APPROACHING QUALITY IN AN EVER-CHANGING WORLD

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ABSTRACT

Quality is a weapon. The emphasis and appearance of this weapon must continually reconstruct as the world evolves. Specifically, we must respond to changes in geographical and economic borders, exponential rates of technological developments, and expectations induced by the Internet. Quality is the most useful weapon to effectively deal with continual changes. Two things must happen in order to use quality as a potent weapon: 1) we must learn an inductive approach and 2) we must develop details required in executing this new approach.

The historical approach to using quality as a weapon can be labeled as deductive. The deductive approach has been mostly "outside in" and favors generic ideas developed by academicians lacking a real appreciation for macro as well as micro-execution details. The deductive approach is not suitable for rapidly changing socioeconomic and technological environments. What we need now is an inductive approach. The inductive approach can be described as "*inside out.*" That implies that we should start with the specifics of a situation to be improved and attack it with quality science tools. In so doing, we learn to appreciate the power of quality science in finding solutions to complex situations. If we solve a few specific situations in this manner, general principles of quality science will become known and practicing them will become more common. We establish the thesis that in a rapidly changing world what we need is an inductive approach more than a deductive approach.

How do we execute an *inside out* approach? The *inside out* approach is based on the frequently asked question, "What should be done next?" in line with the objectives of the organization. The theme of this paper is to develop a set of common questions whose answers define a need and the path that organization must take along with a set of actions. The questions we develop are fairly universal and remain constant with respect to the changing times. What does mature however, are the answers to these questions as the world changes and organizations progress. In this paper, we develop examples of worldwide changes and how companies are rearranging their quality approach.

INTRODUCTION

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, uniformity around target from the producer's viewpoint or condition of output from a generic viewpoint.

An inductive approach advocates starting with specifics of the organization in a specific country. To do this, 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. On the other hand, the deductive approach, follows a general model developed somewhere in the world such as Zero Defects, Total Quality Control, ISO 9000, Six Sigma Quality, Lean Thinking, and Total Quality Management. Such quality models, though sound in their reasoning, may not be strategic for the purpose. In fact, quality scholars all over the world are busy comparing advantages and disadvantages of the deductive approaches. These exercises are of no help to organizations dealing with specifics that need to be addressed and resolved.

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

DIFFERENCE BETWEEN DEDUCTIVE AND INDUCTIVE

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 it encounters. 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. This sequence is deductive.

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. It is then possible to put forth a context-based question to this newly assimilated information. The question would be how could this new quality information help us solve our problems? The ultimate result is a need-based operational quality model. This sequence is inductive.

The deductive sequence is more prevalent, whereas the inductive sequence 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.

Figures 1, 2, and 3 illustrate the preferred options.

Quality should be approached inside out not outside in.

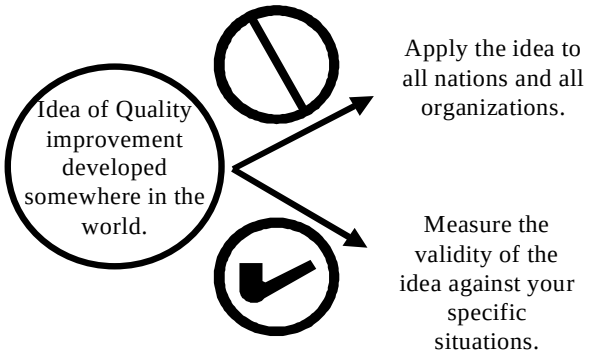

Figure 1 – Difference between "inside out" and "outside in"

Quality should be approached experimentally, and not on a grand scale organization.

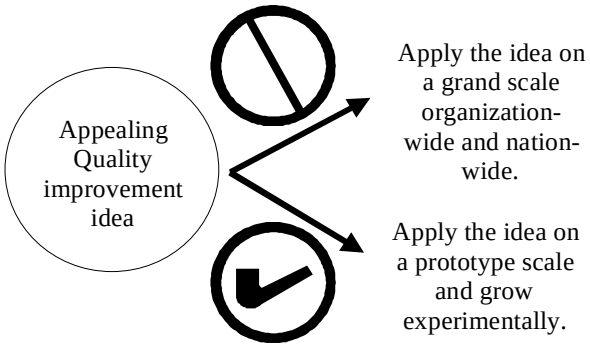

Figure 2 – Difference between experimental and grand scale

Quality should be approached inductively not deductively.

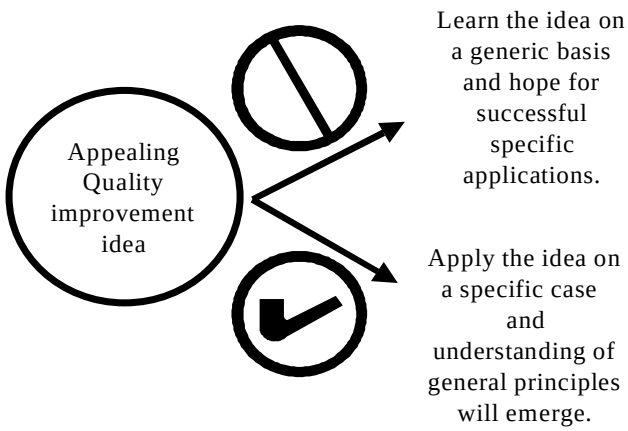

Figure 3 – Difference between inductive and deductive

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 inductive scenario being more practical as well as useful. The deductive scenario forces the organizations to be "horizontal" implying that the good ideas must be applied organization-wide. This school of thought is often titled - QUALITY IDEAS UNIVERSALLY APPLY. The inductive scenario is "vertical" indicating that ideas must be selected and sequenced. This will force the organization to seek specific situations and bring them to resolution. Figure 4 illustrates the difference between vertical and horizontal.

