

Advanced TQM for the New Era
Towards Quality for Sales in Addition to Quality for Cost
through Enhancement of Customer Satisfaction

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1. Advanced TQM for the New Era

Dr. Ishikawa contributed towards establishing TQM (Japanese-way quality management). In addition, he insisted about the importance to raise the peak of the mountain of quality as well as to widen the base of the mountain. We had a big boom in quality in 1980 to 1990 in the world but, today, many industrialists do not look at quality concepts and methods with due excitement and just consider them as routine practices. In order to globally rejuvenate quality activities, we need to motivate quality experts in the leading companies in TQM.

In order to gain attention towards raising the peak of the mountain of quality, let me propose to establish a package of theories and methodologies that are even rough cut, but are based on strong fundamentals under the name of Advanced TQM (A-TQM). My endeavor is to appeal through this approach to the intellectual curiosity of the quality experts in the leading companies practicing TQM. In this presentation, let me show some examples of theories and methods which will be part of A-TQM.

2. Towards Quality for Sales in Addition to Quality for Cost through Enhancement of

Customer Satisfaction: Q1 (past quality), Q2 (present quality), and Q3 (future quality)

Needless to say, the objective of quality management is to enhance customer satisfaction, which in turn has considerable impact on the financial results of the organization. In the new era of quality, it will be the age not only to wipe out customer rage and dissatisfaction but also further enhance customer delight and satisfaction. Then, we enhance Quality for Cost (QfC) that is represented by failures which bring about extra cost due to warranty claims, recalling products, guarding against the repetition of past failures in new products and so on. In addition, we develop Quality for Sales (QfS) that is represented by the features of a new product which increases sales. In the highly competitive future environment emerging in the global market, there is a need to develop quality by integrating both the concepts of Quality for Sales (QfS) and Quality for Cost (QfC).

When we discuss of Quality by integrating both QfS and QfC, we should take it into consideration of the following two trends prevailing today.

- a. While we purchased many products for the first time in the 20th century, as we already own most of them, today, we decide to purchase new products to replace the old. Therefore, our selection of an item is more or less dependent on the product which we own.
- b. We must pay the attention to the difference of the meaning of quality between industrial use and public use. While the quality means mainly in negative sense like non-conformance, failure, complaints in industrial use, it is more widely used and it also includes positive sense such as multi- function, high performance, excellent user-friendliness, nice style and so on in public use. Discussing this we should revisit Metaphysics by Aristotle(384-322 BC) at Chapter 5 Philosophical Dictionary. He sums up quality into the two meaning such as

- 1) Difference of real substance, or, essence
- 2) Virtue and vice or good and evil

Kano, N; Seraku, N.; Takahashi F.; Tsuji, S.:(1984) “Attractive Quality and Must-Be Quality” *Hinshitsu, JSQC*, Vol. 14, No. 2, pp 147-156 (in Japanese)

English Translation: Kano, N., Seraku,N., Takahashi, F., Tshuji, S.(1996) “Attractive Quality and Must-be Quality” *Best on Quality, IAQ Book Series, ASQC Quality Press, IAQ, No. 7, pp. 165-186*

Remark: This paper is developed based on the following:

Noriaki Kano (2015) “The Future of Quality: Towards Quality for Sales in Addition to Quality for Cost through Enhancement of Customer Satisfaction “ 2015 Future of Quality Report; Quality Throughout!, p.p.70-78, ASQ

URL: <http://asq.org/future-of-quality>

3. Sales Model

At the simplest level, Sales is a function of Demand (D), Coverage (C), and Success Rate (SR), where D is the total potential amount of a product which might be desired by the market, C is the subset of that demand reached by marketing of a certain maker, and SR is then the ratio of actual sales of a product or a product group of the maker to its coverage. This is visualized by Fig. 1.

Remark) Thus, $SR * C / D$ is an equation for Market Share (MS). Conversely, realized Sales can be understood as

$(D * MS)$, and MS can be expressed as $(C / D * SR)$.

