QFD and Administrative Knowledge Management

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ABSTRACT
TQM has been widely applied to administrative divisions. We will discuss in this report about an approach in Quality Function Deployment (QFD) on handling administrative issues from a standpoint of knowledge management. We shall discuss an approach by QFD to handle administrative issues in consumer orientation from the viewpoint of knowledge management. A method of establishing administrative quality targets is proposed by grasping actual and potential demands and needs of citizens which are tacit knowledge and utilizing quality table by preponderant orientation. To achieve this, enhancement of quality of administrative works to secure quality of output by administration is desirable. Quality deployment to actualize people’s needs is applied to the former; and work function deployment which actualizes it is applied to the latter.

Keywords: QFD, Administration, Knowledge Management, TQM

1.0 Introduction

Since Japanese TQC was re-transferred in the 1980s, TQM has spread widely in non-manufacturing divisions in the USA. Recently, it appears that TQM is applied even also to administrative divisions. We will discuss in this report about an approach in Quality Function Deployment (QFD) on handling administrative issues from a standpoint of knowledge management. In other words, we will apply techniques of new product development and their methods of thinking from the standpoint of consumer orientation in the field of administration.

As manufacturing industry was converted from producer-orientated to consumer-orientated, administration needs to be changed from one for politicians to one for citizens (customers). How to grasp citizens’ actual and potential demand and needs will certainly become necessary. However, because citizens’ demand is unlimited, preponderant orientation will become necessary. Accordingly, under the harmony (of quality, quantity and cost) with economy, citizen orientation is required from the medium- and long-term view, and not just by meeting their short-term requirements.

To achieve this, it is necessary to establish concrete administrative quality targets, for which the quality tables of QFD will be used. Enhancement of quality of administrative output and quality of administrative works to secure these is desirable to achieve these targets. Quality Deployment; QD to grasp citizens’ needs correctly will be applied to the former, while Work Function Deployment to actualize this will be applied to the latter. The general term of these is so-called Quality Function Deployment; QFD in a wide sense [1-7].

Professor Ikujiro Nonaka et al. had provided logical bases [8] for development of new products where tacit knowledge has been made to be explicit knowledge in knowledge management through socialization and externalization, and furthermore, new knowledge is created through combination and internalization. The concept of tacit knowledge and explicit knowledge is a new idea, but Akao et al. separately proposed QFD for 35 years, which has already been widely used not only in Japan but also in the USA as a concrete method of developing new products.
Fig. 1: SEC1 Model and QFD, Conversion from Tacit Knowledge to Explicit Knowledge

It has been clarified that, when QFD is explained, explanation of processes to the design quality establishment can be made very clearly in accordance with the SEC1 Model shown in Figure 1, which is the core of Mr. Nonaka’s Theory. We have already announced the contents of general manufacturing industry at the 7th-ICIT (International Conference on ISO9000 and TQM)[9] and the contents [10] of Health Care at the 8th-ISQFD respectively. We will approach this as administrative knowledge management this time.

2.0 Socialization : Conversion from tacit knowledge to tacit knowledge

Table 1 Conversion from Primitive Data to Demand Quality (Scene Deployment)

