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Hong Kong Society for Quality



Q_F_D Quality Table


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22nd March 2013

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Basics of QFD

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Aim of QFD

To complete a quality system from design to production so as to assure the finished product could meet users' satisfaction



Customer Satisfaction

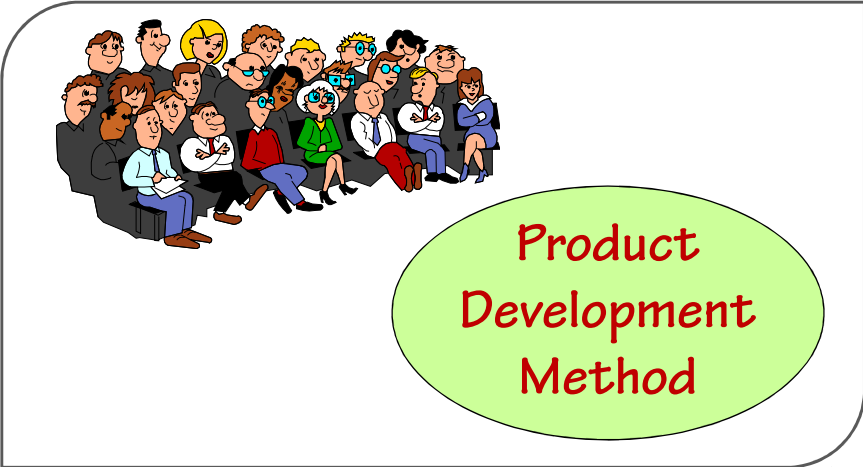
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What is QFD?




Product Development Method

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The Way QFD Works

To convert users' requirements into counterpart characteristics so as to determine the design quality for the product



&


Based on the counterpart characteristics, systematically deploy the correlations among the quality of each functional components & that of the individual parts as well as each of the process elements

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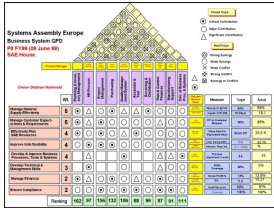
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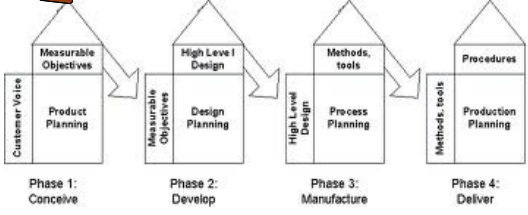
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What is QFD?







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Quality Table

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Quality Table or
Commonly Known As "HOQ"

Systems Assembly Europe
Business System QFD
P8 FY99 (09 June 99)
SAE House

Owner: Dietmar Harvstedt

| | Strategic Manager | Planning & Inventory Management | HR Process | Project Management | Purchasing | Quality Management | Logistics & Transport | Research & Development | Plan & Control | Finance | Manufacturing | Procurement | Proc. & Systems | Customer Support | Measure | Target | Actual |
|---|-------------------|---------------------------------|------------|--------------------|------------|--------------------|-----------------------|------------------------|----------------|---------|---------------|-------------|-----------------|------------------|-------------------------------|-----------|--------|
| Manage Material Supply Effectively | 5 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Material OT @ P08 | 93% | 88% |
| Manage Customer Expectations & Requirements | 5 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | OT to Customer Request | 96% | 88% |
| Effectively Plan SAE Resources | 4 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Value Add Per Equivalent Hour | 34.6K EUR | 33.5 K |
| Improve total flexibility | 4 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Cap. Turnover | 75% | 66.75% |
| Develop & Improve Business Processes, Tools & Systems | 4 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Process Improvement Count | 44 | 15 |
| Develop Technical & Management Skills | 3 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Skills Coverage | 90% | 0% |
| Manage Finances | 2 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Gross Profit % | 13% | 13.3% |
| Ensure Compliance | 2 | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Audit Pass Rate | 90% | 91% |
| | | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | Coverage | 100% | 100% |
| Ranking | | 162 | 97 | 156 | 132 | 106 | 88 | 96 | 87 | 91 | 111 | | | | | | |

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Core Components of Quality Table

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Demanded Quality Deployment Chart

Extract, organize & work out the degree of importance for qualities that demanded by customers