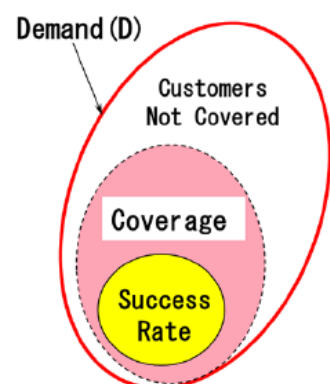


Fig. 1. Sales Model

The factors for Coverage (C) are various and some of them

are variables outside the realm of quality. Although marketing efficacy and brand strength are major determinants of how many customers reach (C), they are different by types of business such as B to B & B to C by products such as chemicals, equipment, vehicles, electric appliances, machinery, foods, houses and so on. A customer's initial selection of a specific brand and product among alternatives (SR) is likely to be shaped by the product's price and payment conditions (P&PC), delivery (Del) options and sales talk and servicing conditions(S&S) in addition to quality (Q).

As a whole, the nature of Sales as an output resulting from many inputs is visualized as an example in Fig.2. From this, we can easily understand that although quality is good, it does

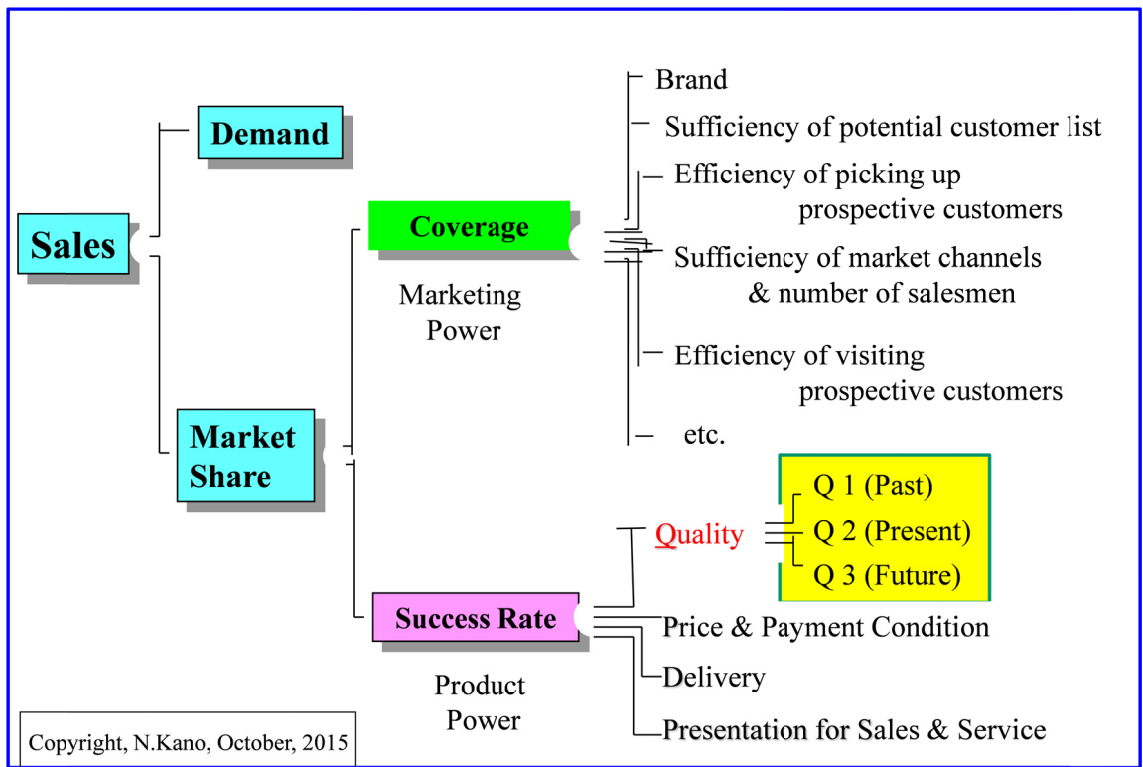


Fig. 2 Hierarchical Sales Structure Model (HSS Model)

not assure sales increase. That being said, however, quality still plays a critical role in the overall process of Sales.

Let us consider the particular case of replacement purchases, where customers seek to replace aging semi-durable products such as refrigerators, cars, or keyboards. In this case, we might divide the question of quality into “past quality” (Q1), or what the customer has experienced thus far of the quality of current product, “present quality” (Q2), or how attractive the customer

currently finds and confirms by trying to use the product relative to its competitors, and “future quality” (Q3), or which the customer cannot confirm at the purchasing point but how he/she expects a product to safely and reliably serve him or her as time elapses under expected or unexpected usage conditions. As we cannot clearly evaluate durability at the purchase point, it is also Q3.