<table>
<thead>
<tr>
<th>Contents of Dream</th>
<th>Scene</th>
<th>Requirements Items</th>
<th>Demanded Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takes a long time to visit the Prefectural Office from the boundary</td>
<td>who: User of the Prefectural Office, where: Means of transportation, when: Preparation of contact networks</td>
<td>Difficult to visit the Prefecture Office</td>
<td>Location is inappropriate</td>
</tr>
<tr>
<td>Takes a long time to visit the Prefectural Office from the boundary</td>
<td>who: User of the Prefectural Office, where: Means of transportation, when: Preparation of contact networks</td>
<td>Substantiation of road networks</td>
<td>Easy to attend the office, Easy to commute to the school, Possible to travel comfortably, The network of the city is good, Difficult for you to get lost on that road, The means of transportation is many</td>
</tr>
<tr>
<td>Takes a long time to visit the Prefectural Office from the boundary</td>
<td>who: User of the Prefectural Office, where: Means of transportation, when: Preparation of contact networks</td>
<td>Substantiation of means of transportation</td>
<td>Easy to use transportation, Possible to use trains effectively, The trams are easy to use, Traffic conditions are always stable</td>
</tr>
<tr>
<td>Takes a long time to visit the Prefectural Office from the boundary</td>
<td>who: User of the Prefectural Office, where: Means of transportation, when: Preparation of contact networks</td>
<td>Smoothness of transportation</td>
<td>Little congestion, It is possible to travel the road smoothly, Get to easy about traffic information, Traffic accidents are unlikely to occur, There are many trains in service, Easy to use the station</td>
</tr>
</tbody>
</table>
From the viewpoint of customer orientation, it is important to collect and research information from citizens first to reflect them in administrative policies, and utilize them for future improvement. However, requirements from each citizen vary and it is actually in the ‘tacit’ state. You collect information from ‘primitive information’ [3], which is what customers express ‘customers’ demand quality’ in their own words. Furthermore, you will draw potential demand [4] in the ‘Scene Deployment Method’ of Mr. Ootui and Mr. Ono. Here, as an example, we will discuss the method of one of the data from ‘convenient’ among the ‘dream contents’ in respect of the ‘measures to actualize ‘dreams’ [11] proposed by people in the Gifu Prefecture’ as a primitive data.

(1) Collection of primitive data
When you collect primitive data, you should record data of ‘gender and age’, etc. as the information resource beforehand. Here, for example, as a primitive data, we will discuss about the case of ‘We would like preparations in the Prefectural boundary area to be made for a contact network of roads, etc. by which it takes a long time to visit the Prefectural Office’.

(2) Scene deployment
You assume a scene of each primitive data from the standpoint of 5W1H (What, Where, When, Who, How, and Why). You assume a scene where a ‘user of the Prefectural Office’ demands for ‘preparations of a contact network’ because of ‘to the Prefectural Office’ and the ‘difficulty of going to the Prefectural Office’.

(3) Abstracting requirements
‘Use of the Prefectural Office’, ‘substantiation of a contact network’, ‘substantiation of means of transportation’, etc. are abstracted from the above scenes, while from the ‘means of transportation within the Prefecture’, and ‘at the time of attending the office’, ‘Smoothness of means of transportation’, etc. can be abstracted as a ‘demand item’. However, the above items are enumerative, and not arranged. They are in the ‘tacit’ state.

3.0 Externalization : Conversion from tacit knowledge to explicit knowledge

3.1 Externalization (I) : Externalization of customers’ words

3.1.1 Abstracting ‘demand quality’
The preceding requirements are not only demands for quality but also those for delivery dates, costs, etc. You abstract requirements like memos without being sticky about quality too much from the beginning. Allowing for that, you abstract ‘demand quality’ as language expressions of customers. You will be able to abstract, as demand quality, ‘It is easy to use the Prefectural Office’ from the requirement, i.e. ‘use of the Prefectural Office, and similarly ‘It is easy to attend the office’, ‘It is possible to attend the office comfortably’, etc., etc. from ‘substantiation of a road network’, ‘a lot of means of transportation’, etc., etc. from ‘substantiation of means of transportation’, and ‘little congestion’ from ‘smoothness of means of transportation’ respectively.

In this way, it is possible to abstract a greater number of potential demand qualities than citizens are thinking. This means that you need to put a priority order by researching the degree of importance without taking up all the requirements.

3.1.2 Preparation of demand quality development table : conversion to explicit knowledge
Demand qualities sought by the above method are in a separate state and cannot form explicit knowledge as they are. You therefore need to group them in KJ like method [Note 1]. In the progress of this classification, they will be arranged for the first, second, third time and so on, and will be collated in the demand quality deployment table which has the phase structure shown in Figure 2. In the steps of (1) to (2), customer information is still separate and therefore tacit knowledge. Only when they are collated in the demand quality deployment table, what information is useful will be clarified.
(1) Establishment of planning quality

We have discussed a method of grouping primitive information into demand qualities. Please therefore utilize it for research of voices or requests from citizens. Because administration has library services, we will explain below an example of the library researched by Inayoshi [12], [13] at this university. Please apply this to actual administrative services.