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Business System QFD
RS FY98 (09 June 98)
SAE House


| WL | Process Manager | HR Processes | Product Management | Purchasing | Quality Management System | Support & Maintenance | Research & Development | Production Control | Manufacturing | Plant & Equipment | Procurement | Finance | Marketing | Customer Support | Measure | Target | Actual |
|----|--|--------------|--------------------|------------|---------------------------|-----------------------|------------------------|--------------------|---------------|-------------------|-------------|---------|-----------|------------------|--------------------------------|----------|--------|
| 5 | Manage Internal Supply Inventory | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Revenue OT to PFD | 82% | 88% |
| 5 | Manage Customer Expectations & Requirements | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Revenue OT to Customer Support | 86% | 88% |
| 4 | Inventory Plan M/T Resources | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | OT to Customer Support | 34.6K DT | 33.5 K |
| 4 | Improve total efficiency | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Cost Transferrable | 75% | 66.7% |
| 4 | Develop & Improve Business Processes, Tools, Systems | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Process improvement count | 44 | 10 |
| 3 | Develop Technical & Management Skills | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Skills Coverage | 80% | 0% |
| 2 | Manage Finances | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Stress Profit % PFD | 12% | 13.2% |
| 2 | Ensure Compliance | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Health/Incidents Coverage | 100% | 81% |
| | Ranking | 162 | 97 | 156 | 132 | 106 | 88 | 96 | 87 | 91 | 111 | | | | | | |

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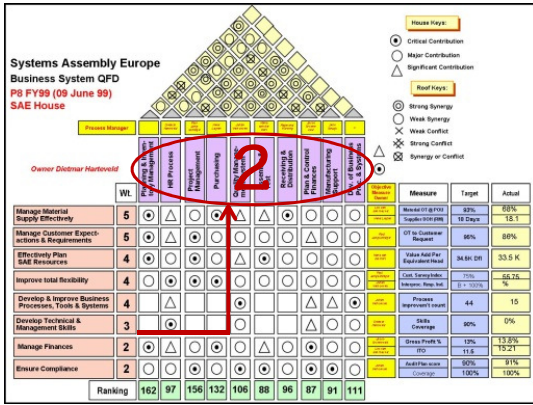
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Quality Element Deployment Chart

Convert demanded qualities into quality items & then organize into quality elements




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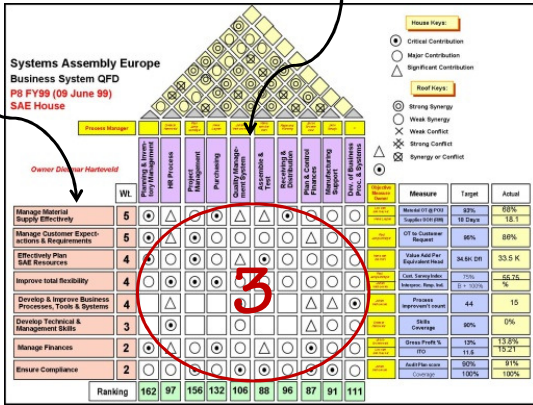


Quality Chart

Determine degree of correlation between each pair of demanded quality & quality element

Determined Quality Deployment Table

Quality Element Deployment Table



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Other Components of Quality Table

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Quality Planning Chart

Analyze performance & formulate strategy

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SAE House

| Owner | Weight | Process Manager | HR Processes | Project Management | Purchasing | Quality Management System | Logistics & Distribution | Manufacturing | Product Development | Customer Service | Measure | Target | Actual |
|---|--------|-----------------|--------------|--------------------|------------|---------------------------|--------------------------|---------------|---------------------|------------------|-------------------------------|---------|--------|
| Manage Material Supply Efficiency | 5 | | △ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Material Yield | 82% | 90% |
| Manage Customer Expectations & Requirements | 6 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 1st Customer Complaint | 18 Days | 15.7 |
| Effectively Plan SAE Resources | 4 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Make Order Per Available Hour | 34 %/hr | 33.5 K |
| Improve total flexibility | 4 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Unit Throughput | 66.72 | 66.72 |
| Develop & Improve Business Processes, Tools & Systems | 4 | | △ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Process Improvement team | 15 | 15 |
| Develop Technical & Management Skills | 3 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Sales Coverage | 80% | 87% |
| Manage Finances | 2 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Share Profit % | 12% | 13.7% |
| Ensure Compliance | 2 | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Inventory Turn | 11.8 | 11.7 |
| | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Customer Satisfaction | 80% | 81% |
| | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Customer | 100% | 100% |
| Ranking | | | 162 | 97 | 156 | 132 | 106 | 88 | 96 | 87 | 91 | 111 | |