For an example of how these different aspects of quality interact, we might consider a driver who has used a car from a particular brand for a certain number of years, and is now looking to replace it. In this case, the three Qs would be as follows:

Q1: The customer, having driven the car around for the period, is either content or unhappy, having experienced between zero and many problems with the vehicle.

Q2: A competing brand has a new model on offer, and the customer either finds said brand more attractive than the new model of his current brand, or vice a versa.

Q3: This is a quality of a product which may change after lapse of time in use under expected or unexpected conditions and is expected by customer at the time of purchase. Safety and reliability are typical example of Q3.

In the above case, assuming that the customer selects a brand only based on quality, even if the customer has a positive Q1, curiosity might still drive him or her to choose a competitor due to superior Q2. Conversely, if the customer has a bitterly negative Q1, he or she may start to investigate Q2 for its competitor.

For a car maker, the issue of greatest concern is when a customer who currently uses the brand’s car decides between replacing it with the brand’s new car or switching to a competitor’s model. In this case, the factors that influence the selection of brand will in general depend on these Q1, Q2, and Q3 in addition to other factors of product power as discussed above.

4. Discussion on Q1, Q2 and Q3

Let us now generalize our discussion of the three Qs.

What is Q1? Q1 is the customer’s impression of the current car, which can be further subdivided into Q1a, Q1b and Q1c:

Q1a: The customer’s perception of treatment received during the warranty period when compensation claims are filed, in terms of criticality of the problem, responsiveness and degree of resolution.

Q1b: The customer's perception of treatment for paid service in terms of criticality of the problem, responsiveness and degree of resolution

Q1c: The customer's overall perception of the product overall in terms of likes and dislikes, as dependent on the strengths and weaknesses of the product in usage, the provision of good or bad service, or the provision of appropriate or inappropriate information to the customer after purchase, leading to inconvenience and discomfort due to inappropriate design specifications, such as poor air-conditioning or difficult-to-read signs in small lettering on the dashboard. These are problems that cannot be solved by repair, rework or reform. In addition, there could be minor problems the customer thinks are not worth filing claims for. Style belongs in this category.

Amongst the above three, Q1a covers warranty claims that obviously lead to extra cost and hence lower profitability for the maker. If the cost is benchmarked against that of competitors, it will motivate the maker to reduce Q1a to enhance profit and control cost. For this purpose, cost is analyzed on the basis of problems as they occur in the relevant phases of production, with measures to prevent recurrence being widely investigated. In this context, Q1a can be thought of as a typical example of QfC. In addition, Q1a influences the buyer's replacement purchase decision. Therefore, Q1a also falls under QfS. On the other hand, the maker does not incur any cost at all for Q1b and Q1c. However, the maker will be rewarded or punished by the consumer's purchase decision based on both Q1b and Q1c, and thus these both fall under QfS.

What is Q2? New models with specialized attractive features may be released by various brands as replacement options for the customer. All the quality elements such as function, performance, user-friendliness, styling, visual appearance, sensory feelings, various dimensions including width, depth, and height, size, weight, safety structure, maintainability, environmental factors, running and scrap cost and so on may become features. For example, in the case of a car, automated driving is considered one of the hot features today. Evaluation of such features by customers falls under Q2 and influences brand selection. Therefore, Q2 is QfS. Fashion should be considered a very important factor by the maker when offering new features. This is especially the case in B to C, relative to B to B.

Finally, what is Q3? While the features of Q2 are confirmed with trial use before the decision of purchase, as for Q3 such as reliability and safety after using it, what we can do is to believe the seller's explanation and buy it or to suspect his/hers and not to do so. In case of buying it, we may encounter the troubles due to the failures or the deterioration of features or the accidents

to cause fatality or body injury or bring about property damage after lapse of time in use under expected or unexpected conditions.

Q3 cannot be confirmed on purchasing the product but can be confirmed in future, or, after the lapse of time in use and this is dependent on the degree of consumer's confidence about the safety and reliability of the product, including the risk of critical accident or failure related to newly introduced features.