Regarding demand quality which has been ‘externalized’ to become explicit knowledge, you establish planning qualities that satisfy citizens and are superior to other public facilities. To do so, it is necessary to research the degree of interest (the degree of importance) of customers. Research methods include the method of questionnaires or AHP method (Analytic Hierarchy Process) [14], but 5 phase evaluation values are shown here. This focuses upon what has a high degree of importance, and at the same time, carries out comparison between the library of this university and those of other universities, and examines which quality should be enhanced as a strategy.

Establishment of planning quality is carried out as shown in the right hand column in Table 2. For example, the degree of importance of the ‘PC in the library’ is relatively high (at 5.8%) in demand quality and the level of this university is ‘2’, which means that it is inferior to those of libraries of other universities. Accordingly, improvement from ‘2’ to ‘4’ was aimed for as planning quality in order to differentiate from other libraries. As the rate of an increase in the level is ‘2.0’, technical improvement shall be made preponderantly. Furthermore, the degree of sufficiency of demand quality, i.e. ‘there are specialty materials’, which is the secondary item of ‘there is sought information’, is ‘3’, which is about the same level as that of other libraries. However, the degree of importance is the highest value (at 8.5%). We have therefore decided to level it up by ‘1.33’ times from ‘3’ to ‘4’ and strengthen PR activities for this item.

(2) Preponderant orientation in development

The importance of the developer’s viewpoint (generally companies) is different from the degree of importance seen from the customers (users). Even if customers think that a certain thing is the most important, it is not an important point for development from the standpoint of the library concerned, where it is already the highest level and superior to other libraries. The method shown in [Note 2] that is used in QFD in general is used as the degree of importance which includes the intention of the aforementioned library. The library will therefore carry out preponderant orientation towards items whose weight is high (10.8%) such as ‘in-library PCs are easy to use’.

Fig. 2: Preparation of Demand Deployment Table by the Grouping in the KJ like Method.
3.2. **Externalization (2): Externalization of words of techniques**

(1) Abstracting quality characteristics

Characterization of quality is required to technically clarify customer demand that is tacit knowledge. Quality characteristics are ‘yardsticks to evaluate quality’, but it is difficult to carry out quality characterization easily. We therefore use ‘elements that can be yardsticks to evaluate quality’ as quality elements, which are words that look like quality characteristics.

### Table 2 Establishment of Planning Quality

<table>
<thead>
<tr>
<th>Quality Element Dept.</th>
<th>Adaptable of information</th>
<th>I-n library facility substantiation degree</th>
<th>Librarians support degree</th>
<th>Comparative analysis</th>
<th>Quality planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demanded Qual. Dept.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is sought books</td>
<td>0.02</td>
<td></td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Materials are the most up-to-date</td>
<td>0.05</td>
<td></td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Poor materials or good materials</td>
<td>0.00</td>
<td></td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>There are many specialty materials</td>
<td>0.06</td>
<td></td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Good atmosphere</td>
<td>0.02</td>
<td></td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>All library facilities are easy</td>
<td>0.06</td>
<td></td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Necessary software can be used</td>
<td>0.00</td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>It is possible to have a rest</td>
<td>0.02</td>
<td></td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Ask some question easy</td>
<td>0.00</td>
<td></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Quality element importance</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You will abstract quality elements from the preceding demand qualities with the use of the quality characteristics conversion sheet. As shown in Table 3, you will abstract quality elements such as ‘the number of books in the specialty fields’ and ‘the specialty materials substantiation degree’ from the tertiary item of demand quality, i.e. ‘It is possible to pursue specialty materials’, and ‘the number of PCs’, ‘the number of PCs/Floor’, etc. from ‘there are a lot of PCs’. It is difficult to measure ‘the specialty materials substantiation degree’, etc. immediately. However, you are not able to grasp true quality that customers are looking for without using such words.