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5. Roof

Review
the degree of
contradiction
between
quality elements

| Owner Distinctive Horizons | WI | Process Manager | | | | | | | | | | Measure | Target | Actual | | | |
|---|----|-----------------|--------------------|------------|---------------------------|--------------------------|-----------------------|---------------------|-------------------|-------------|-------------------|---------|--------|--------|---|---|---|
| | | HR Process | Project Management | Purchasing | Quality Management System | Logistics & Distribution | Manufacturing Process | Product Development | Service & Support | Procurement | Finance & Systems | | | | | | |
| Manage Material Supply Effectively | 5 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Manage Customer Expectations & Requirements | 5 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Effectively Plan SAE Resources | 4 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Improve total flexibility | 4 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Develop & Improve Business Processes, Tools & Systems | 4 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Develop Technical & Management Skills | 3 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Manage Finances | 2 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Ensure Compliance | 2 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Ranking | | 162 | 97 | 156 | 132 | 106 | 88 | 96 | 87 | 91 | 111 | | | | | | |

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Identification of Important Quality Elements


Those of
high weights
are
the important
quality elements

| Owner Distinctive Horizons | WI | Process Manager | | | | | | | | | | Measure | Target | Actual | | | |
|---|----|-----------------|--------------------|------------|---------------------------|--------------------------|-----------------------|---------------------|-------------------|-------------|-------------------|---------|--------|--------|---|---|---|
| | | HR Process | Project Management | Purchasing | Quality Management System | Logistics & Distribution | Manufacturing Process | Product Development | Service & Support | Procurement | Finance & Systems | | | | | | |
| Manage Material Supply Effectively | 5 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Manage Customer Expectations & Requirements | 5 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Effectively Plan SAE Resources | 4 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Improve total flexibility | 4 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Develop & Improve Business Processes, Tools & Systems | 4 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Develop Technical & Management Skills | 3 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Manage Finances | 2 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Ensure Compliance | 2 | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ | △ |
| Ranking | | 162 | 97 | 156 | 132 | 106 | 88 | 96 | 87 | 91 | 111 | | | | | | |

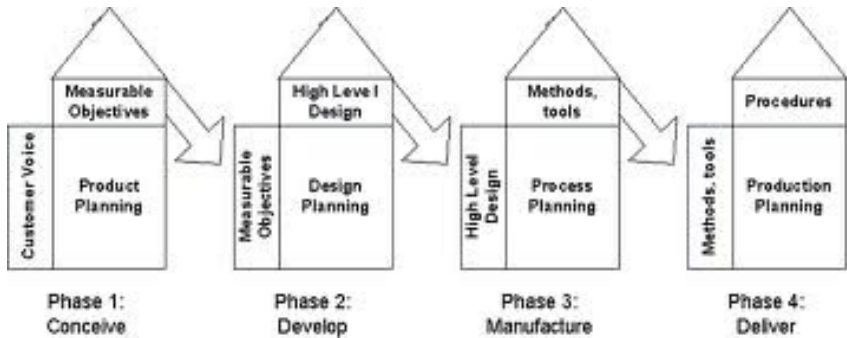
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Further Deployment:
From 1st HOQ to 2nd, 3rd, ... HOQs



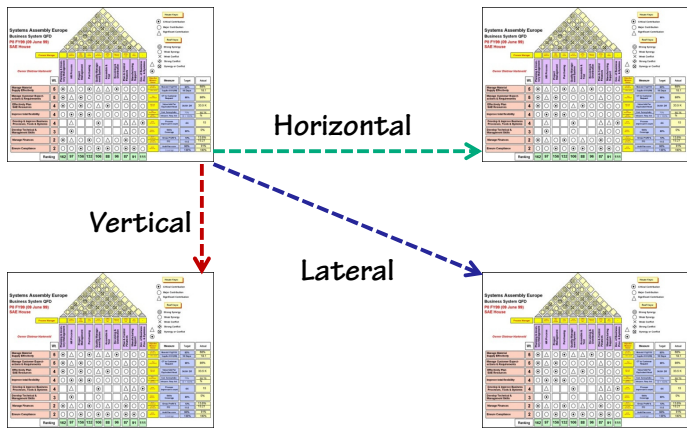
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Deployment of HOQs



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Quality Planning of QFD

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Collecting Customer Opinions

- 1 Degree of Concern**
with each demanded quality
- 2 Degree of Satisfaction**
with the performance of both the company
& competitors of each demanded quality