Quality should be approached <u>vertically</u> not <u>horizontally</u>.

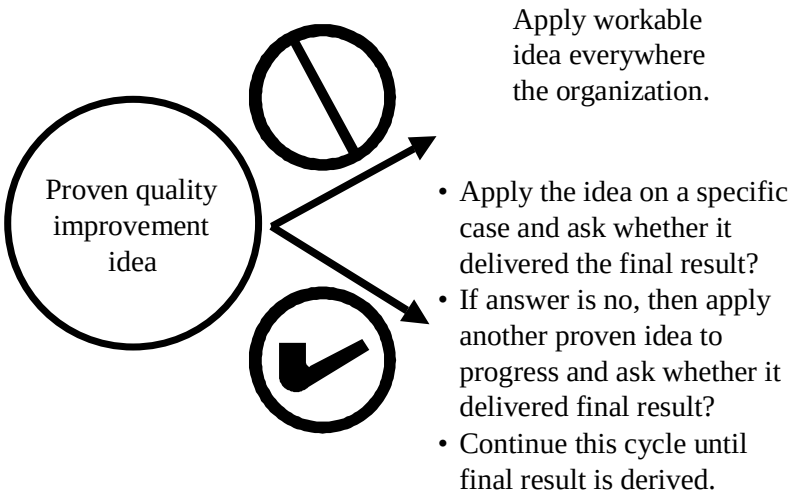

Figure 4 – Difference between vertical and horizontal

We can say that 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.

What is most alarming is that when advocates of the deductive approach are brought in to help with specific problems, they fail to demonstrate the applicability or the practicality of the very idea that they are espousing organization-wide. Unfortunately, leadership does not know enough to ask questions about the specifics and therefore, the merit of the idea or competence of the presenter never gets tested.

WHY ARGUE THE DIFFERENCE BETWEEN QUALITY APPROACHES

The first and foremost purpose of this interactive forum is to improve the worthiness 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 should be tested on a prototype scale to measure its applicability, validity, and uniqueness. Quality as a profession will benefit by the challenges of developing contexts. It will most certainly reduce waste generated by articulate deductive presenters.

HOW DO WE DEVELOP A CONTEXT?

To develop a context for a specific situation, we need to determine which of the quality elements are less than adequate or missing altogether to achieve a set of objectives. This is done through a series of hierarchical topics in a question format. Each topic is broken down into many subtopics. Table 1 identifies the structure of this format with key topics and corresponding subtopics. The answers to these questions help us generate the context. Once the context is developed for a specific organization, we are in the position to apply quality science ideas to improve performance.

To develop the context and corresponding working model successfully, we 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 for applying quality science are dynamic. They must be revised periodically in light of the progress made and the technological advances that have occurred. Even though the working model may change, the process of developing a context should remain robust.

Table 1 – Questions that determine the context

Topic	Topics	Subtopics
1	What is happening now?	• Infrastructure • Environment • Hierarchy of employee needs • Current quality attempts
2	What are the organizational needs with respect to quality?	• Perceived quality • Delivered quality • Produced quality • Grade of quality
3	What should we emphasize first?	• Quality System • Quality Improvement • Quality Planning • Quality Control
4	Which strategy must be used?	• Quality ideas developed elsewhere versus focus on our problems • Improve system versus improve performance • Inductive or deductive approach
5	What results are we likely to alter at the micro level?	• Quality (delivered, produced, graded, or perceived) • Productivity (speed, people) • Waste (material, time) • Cost (material, people, space)
6	What results are we likely to alter at macro level?	• Profitability • Market share • Environmental quality • Quality of life

The answers to the questions in Table 1 are utilized to come up with a *yes* or *no* response to the following:

1) Is market share a problem?
2) Is profit a problem?
3) Is customer satisfaction a problem?
4) Is image a problem?

There are 16 possible working models resulting from *yes* and *no* responses. 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
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 sound. The company 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 emissions do not meet 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 #11, the company should primarily improve the grade of quality.

EXAMPLE 2

Let us take a large electronic 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 needs improvement. The delivered quality is reasonably sound. 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 # 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 loopholes. 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, government services can run efficiently and cost less.
3	Is customer satisfaction a problem?	Yes, most of the time is spent waiting for the services rather than enjoying the services.
4	Is image a problem?	Yes, with the exception of few isolated successes.

SUMMARY

Quality ideas are universal. However, when they are not examined with respect to applicability for specific situations, their usefulness is limited. In fact, their implementation can be wasteful. On the other hand, when quality ideas are applied by first developing a context, they can produce dramatic results.

We developed four helpful suggestions to approach quality at a national or organizational level: 1) Do not automatically invest in a quality idea without first determining its timing and its applicability tested against your specific situations, (2) Experiment with appealing quality ideas before implementing them on a grand scale, (3) Apply the appealing quality improvement ideas inductively and let the understanding of general principles emerge, and (4) Apply proven quality ideas vertically before considering their horizontal implementation.

Next we showed how to develop a context for specific situations for any given company or a country. 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 simply *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) An inductive approach to quality as more effective weapon compared to deductive approach and 2) A development of the context and the model that directly improves organization's quality performance.