Working in Q3 thus involves instilling conviction in the customer that the product is safe and reliable and this can be achieved through systematic activities such as application of reliability engineering, for example, Failure Mode and Effects Analysis (FMEA). There is no doubt that when a customer purchases a product, especially a safety-related one, that this confidence is an important key factor for brand selection. Therefore, this is a factor that falls under QfS. If an accident or failure happens or occurs in usage, however, it becomes Q1a for the purchased car as a factor under QfC. In addition, Q3 also includes the trends of governmental regulation or insurance in case of accidents. This affects the brand too.

Finally, a visualization of the above Qs follows in Fig. 3.

One more question remains: how important are these aspects of quality, relative to each other? As Q3 is evaluated after a probable brand is proposed, we might regard our comparison as strictly being between Q1 and Q2. In reality, however, this question lacks a single answer, as the relative weight of Q1 and Q2 is likely to differ by customer. Even for the same person, Q1 and Q2 may possess differing levels of importance for different products.

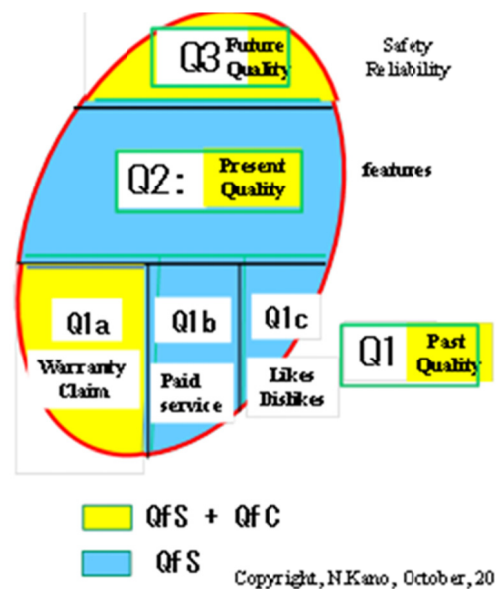


Fig. 3 Quality for Sales vs Quality for Cost: Q1, Q2, and Q3

As shown in Fig. 3., the area of quality activities should be expanded to QfS in addition to QfC, which is already the responsibility of quality professionals. It is not realistic to expect that all activities will be their responsibility: however, quite a wide area can be covered by them. In this case, we should start preparing for the new challenge.

5. Questionnaire Survey to Consumers about the impact of Q1, Q2 and Q3 on Customer Loyalty

It is our ultimate objective that the above developed theory is to be applied by a maker to expand its quality activities not only for reducing negative aspect of quality to mitigate customer rage and dissatisfaction and then to lower cost but also creating and enhancing positive aspect of quality to enhance customer delight and satisfaction and then to increase sales.

Based on this objective, I talked with a few executives from companies promoting TQM enthusiastically, about the application of the theory. Everybody showed his/her interest in it, but he/she suggested me to clarify it by a practical example which shows what kinds of input data are necessary to apply it and to outline what kinds of useful information will be obtained as a result of its application.

Then, taking consumer durables as an example, I developed a questionnaire as attached in the annex which is prepared based on the above theory for replacement purchase. Then, the two surveys were conducted with the questionnaire: One survey was conducted with my Old Boys and Girls who graduated from my seminar in 1972 to 1996 and its sum-up statistic table is shown in Table 1a. The other one was conducted with the executives and senior managers of one Hitec company who could respond to the questionnaire in English and its sum-up table is shown in Table 1b and Table 2.

Observation from the Table 1a:

Let us denote “loyal customer” who selects the same brand car and “competitor switcher” who select the competitor car after replacement.

Impact of Q1, Q2, and Q3 on Loyalty

Q1: For most of the respondents who are satisfied with Q1, the loyal customers and competitor switchers are almost equal while, for a few respondents who are neutral or dissatisfied with Q1, there are no loyal customers at all.

Q2: The final selection of “loyal” or “competitor” is dependent on the features of which maker is the first favorite.

Q3: Most are no concerned about Q3.