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Determine Two Strategic Issues



1 Quality Level

2 Selling Tactics


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1. Calculate Improvement Rate



Planned Quality

Satisfaction with Company's Performance

E.g. $5/3 = 1.67$


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2. Allocate Sales Points





1.5
 1.2


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Weight of Each Demanded Quality






Degree of Concern \times Improvement Rate \times Sales Point

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Quality Planning of QFD

| Quality Element Deployment Table | | Degree of Importance | Quality Standards | | | | | | | | | | Weight | |
|----------------------------------|----------------------------|----------------------|-------------------|-------------|-----------|-----|-----|-----------------|-----------------|------------------|---------------|--------------|-------------------------|--------|
| | | | Benchmarking | | | | | Planned | | | | | | |
| | | | Competitors | | | | | Planned Quality | | | | | | |
| Primary | Secondary | | This Company | Bridgestone | Panasonic | BMW | RAM | Louis Galliano | Planned Quality | Improvement Rate | Skilled Point | Above Weight | Demandor Quality Weight | |
| Easy to transport | Not cumbersome | 1.10 | 3 | 2 | 2 | 4 | 4 | 2 | 3 | 1.00 | | | 1.10 | 0.59 |
| | Anyone can assemble | 0.83 | 3 | 2 | 1 | 3 | 3 | 2 | 3 | 1.00 | | | 0.83 | 0.45 |
| | Light weight materials | 3.29 | 3 | 2 | 1 | 5 | 3 | 3 | 4 | 1.33 | 0 | | 5.27 | 2.81 |
| | Does not take up space | 1.44 | 3 | 2 | 2 | 4 | 4 | 3 | 3 | 1.00 | | | 1.44 | 0.77 |
| Comfortable ride | Easy to pedal | 2.04 | 3 | 3 | 5 | 3 | 3 | 3 | 4 | 1.33 | | | 2.72 | 1.45 |
| | Can select components | 1.06 | 3 | 5 | 4 | 2 | 3 | 2 | 3 | 1.00 | | | 1.06 | 0.56 |
| | Less vibration | 2.86 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1.00 | | | 2.86 | 1.53 |
| | Good chassis balance | 2.30 | 3 | 4 | 4 | 2 | 3 | 3 | 3 | 1.00 | | | 2.30 | 1.23 |
| Stylish design | Does not hurt/burn | 7.51 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 1.33 | 0 | | 12.02 | 5.46 |
| | Curvy fluid design | 4.43 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 1.33 | | | 5.91 | 3.16 |
| | Has premium quality feel | 13.30 | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 1.67 | 0 | | 33.26 | 17.77 |
| | Looks good with clothing | 13.30 | 3 | 2 | 3 | 3 | 4 | 4 | 5 | 1.67 | 0 | | 33.26 | 17.77 |
| Easy to use | Can carry things | 2.87 | 3 | 3 | 3 | 1 | 2 | 1 | 3 | 1.00 | | | 2.87 | 1.42 |
| | Can ride immediately | 1.85 | 3 | 3 | 2 | 4 | 4 | 3 | 3 | 1.00 | | | 1.85 | 0.99 |
| | Has many options | 1.28 | 3 | 5 | 4 | 1 | 4 | 2 | 3 | 1.00 | | | 1.28 | 0.68 |
| Hard to breakdown | Durable materials | 4.98 | 3 | 4 | 4 | 2 | 4 | 3 | 4 | 1.33 | 0 | | 7.91 | 4.17 |
| | Hard to chip paint | 1.13 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 1.00 | | | 1.13 | 0.60 |
| | Durable parts | 2.35 | 3 | 4 | 4 | 2 | 4 | 3 | 3 | 1.00 | | | 2.35 | 1.23 |
| Does not soil clothing | Does not cause oil stains | 5.06 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 1.33 | | | 6.74 | 3.6 |
| | Does not catch clothing | 5.93 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 1.33 | | | 7.99 | 4.27 |
| | Does not splash back water | 21.32 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 1.67 | 0 | | 53.90 | 28.48 |
| Quality Element Weight | | 100.00 | | | | | | | | | | | 187.15 | 100.00 |

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An Example of Applying QFD on Understanding Patients' Satisfaction with Surgery



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Background Information

This study was conducted by Ms Yukie Kozawa, PhD student of Prof. Yoji Akao, at a hospital in Japan. Yukie reported this study at the International Conference on ISO9000 & TQM at Shanghai in 2005.