### Table 3: Abstracting Quality Elements from Demand Quality

<table>
<thead>
<tr>
<th>Demand quality deployment table</th>
<th>Abstracting quality element</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are sought books</td>
<td>Number of books in specialty fields</td>
</tr>
<tr>
<td>Learning books are substantial</td>
<td>Specialty materials substantiation degree</td>
</tr>
<tr>
<td>General books are substantial</td>
<td>Number of kinds of learning books</td>
</tr>
<tr>
<td>Magazines are substantial</td>
<td>Learning materials substantiation degree</td>
</tr>
<tr>
<td>Newspapers are substantial</td>
<td>Number of contracted titles</td>
</tr>
<tr>
<td>Full of latest information</td>
<td>Freshness of materials</td>
</tr>
<tr>
<td></td>
<td>Materials freshness degree</td>
</tr>
</tbody>
</table>
(2) Preparation of quality element deployment table

As shown in Figure 3, you will prepare a quality element deployment table by grouping quality elements and phasing them into the primary group, secondary group, and so on. Important technical information which used to be tacit knowledge can be externalized in this way. This is shown in the upper column in Table 2.

Fig. 3: Preparation of Quality Element Deployment Table by Grouping in the KJ Method
4. Combination: Conversion from explicit knowledge to explicit knowledge

4.1 Preparation of quality table

The quality table shown in Table 2 is the combination of the demand quality deployment table and quality element deployment table. What is also important is that the quality table has an important role called ‘from the customers’ world to the technical world’, that is, a role to convert to a different world through a matrix. The demand quality deployment table represents the ‘citizens’ world’, that is, what has been abstracted from citizens’ demands, and the proper method is that this is presented from the citizens’ side.

On the other hand, quality characteristics, i.e. the quality element deployment table is a technical world concerning administration. It is therefore difficult to actualize all the citizens’ demands, which vary. Accordingly, it is significant that the Prefecture which performs Prefectural administration examines in anticipation of the future on behalf of the citizens.

In cases of product development, technicians tend to ignore customers whose technical knowledge is poor, and put emphasis on their own techniques. As a result, in some cases they are unable to satisfy customers. In administration, all the citizens living in that region are the subject. Their influence is therefore not small, and the way in which citizens’ demands under a hard-and-fast rule are handled creates a great dissatisfaction. Planning and design of administration should be made from the standpoint of market-in (orientation towards citizens’ viewpoint) in accordance with what is sought from the citizens and not from the standpoint of product out (orientation towards the administration’s viewpoint).

Whether planning should be accepted or not will be decided by citizens. Planning quality should therefore be decided from the demand quality deployment table. Classification of converting it into concrete technical words and deciding realizable design quality from the quality element deployment table is important.

4.2 Conversion of the degree of importance

For the conversion of the degree of importance of demand quality, the scores of ‘5,3 and 1’ will be given to the marks, ‘◎, O, and ∆’, which represent the corresponding strengths showing the strength of the relationship, and the independent mark distribution method shown in [Note 3] is used. As shown in Table 2, the corresponding strength will be multiplied by the demand quality weight in each line, and the total of the vertical columns for each quality element will be the degree of importance of the quality element. The degree of importance of ‘the library materials substantiation degree’ is 1.38(5%), and preponderant orientation towards the items of the high degree of importance will be implemented.