Table 1a. Survey: Impact of Q1, Q2, and Q3 on Loyalty
 Respondents: Kano OBOG (Old Boys and Girls: 1972-1996)
 In case of car replacement

KANO Lab OBOG 1972-96		Q2: Maker of the Favorite Features				No favorite features	Total
		Loyal		Competitor			
Q3: Concern about safety/ reliability		Concerned	No concern	Concerned	No concern		
Q1: Satisfaction Current Product	Satisfied	3(3/0/0)	21(14/4/3)	1(0/0/1)	16(1/12/3)	8(3/3/2)	49(21/19/9)
	Neutral		1(0/1/0)		1(0/1/0)		2(0/2/0)
	Dissatisfied		1(0/1/0)	1(0/1/0)	1(0/1/0)		3(0/3/0)
Column Total		3(3/0/0)	23(14/6/3)	2(0/1/1)	18(1/14/3)	8(3/3/2)	54(21/24/9)
Ssmi-Total		26(17/6/3)	61%	20(1/15/4)	5%	8(3/3/3)	54(21/24/10)

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How to read each cell:

For example, the cell description of 21(14/4/3) for the row of “Satisfied” of “Q1: Satisfaction with Current Product” and the column of “No Concern” of “Loyal” of “Q2: Maker of the Favorite Features”:

21: the number of respondents

14: the number of loyal customers

4: the number of competitor switchers

3: the number of respondents who pend replacement, namely, continue to use the cars which they have used.

Table 1b. Survey: Impact of Q1, Q2, and Q3 on Loyalty
 Respondents: Staff of a Hih Tech company in Taiwan who can respond to the questionnaire in English

Taiwan H I-Tec Com apay Staff		Q2: M aker of the Favorite Features				No favorite features	Total
		Loyal		Competitor			
Q3: Concern about safety/ reliability		Concerned	No concern	Concerned	No concern		
Q1: Satisfaction with Current Product	Satisfied	14 (12/1/1)	2 (2/0/0)	12 (3/8./1)	16 (1/12/3)		44 (18/21/5)
	Neutral	4 (4/0/0)	1 (1/0/0)	7 (1/6/0)	3 (1/2/0)	2 (1/0/1)	17 (8/8/1)
	Dissatisfied	2 (2/0/0)		2 (1/1/0)			4 (3/1/0)
Column Total		20 (18/1/1)	3 (3/0/0)	21 (5/15/1)	19 (2/14/3)	2 (1/0/1)	65 (29/30/6)
Ssm i-Total		23 (21/1/1)	91%	40 (7/29/4)	18%	2 (1/0/2)	65 (29/30/6)

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Observations from the Table 1b:

Q1: While about two third of the respondents are satisfied with Q1, about one third are not satisfied with Q1. This table data shows that Q1 seems not to be determinant for a loyal customer or not.

Q2: As is the same observation with Table 1a., the final selection of “loyal customer” or “competitor switcher” is dependent on the features of which maker is the first favorite.

Q3: Most are not concerned about Q3 (reliability or safety)

Table 2. Impact of Q1a, Q1b and Q1c on Q1
In case of car replacement

How to read an element of each cell of Table 2:

For example, let us pick up the first element (5, 3) 1(1/6/0) for the row of “No” of “Q1a: Warranty Claim Service” and the column of “No” of “Q1b: Paid Service”.

Taiwan Hitech Company Staff		Q1b: Paid Service					
		No	yes				
			5	4	3	2	1
Q1a: Warranty Claim Service	NO	51 (28/20/3) 55%	(5, 3) 1(1/4/0)	(5, 5) 1(1/0/0)	(4, 3) 1(0/1/0)		
			(4, 5) 4(3/1/1)	(4, 4) 4(2/2/0)	(4, 2) 1(0/1/0)		
			(4, 4) 6(2/3/1)	(4, 4) 3(3/0/0)	(3, 3) 3(1/2/0)		
			(4, 3) 2(1/1/0)		(3, 2) 1(0/1/0)		
			(4, 1) 2(2/0/0)				
			25 (17/6/2) 68%				
	Yes	5	(4, 5) 2(1/1/0)	(5, 5) 1(1/0/0)			
		4	(4, 4) 3(2/1/0)	(5, 5) 1(0/1/0)	(4, 3) 1(1/0/0)	(4, 4) 1(1/0/0)	
			(4, 3) 5(2/3/0)			(2, 2) 1(1/0/0)	
		3	(3, 3) 1(0/1/0)				
		(3, 3) 1(0/0/1)					
	2	(2, 4) 1(1/0/0)					
	1						
					14 (7/7/0) 50%		
						12 (4/7/1) 33%	

(5,3) represents

(Q1c, Q1)

1(1/6/0) is the same with Table 1a, namely,

1: number of respondents who answer (Q1c, Q1) as (5, 3)

1: the number of loyal customers

6: the number of competitor switchers

0: the number of respondents who pend replacement, namely, continue to use the cars which they have used.