Source: Akao, Y., & Kozawa, Y. (2005). QFD and knowledge management: A QFD case study on a survey of surgery patient satisfaction. Paper presented on *The 10th International Conference on ISO 9000 & TQM, 28th-30th March, Shanghai, China.*



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Medical Expert

- 1 Medical experts have been traditionally focused on technology-driven treatment advancement
- 2 However, their efforts do not always fully satisfy the patients' needs

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Patients' Needs

1 It is undeniable that the main concern
Of the patients is being cured

2 But, it is not the only concern

3 Patients have other concerns
which are related to treatment



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**Understanding Patients' Needs
Is Important**

1 Technological development of
medicine & surgery techniques

2 Provision of hospital, rehabilitation
& other related care services




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QFD Role in This Study



- 1 Define the qualities demanded by patients for surgery services
- 2 Translate the demanded qualities of patients into the quality elements of surgery services


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Extract Demanded Qualities from VOC



- In 20's
- No surgery experience

I want unnoticeable scar, ..., I want to wear bikini


Extracted Items

- Good Appearance
- Can Wear Bikini
- Small Wound

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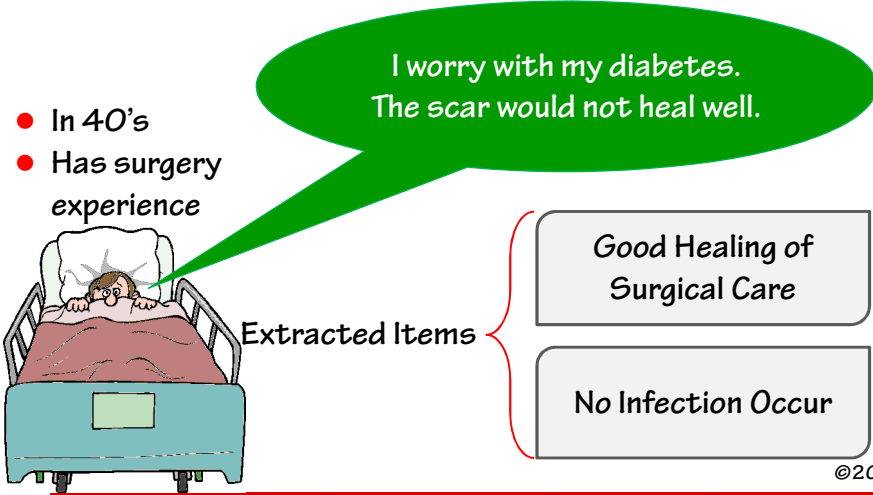
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Extract Demanded Qualities from VOC

- In 40's
- Has surgery experience



I worry with my diabetes.
The scar would not heal well.

Extracted Items


Good Healing of Surgical Care

No Infection Occur

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Create Demanded Quality Deployment Chart

| No. | Data | Source Data | Scene | Required items | Required quality |
|-----|--|---|---------------------------------|--|--|
| | | | SWIH | | |
| 1 | Not experienced surgery Student in twenties | Want painless surgery | During surgery After surgery | No pain | No pain |
| 2 | Not experienced surgery Woman in twenties | Want unnoticeable scar Want to wear swimsuit | After surgery | Want scar I can wear bikini with | Good appearance Can wear swimsuit Small wound |
| 3 | Experienced surgery Woman in sixties | Helped me with toilet when I couldn't walk by myself. Helped me wipe off | After surgery | Want all kinds of help when I can't move | Good toilet care Good cleanliness care |
| 4 | Experienced surgery Man in forties | Waiting for me at work or home, so want to get back quick | After surgery | Want to choose operative method if endoscopy is used | Can leave hospital soon |
| 5 | Experienced surgery Man in forties | I'm worried that with diabetes, the scar won't heal well | During surgery After surgery | Don't want complications from another illness | Good healing of surgical care No infection occurs |
| 6 | Experienced surgery Man in sixties | Right after coming to, I saw a patient ... | After surgery | Right after coming to, I could get up sputum by myself | Breathing easy |