5.0 Establishment of Design Quality

The planning quality of ‘In-library PCs are easy to use’ is ‘4’. It is therefore necessary to raise the level from ‘2’ by 2.00 times. The quality element which corresponds to this in the strength is ‘the perusal environment substantiation degree’, ‘the learning environment substantiation degree’, etc. and enhancement of these will be the focus. The Library A’s present value of the demand quality, i.e. ‘there are a lot of specialty materials’, is ‘3’ as other libraries, but the degree of importance of this is high at 0.035(0.085 %). Demand from students is strong. The level of ‘4’ is therefore aimed for as planning quality. Where the corresponding relationship is traced to embody this, ‘the library materials substantiation degree’, ‘from the 2.0 books/(student)’, which is the present value of Library A in respect of ‘the library materials substantiation degree’ as design quality to ‘5.0 books/(student)’ have been decided to be aimed for.

(5) Internalization: Conversion from explicit knowledge to tacit knowledge
- Towards creation of new knowledge –

5.1 Listing up ideas

After establishing design quality, you need to actualize it by technique. To do so requires concentration of flashes of ideas and conceptions, and a number of conceptual methods are proposed as its methodology. We used reviewed dendrogram (called RD hereinafter) as a tool with which we carry out internalization of the SECI model concretely. RD shown in Figure 4 is a superior method proposed by Nihon Hikoki, and has been used for the last 20 years [15].
5.2 Preparing a design dendrogram by Qs and As

Firstly, you grope for ideas to achieve a designated design quality value per quality element such as ‘the library materials substantiation degree (enhancement from 2.0 books per person to 5.0 books per person)’, ‘the non-library materials substantiation degree (enhancement from 500 titles per annum to 700 titles per annum)’. In Figure 4, ‘digitizing materials’ is proposed as an idea and ‘How will it be done?’ is asked as a question. The answer was ‘scanned using a scanner’. Furthermore, to a question, ‘Aren’t librarians busy with their normal tasks?’, the answer was ‘We will examine whether student workers are acceptable or not’. Then, a survey concerning employment of student workers was carried out.

<table>
<thead>
<tr>
<th>Quality element</th>
<th>Design quality value</th>
<th>Conception tree</th>
<th>Design dendrogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library materials substantiation degree</td>
<td>20 books/person~50</td>
<td>How will it be done? Scanning using a scanner</td>
<td>Research of contractors' existence is required</td>
</tr>
<tr>
<td>Non-library materials substantiation degree</td>
<td>500~700</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development of digitizing materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Is it a concrete digital</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>To collect materials by a digital medium</td>
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</tr>
</tbody>
</table>

Fig. 4: Reviewed Dendrogram (R.D.)

5.3 Abstracting bottleneck techniques

Professor Yasushi Furukawa called the techniques that cannot be solved by prior techniques (bottle)neck techniques. He clarified this at an early stage of development and recommended to proceed with the development by putting emphasis on this. What is solved will be accumulated and utilized as technical materials or technical standards and as ‘explicit knowledge’.

5.4 Internalization and knowledge creation

As the processes of Qs & As clarify, what is accumulated as ‘explicit knowledge’ is nothing but the small part of the whole volume, and the most part is ‘internalized’ as ‘tacit knowledge’. No design dendrogram is usually made as above and most of them are forgotten. However, by making an RD, utilization of a numberless ideas which have been internalized will lead to ‘creation of tacit knowledge’. Then, by intersecting with ‘tacit knowledge’ from new customers, ‘creation of new knowledge’ will be made.

6. Work function deployment

Japanese Industrial Standards of QFD have recently been legislated [16]. This is evaluated as a major result of QFD. The prior QFD had been classified into quality deployment and QFD in a narrow sense, but the latter is now called ‘work function deployment’. This expression is therefore used in this paper. The majority of these standards correspond to so-called quality deployment, and do not refer to quality of works in depth. The authors et al. have always been defining ‘work quality elements’, and therefore discuss from this standpoint.
Quality in wide sense

Quality in a narrow sense

Quality of products — Quality for products them

Quality of work

Activities to secure quality of products

Planning, Design, Purchase, Production, etc

Quality of each activity

Fig. 5: Networks of Qualities and Qualities of Works

As shown in Figure 5, Quality function deployment QFD is assumed to consist of quality deployment, which is a ‘network of qualities’ of products themselves, and work function deployment QFD, which is a ‘network of qualities of works’. ISO9000 before 1994 belongs to the latter category, but the interest in it was not high.