Q1a	Evaluation to treatment of dealer for warranty claim
Q1b	Evaluation to treatment of dealer for paid maintenance
Q1c	Likes or dislikes to the current product and services other than warranty claim(Q1a) or paid maintenance(Q1b)

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Remark: Respondents: The same respondents with the ones of Table 1.

Observations from the Table 2:

Correlation of Q1c with Q1a, Q1b: The comparison of the three areas of high (Q1a, Q1b), middle (Q1a, Q1b) and low (Q1a, Q1b) highlighted in blue, in white and in yellow, respectively, shows some correlation of Q1a and Q1b with Q1c.

Impact of Q1a and Q1b on Loyalty: The loyalty percentage of the above three areas are

68, 50, and 33 %, respectively, where loyalty percentage (LP) is calculated as follows:

$$LP = \frac{\text{(the number of loyal customers)}}{\text{(the number of respondents)}} \times 100\%$$

A few unusual responses: For example, one respondent answered to the questions of Q1a, Q1b, Q1c and Q1 as follows:

“no experience with warranty claim”, “no experience with paid service”, “good”, and “will not consider”, respectively.

However, he/she was finally a loyal customer.

Overall Discussions on the above observations:

1. Within the limited area of the respondents, from the loyalty percentage shown as: 61% and 5% for Kano Data, 91% and 18% for Taiwan Data, respectively. for the current maker or competitor as the first favorite, it was clear that the loyalty was dependent on the features (Q2) of which maker was the first favorite.
2. As the number of respondents were not enough to discuss impact of Q1 on loyalty, we observed such an interesting trend as the impact of (Q1a, Q1b) on loyalty percentage as shown in Table 2.
3. Q3: Most are no concerned about Q3 (reliability safety)

How to apply the Theory of Q1, Q2 and Q3:

- a. The above survey shows the possibility to find a general trend of the impact of Q1, Q2, and Q3 on loyalty segment by segment by expanding the size of respondents.
- b. Assume the results shown in Table 1a, **Table 3. Individual Data of Q1a, Q1b, Q1c, Q1, Q2 and Q3** or Table 1b. and Table 2. to be obtained from the customers of your company products.

In this case, what and how do you find about quality of your products? Do you find anything new? If so, it is worthwhile for your company to introduce this theory for review your quality activities comprehensively.

respon dent No.	Q1a	Q1b	Q1c	Q1	Q2	Q3
5	6	3	4	2		
7	2	6	2	4		
9	6	5	4	4		
11	6	4	4	4		
12	4	6	4	3		
13	5	6	4	5		
13	5	3	2	3		
15	6	6	4	5		
16	6	6	4	1		

c. For the company use of this theory,

you may consider to use it customer by customer with use of Excel Format as is shown in Table 3 in addition to statistically summing up like above tables.

The above survey clarifies which aspect of quality should we improve, Q1, Q2, or Q3. In the model below, let us discuss how to improve each of the problems.