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Create Demanded Quality

Deployment Chart Affinity Diagram



| No. | Data | Source Data | Scene | Required items | Required quality |
|-----|--|--|---------------------------------|--|--|
| | | | 5WH | | |
| 1 | Not experienced surgery Student in twenties | Want painless surgery | During surgery After surgery | No pain | No pain |
| 2 | Not experienced surgery Woman in twenties | Want unnoticeable scar Want to wear swimsuit | After surgery | Want scar I can wear bikini with | Good appearance Can wear swimsuit Small wound |
| 3 | Experienced surgery Woman in sixties | Helped me with toilet when I couldn't walk by myself. Helped me wipe off | After surgery | Want all kinds of help when I can't move | Good toilet care Good cleanliness care |
| 4 | Experienced surgery Man in forties | Waiting for me at work or home, so want to get back quick | After surgery | Want to choose operative method if endoscopy is used | Can leave hospital soon |
| 5 | Experienced surgery Man in forties | I'm worried that with diabetes, the scar won't heal well | During surgery After surgery | Don't want complications from another illness | Good healing of surgical care No infection occurs |
| 6 | Experienced surgery Man in sixties | Right after coming to, I saw a patient ... | After surgery | Right after coming to, I could get up sputum by myself | Breathing easy |


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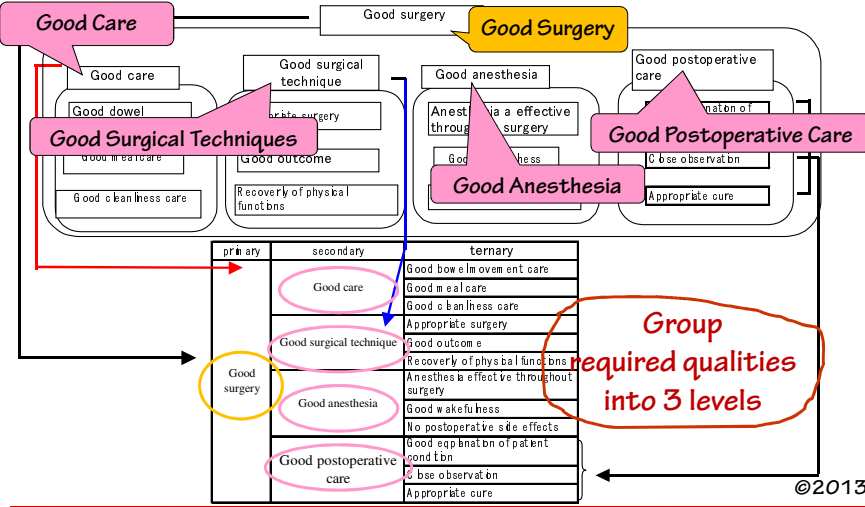
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2 Reference Only
Create Demanded Quality

Deployment Chart






| primary | secondary | tertiary |
|--------------------------|-------------------------|--|
| Good care | Good surgical technique | Good bowel movement care |
| Good surgical techniques | Good anesthesia | Good meal care |
| Good anesthesia | Good postoperative care | Good cleanliness care |
| Good postoperative care | | Appropriate surgery |
| | | Good outcome |
| | | Recovery of physical functions |
| | | Anesthesia is effective throughout surgery |
| | | Good wakefulness |
| | | No postoperative site effects |
| | | Good explanation of patient condition |
| | | Close observation |
| | | Appropriate cure |

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2 Create Demanded Quality
Deployment Chart

| primary | secondary |
|------------------|--------------------------------|
| No pain | No pain on movement |
| | Effective medicine |
| | Attention given to pain |
| Quick recovery | Can move soon |
| | Can eat soon |
| | Can leave hospital soon |
| Good surgery | Good care |
| | Good surgical technique |
| | Good anesthesia |
| | Good postoperative care |
| Small wound | Good appearance |
| | Can wear swimsuit |
| | inconvenient in clothes |
| No complications | Breathing easy |
| | No infection occurs |
| | Good healing of surgical wound |


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3 Identify Important Demanded Qualities



- 1

Patients of a hospital
- 2


Employees of a company who have undergone surgery before
- 3

Employees of a company who have not undergone surgery before

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3 Reference Only
Identify Important Demanded Qualities