Table 4: Work Quality Elements

<table>
<thead>
<tr>
<th>Work Function</th>
<th>Pursuit of work objectives</th>
<th>Work quality elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>To secure a budget</td>
<td>To secure a suitable budget</td>
<td>Suitability of the secured budget</td>
</tr>
<tr>
<td>To manage human resources</td>
<td>To secure a budget suitably</td>
<td>Suitability of securing a budget</td>
</tr>
<tr>
<td>To secure facilities</td>
<td>To manage suitable human resources</td>
<td>Suitability of managing human resources</td>
</tr>
<tr>
<td>To draw up operational plans</td>
<td>To secure sound facilities</td>
<td>Authenticity of secured facilities</td>
</tr>
<tr>
<td>To implement operational plans</td>
<td>To secure facilities soundly</td>
<td>Authenticity of securing facilities</td>
</tr>
</tbody>
</table>

Table 5: Quality element deployment table

<table>
<thead>
<tr>
<th>Work function deployment table</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>To secure operational resources</td>
<td>To secure a budget</td>
<td>To manage human resources</td>
</tr>
<tr>
<td>To operate a library</td>
<td>To secure facilities</td>
<td>To draw up operational plans</td>
</tr>
<tr>
<td>To construct the collection of books</td>
<td>To implement operational plans</td>
<td>To manage planned implementation</td>
</tr>
<tr>
<td>To present purchased materials</td>
<td>To project the collection of books</td>
<td>To decatalogue materials</td>
</tr>
</tbody>
</table>

Adaptability of information

- Library materials adaptability degree
- Non-Library materials adaptability degree
- Information freshness degree
- Past materials substantiation degree
- Specialty materials substantiation degree
- Adaptable of overseas information
- Transmitted information
- Accomplishability degree
- Materials management

Adaptability degree
Katsuyoshi Ishihara [17] extended the VE method which clarifies product functions to work function, and the quality function deployment in a narrow sense by Shigeru Mizuno was born [1]. There are objectives for works, and whether it is a ‘good work’ or not is judged by how it fits for a work objective. Oofuji et al. analyzed work functions and presented a method of seeking guarantee items by ‘pursing work objectives’ [6].

We deem these very guarantee items to represent ‘qualities of works’ which show whether the works are good or not, and defined these as ‘work quality elements’ as ‘elements that can be a yardstick to evaluate qualities of works’ [12]. This means that we apply the preceding ‘elements that can be yardsticks to evaluate qualities’ to qualities of works as ‘quality elements’.

Here, we show the preceding example of the library in table 4. Work function is analyzed, and work objectives are further pursued to abstract work quality elements. The right hand table shows a matrix of this and quality elements of output.

In cases of administration, work function must be clarified first. You can only analyze works of each of your divisions. You cannot complete all these in a day. However, it may be possible to cover all administration, ideally if you carry out your thought of TQM by colligation by starting from the terminal.

7.0 Construction of quality system by networks of qualities

In this paper, we introduced the SECI model by QFD on the basis of examples with centering on conversion from tacit knowledge to explicit knowledge. The new product development system by QFD consists of all processes from users’ demand as a starting point to product deployment, technical deployment, cost and reliability deployment. Please refer to literature [1] to [7] for additional information. Figure 6 shows this in brief.

![Comprehensive Quality Deployment System](image)

‘Quality deployment’ is to establish design quality by quality table, and convey important points from the standpoint of
Quality control has been developed from total quality control, TQC, to TQM, because quality control is concerned with not only manufacturing but also all processes of planning, design, manufacturing, inspection, sales, etc. beginning with marketing. ISO has not been sufficiently mentioned in respect of concrete method to secure quality of new products. We have therefore made research to connect ISO with QFD [18]–[20]. Management quality has been recently questioned, and ‘quality of management’ has come to the fore. Because our research relating to this has been announced at the ICIT, we omit it here [21].