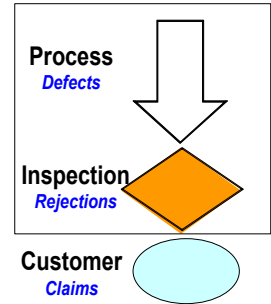
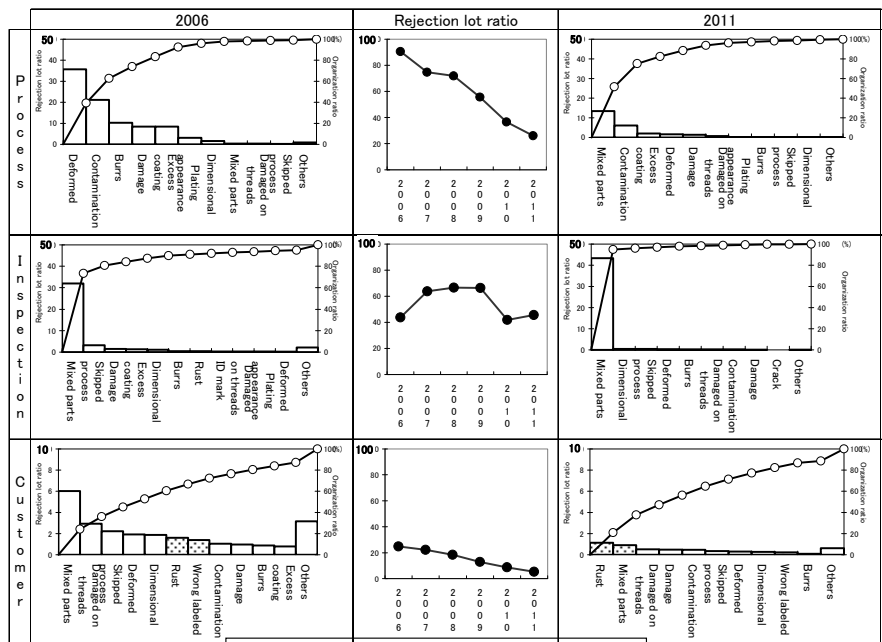


Fig. 4. The Most Basic Model of Quality Assurance

6. Application of Vertical Evaluation on Q1a (Warranty Claims linked with Rejection in Inspection and Defect] in Process

As the Q1a problem due to production is linked with defect in process and rejection in inspection, we can clarify the vertical structure of the problems and may get indication where are the possible root causes.



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Fig. 5..Bird's Eye View: Horizontal and Vertical Evaluation
 Ref. Noriaki KANO, Noriyasu Kondo, "Ikki-Tsukan" Diagnosis of Quality Assurance Status through Consistent Analysis of In-process, Inspection and Claim Non-Conformities " Presented at JSQC Research Presentation Conference Tokyo, 26, May, 2012

Following is the application of vertical evaluation to warranty claims in Meidoh Company, bolt supplier to Toyota Motors

7. Application of Attractive Quality Creation based on Yoneyama Model and Kano Model to Create New Features

As one of the methods to create Customer Delight, according to Yoneyama Model:

<http://www.juse.or.jp/english/archives/#anc01>.

we explore latent requirements of customers and then create quality element with attractive quality based on Kano Model. As an application of this method, let us share the thesis by my two former supervising students such as Takashi Saito and Takashi Ohki in 1999. Their research started with how to renovate an umbrella which was developed exhaustively, and room for development seemed to be left in nothing further. According to Yoneyama Model, we did not interview with any pedestrians with umbrellas in rainy days, but just we observed them and take note about their behaviors. On the note of their observations, we found many issues, Specially we were very impressed with the difference between mother with a baby and mother without a baby. Then, we decided to change our subject from innovating umbrella to creating a rain gear for a mother with a baby. Then, we carefully continued to observe mothers with babies in rainy days and we found that they have less freedom to behave themselves, and are constrained by more baggage than others. In addition, their difficulties are not only limited in a rainy day but also even in fine weather. Then, we developed All Weather Knapsack for Mother with Baby (AWKMB) shown as Fig. 6.



Fig. 6 All Weather Knapsack for Mother with Baby (AWKMB)

Next one is another case of Attractive Quality Creation. A new tractor which were invented by an Indian company, Mahindra and Mahindra, in 2006, which was named as “Shaan.” This tractor is very unique in a multi-purpose vehicle useful not only for agriculture, but also for transporting goods, people, and the family. M&M realized that the customers have the latent requirements such as a built-in trolley, higher road speed, and a soft-top canopy to be added to their new tractor model, in addition to their products for farming, These initiatives assisted M&M with becoming the world’s largest seller of tractors in 2009.