Aggregated Weight of the Importance of the Required Qualities

| Required quality | Degree of importance | Overall quality | | | Quality of planning | | | | |
|------------------|--------------------------------|-----------------|---------|---------------------|---------------------|---------------|-------------------|-------------------------------------|------|
| | | hosp. A | hosp. B | Quality of planning | Ratio of level-up | Selling point | Unadjusted weight | Adjusted weight of required quality | |
| No pain | No pain on movement | 0.015 | 4(0.06) | 4(0.06) | 4(0.06) | | | 1.5 | 0.01 |
| | Effective medicine | 0.043 | 4(0.17) | 4(0.17) | 4(0.17) | | | 4.3 | 0.04 |
| | Attention given to pain | 0.042 | 4(0.17) | 3(0.13) | 4(0.17) | | | 4.2 | 0.04 |
| Quick recovery | Can move soon | 0.028 | 4(0.11) | 4(0.11) | 4(0.11) | | | 2.8 | 0.02 |
| | Can eat soon | 0.035 | 4(0.14) | 4(0.14) | 4(0.14) | | | 3.5 | 0.03 |
| | Can leave hospital soon | 0.047 | 5(0.24) | 5(0.24) | 5(0.24) | | | 4.7 | 0.04 |
| Good surgery | Good care | 0.048 | 4(0.19) | 3(0.14) | 5(0.24) | 1.25 | ◎ | 9 | 0.08 |
| | Good surgical technique | 0.099 | 3(0.30) | 4(0.40) | 4(0.4) | 1.33 | ○ | 14.9 | 0.13 |
| | Good anesthesia | 0.102 | 4(0.41) | 4(0.31) | 4(0.41) | | | 10.2 | 0.09 |
| | Good postoperative care | 0.092 | 4(0.37) | 4(0.37) | 4(0.37) | | | 9.2 | 0.08 |
| Small wound | Good appearance | 0.025 | 4(0.1) | 4(0.1) | 4(0.1) | | | 2.5 | 0.02 |
| | Can wear swimsuit | 0.01 | 4(0.04) | 4(0.04) | 4(0.04) | | | 1 | 0.01 |
| | inconvenient in clothes | 0.045 | 4(0.18) | 4(0.18) | 4(0.18) | | | 4.5 | 0.04 |
| No complications | Breathing easy | 0.059 | 4(0.24) | 4(0.24) | 4(0.24) | | | 5.9 | 0.05 |
| | No infection occurs | 0.152 | 4(0.61) | 4(0.61) | 4(0.61) | | | 15.2 | 0.13 |
| | Good healing of surgical wound | 0.159 | 3(0.48) | 3(0.64) | 4(0.64) | 1.33 | | 21.2 | 0.18 |
| overall quality | | 1 | 3.8 | 3.9 | 4.0 | | | | |

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4 Reference Only
Translate Demanded Qualities into Quality Elements

| Primary | Secondary | Tertiary | Quality Elements | Quality Elements |
|-------------------------|-------------------------|---|---|---|
| | Good care | Good toilet care | Appropriate toilet care | Appropriate care |
| | | Good mealtime care | Appropriate mealtime care | |
| | | Good cleanliness care | Appropriate cleanliness care | |
| Good surgical technique | Good surgical technique | Good postoperative course | Favorable postoperative course | Surgical techniques reliability |
| | | Cure of pre-op illness | Recovery of body function | |
| | | Recovery of physical functions | Symptoms alleviated | |
| Good care | Good anesthesia | No vomiting or shaking after operation | Good wakefulness | Prevention of infection |
| | | Effective anesthesia throughout operation | Appropriate anesthesia throughout operation | Effectiveness of medicine |
| | | Fully awake and alert | Appropriate anesthesia after operation | |
| Good postoperative care | Good postoperative care | Doctor visits often | Appropriate patient observation | Explanation of measures against complications |
| | | Good explanation of condition | Appropriate explanation of postoperative course | Prevention of infection |
| | | Appropriate treatment | Appropriate postoperative cure | Speedy treatment |

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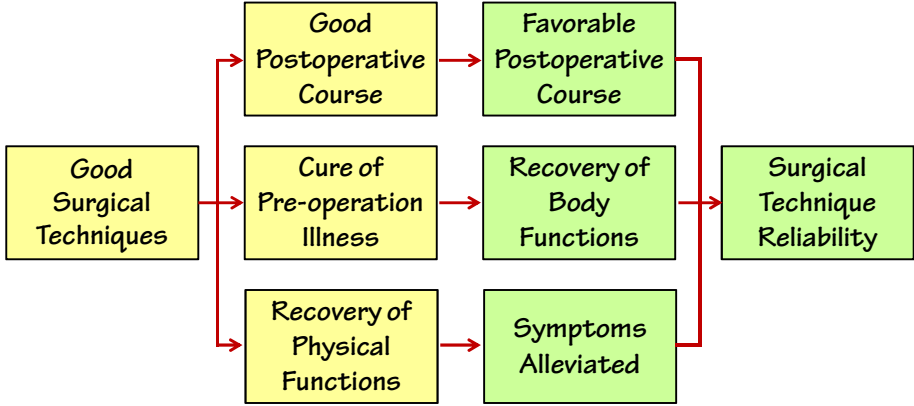
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4. Translate Demanded Qualities into Quality Elements