### 8.0 Conclusion

We consider that administration is for politicians at present, but it has to be reformed to become administration for citizens (customers). We have therefore discussed an approach by QFD to handle administrative issues in consumer orientation from the viewpoint of knowledge management.

We discussed a method of establishing administrative quality targets by grasping actual and potential demands and needs of citizens which are tacit knowledge and utilizing quality table by preponderant orientation. To achieve this, enhancement of quality of administrative works to secure quality of output by administration is desirable. Quality deployment to actualize citizens’ needs is applied to the former, and work function deployment which actualizes it is applied to the latter.

The above is an approach from the citizens’ viewpoint. Efforts from the administration are, however, necessary to be made to satisfy citizens from the standpoint of policy control and vision management by the administration in a medium- and long-term view under the harmony (quality, quantity and cost) with economy.

[Note 1] Firstly, you rewrite the items of ‘demand quality’ into cards such as Post-It notes, etc. As shown in figure 2, you try to collect similar items. ‘It is possible to use trains effectively’, ‘there are a lot of means of transportation’, etc. are similar. You therefore group items whose contents are close. Further, where there is a card which integrates them, you will make it represent the group. Where there is no card, you make a card which represents them. For example, you will make ‘It is easy to use means of transportation’ a representative card. This is called the ‘affinity card’ among the new QC seven tools. You will also make a ‘affinity card’ for the card group close to them; ‘it is possible to travel comfortably’, etc. You will also find a ‘affinity card’ which integrates these further, i.e. ‘convenient traffic’.

[Note 2] You give ‘1.5’, ‘1.2’ and ‘1.0’ to ‘importance ◯’, ‘ordinary state O’, and ‘blank’ respectively, and let (the evaluation score of the degree of importance) x (the ratio of the level-up) x (the valuation score of the sales point) the absolute weight, and the total of the resultant ratios the demand quality weight to which the intention of the developer’s viewpoint is added. For example, in the case of ‘In-library PCs are easy to use’, it will be 0.058 x 2.0 x 1.5 = 0.174 (10.8%), and in the case of ‘there are speciality materials’, it will be ‘0.085 x 1.33 x 1.2 = 0.136 (8.4%)’. Then, preponderant orientation towards high weighting items will be adopted.

[Note 3] In the independent mark distribution method, as shown in Table 2, in the line of ‘there are sought materials’, if ‘◇ (5), O (3) and △ (1)’ are multiplied by ‘0.02’ respectively, the answers will be ‘5 x 0.02 = 0.10, 3 x 0.02 = 0.06 and 1 x 0.02 = 0.02’. Then, other lines will be calculated in the same way. The degree of importance of the ‘library materials substantiation degree’ is the total of the results of the vertical columns, i.e. (0.10 + 0.06 + 0.16 + 0.52 + 0.31 + 0.14 + 0.04) = 1.38 (0.05).
References


Author’s Background

Prof. Yoji AKAO is the Professor at the Graduate School of Business Administration, Asahi University, Japan. Along with the late Dr. Shigeru Mizuno, Dr. Yoji Akao is the founder of QFD. As far back as the 1960s, he was exploring ways to apply powerful Japanese problem solving algorithms to designing products right the first time. Initially using a “fish bone” diagram, his more complex analyses led to a matrix to identify the design elements which would impact customer satisfaction the greatest. Dr. Akao is one of the few to receive the prestigious Deming Prize for Individuals as well as the Best on Quality Award from International Academy for Quality. He was also awarded the inaugural Distinguished Service Medal from the American Society for Quality. He is an author of many published articles and books, and is chairman of the International Council for QFD and the senior advisor to the QFD Institute. Two distinguished awards have been established in recent years in his honor. The Akao Prize® is awarded to individuals around the world who have demonstrated Excellence in their practice and dissemination of QFD for many years. The Akao Scholarship for QFD rewards university students for excellence in their QFD study and research.