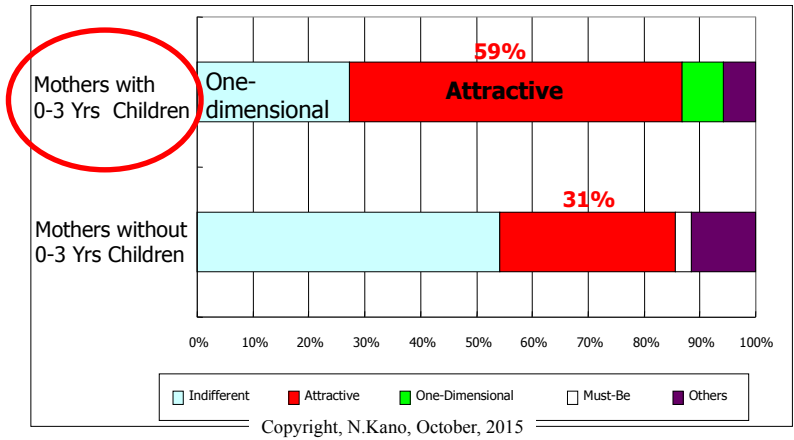


Fig. 7. Evaluation of AWKMB by mother with or without babies

8. How to Work for Q3 Issues

Actual Illustrative, Painful Example: The personal information protection law was established in Japan in May 2003. Executives/managers who bring back documents which contain personal information were sensitive to this issue. For shredder makers, this was a business opportunity and a shredder was developed for family-use. This was only a downsized version of the office use machine, and the opening slit for feeding the paper was kept the same. Sales steadily increased and this penetration into a new segment seemed to be very successful. However, on March 10 and July 15, 2005, two infant children lost their fingers. (For more on this case, the reader is encouraged to see the news release by the Ministry of Economic, Trade and Industry, at:

<http://www.pref.miyagi.jp/uploaded/attachment/7256.pdf>.

Remark: The author owes to Acn Prof. Kazuyuki Suzuki for learning the above example.

In order to avoid Q3 issues, we must do thorough prevention by prediction with FMEA and we need to further strengthen cooperation between quality management and reliability engineering.

9. Conclusion

I wish that my theory of Q1, Q2, and Q3 which I discuss in this article will be helpful to stimulate the intellectual curiosity of quality experts and to expand their activities in this area.

Acknowledgement: The author is indebted to Janak Mehta, Chairman, International Academy for Quality, for his involvement in discussion which was very helpful to polish the concept of Q3.

Annex: Questionnaire of Q1, Q2, and Q3 for a Consumer

1. Select an Item among the followings which you will replace, or have replaced:
[] car, [] motorcycle, [] other consumer durables (describe item)
2. Q1a: Did you experience Warranty Service (cl. Recall)?
[] Yes ⇒ Go to 3. [] No ⇒ Got to 4
3. Q1a: How were you satisfied with Warranty Service?
[] Very Satisfied, [] Satisfied, [] Neutral, [] Dissatisfied, [] Very dissatisfied
4. Q1b: Did you use paid service? [] Yes ⇒ Go to 5 [] No. ⇒ Go to 6
5. Q1b: How were you satisfied with paid service?
[] Very Satisfied [] Satisfied [] Neutral [] Dissatisfied [] Very dissatisfied
6. Q1c: What is your perception of the product overall in terms of likes and dislikes, excluding Q1a and Q1b.
[] Excellent [] good [] neutral [] dislikable [] very dislikable
7. Q1: Taking into account the responses of the above No 3 to No. 5, how do you consider item before replacement
[] very favorably [] quite favorably [] neutral [] not very favorable [] will not consider
8. Q2: For the new model of which maker, do you like its features?
[] The same maker ⇒ Go to 9a
[] The competitor ⇒ Go to 9a
[] I did not like features of any makers ⇒ 9c
9. Q2: For the features :
9a. Q3: Are you concerned about its reliability or safety?
[] Yes ⇒ Go to 9b [] No ⇒ Go to 10 [] I am not specially concerned ⇒ Go to 10
9b. Q3: Explanations about reliability and safety from the maker:
[] Understood ⇒ Go to 10. [] Did not understand ⇒ Go to 9c.
9c. Q2: Then, what did you do?
[] Investigated the feature of the other models ⇒ Go to 8
[] Go to 10
10. Finally which maker you replaced into?
[] The same maker as previously purchased
[] The competitor
[] Suspended replacement and continued to use the current product
11. Profile of a responder
Sex: [] Male [] Female
Age: [] 20 s [] 30 s [] 40 s [] 50 s [] 60 s or over