list-style-type: none"> Grade of quality Produced quality Delivered quality All of the above 	<p>Quality improvement can begin at which location?</p> <ol style="list-style-type: none"> Location 1 Location 2 Location 3 Location 4
3	<p>Quality control means:</p> <ol style="list-style-type: none"> Control all process inputs Follow all the procedures Create a scheme to eliminate or minimize nonconformity from flowing downstream All of the above 	<p>If you find a company that does not understand quality as a business discipline, what would you emphasize first:</p> <ol style="list-style-type: none"> Quality planning Quality control Quality improvement
3	<p>When we have many categories of nonconformity, which category of nonconformity should we choose first to solve?</p> <ol style="list-style-type: none"> A category with maximum nonconformity A category which is easy to solve A category that reflects instability 	<p>To stabilize a process, what do we do first?</p> <ol style="list-style-type: none"> Talk to an operator Start stabilizing input variables Determine nature of instabilities by analyzing output variables Call in a stabilization expert Write procedures

Topic	What does each quality element mean?	How do quality elements fit into the big picture?
3	Process stabilization means <ol style="list-style-type: none"> a. Stabilize output condition b. Stabilize input variables c. Stabilize temperature in the plant d. Stabilize number of units produced per day 	
3	If all known process variables are stable, will it result in stable output? <ol style="list-style-type: none"> a. Yes b. Not necessarily 	

Topic	Questions	Quality Elements
4	Which strategy must be used?	<ul style="list-style-type: none"> • Black box versus focus on problems • System versus real problems • Short-hop versus long-hop • Control, optimize versus modify, recreate
Topic	What does each quality element mean?	How do quality elements fit into the big picture?
4	<p>Which one is most likely true?</p> <p>a. Quality system and quality improvement are independent.</p> <p>b. Quality system is a side effect of having a quality improvement</p> <p>c. Quality improvement is a side effect of having a quality system</p> <p>d. a and b</p> <p>e. a alone</p> <p>f. b alone</p> <p>g. c alone</p>	<p>An engine manufacturer wants to become world-player. However, it operates in a country where there are no emission or noise standards. As a result, engines generate lots of noise and emission. Your quality advice to this company is:</p> <p>a. invest in noise/emission reduction research</p> <p>b. perform competitive studies and create a benchmark</p> <p>c. certify company in accordance with ISO 9000 standards</p> <p>d. follow six-sigma program</p>
4		<p>Which is the best quality strategy for developing nations:</p> <p>a. invest \$10, gain \$12</p> <p>b. invest \$100, gain \$120</p> <p>c. invest \$1,000, gain \$1,200</p> <p>d. invest \$10,000 gain \$12,000</p> <p>e. invest \$100,000 gain \$120,000</p>
4		<p>The most new quality ideas originate in developed nations, especially in USA. In providing advice on quality to less developed nations, what is the most appropriate first step:</p> <p>a. teach new quality idea in English</p> <p>b. translate new quality idea in their language and then teach</p> <p>c. we should understand their problems and modify the new quality idea before teaching</p> <p>d. we should invite them to visit US factories to see how idea works in US</p> <p>e. open up overseas consulting office</p>

Topic	Questions	Quality Elements
5	What results are we likely to alter at micro level?	<ul style="list-style-type: none"> • Quality (delivered, produced, grade, or perceived) • Productivity (speed, people) • Waste (material, time) • Cost (material, people, space)
Topic	What does each quality element mean?	How do quality elements fit into the big picture?
5	<p>The following are micro-level quality improvements except:</p> <ol style="list-style-type: none"> a. re-testing b. customer satisfaction c. scrap d. rework 	<p>There are three micro-level indexes of concern, namely, scrap, rework, supplier returns. Which analysis would you perform to assure that any one of the three indexes is not improving at the cost of the other two indexes:</p> <ol style="list-style-type: none"> a. analyze three plots of index against time b. analyze shape of Pareto distribution of three indexes before and after improvement efforts c. correlation analysis of three pairs of indexes d. analyze control charts of all three indexes
5	<p>The correlation between scrap and rework should be:</p> <ol style="list-style-type: none"> a. high positive b. high negative c. low positive d. low negative e. none 	
5	<p>Process produces first pass yield of 80%. Standard procedure is to retest 20% rejected units. 10% more units pass the retest. 5% more are salvaged through rework. Remaining 5% are scrapped. Most appropriate yield index from profitability perspective is:</p> <ol style="list-style-type: none"> a. 80% b. 90% c. 95% d. 100% e. none of the above 	

Topic	Questions	Quality Elements
6	What results are we likely to alter at macro level?	<ul style="list-style-type: none"> • Profitability • Environmental quality • Quality of life

Topic	What does each quality element mean?	How do quality elements fit into the big picture?
6	<p>Which one of the following index does not directly relate to quality improvement?</p> <ol style="list-style-type: none"> a. Customer satisfaction b. quality of life c. rate of technology development d. pollution reduction e. productivity 	