Reference Only

Demanded Qualities → Quality Elements




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    graph LR
      A[Good Surgical Techniques] --> B[Good Postoperative Course]
      A --> C[Cure of Pre-operation Illness]
      A --> D[Recovery of Physical Functions]
      B --> E[Favorable Postoperative Course]
      C --> F[Recovery of Body Functions]
      D --> G[Symptoms Alleviated]
      E --> H[Surgical Technique Reliability]
      F --> H
      G --> H
  
```

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5. Create Quality Element Deployment Chart

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Use Affinity Diagram to Organize

| Primary | Secondary | Tertiary | Quality Elements | Quality Elements |
|--|-------------------------|---|---|---|
| Use Affinity Diagram to Organize | Good care | Good toilet care | Appropriate toilet care | Appropriate care |
| | | Good mealtime care | Appropriate mealtime care | |
| | | Good cleanliness care | Appropriate cleanliness care | |
| | Good surgical technique | Good postoperative course | Favorable postoperative course | Surgical techniques reliability |
| | | Cure of pre-op illness | Recovery of body function | |
| | | Recovery of physical functions | Symptoms alleviated | |
| | Good anesthesia | No vomiting or shaking after operation | Good wakefulness | Prevention of infection |
| | | Effective anesthesia throughout operation | Appropriate anesthesia throughout operation | Effectiveness of medicine |
| | | Fully awake and alert | Appropriate anesthesia after operation | |
| | Good postoperative care | Doctor visits often | Appropriate patient observation | Explanation of measures against complications |
| | | Good explanation of condition | Appropriate explanation of postoperative course | Prevention of infection |
| | | Appropriate treatment | Appropriate postoperative cure | Speedy treatment |

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5 Only Reference Only Create Quality Element Deployment Chart

Level of surgical appropriateness


| | | | |
|--|---|--|--|
| <p>Appropriate care</p> <p>Appropriate toilet care</p> <p>Appropriate mealtim e care</p> <p>Appropriate cleanliness care</p> | <p>Surgical techniques reliability</p> <p>Favorable postoperative course</p> <p>Recovery of body functbn</p> <p>Syptom s alleviated</p> | <p>Anesthesia technique</p> <p>Good wakefulness</p> <p>Appropriate anestheia throughout operatbn</p> <p>Appropriate anestheia after operatbn</p> | <p>Level of cure</p> <p>Appropriate patient observation</p> <p>Appropriate explanation of postoperative course</p> <p>Appropriate postoperative cure</p> |
|--|---|--|--|

| primary | secondary | tertiary | |
|---------|---------------------------------|---|--|
| | Appropriate care | Appropriate toilet care | <p style="color: red; font-weight: bold;">Group Quality Elements into 3 levels</p> |
| | | Appropriate mealtim e care | |
| | | Appropriate cleanliness care | |
| | Surgical techniques reliability | Favorable postoperative course | |
| | | Recovery of body function | |
| | | Symptoms alleviated | |
| | | Good wakefulness | |
| | Anesthesia technique | Appropriate anesthesia throughout operation | |
| | | Appropriate anesthesia after operation | |
| | Level of cure | Appropriate patient observation | |
| | | Appropriate explanation of postoperative course | |
| | | Appropriate postoperative cure | |

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5 Only Reference Only Create Quality Element Deployment Chart

| primary | secondary |
|-----------------------------------|---|
| Painlessness | Painlessness when moving |
| | Level of attention to pain |
| | Effectiveness of medicine |
| Degree of recovery | Early ability to get up from |
| | Early commencement of eating and drinking |
| | Leave hospital on schedule |
| Level of surgical appropriateness | Appropriate care |
| | Surgical techniques |
| | Anesthesia technique |
| | Level of cure |
| Aesthetic degree | Meet the demand for hobbies and age |
| | Cosmetic satisfaction |
| | Minimum wound size |
| Prevention of complications | Explanation of measures against complications |
| | Prevention of infection |
| | Prevention of postoperative complications |

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6. Complete Quality Chart


| Quality element | Level of surgical appropriateness | Aesthetic degree | | | prevention of complications | | | | | | | |
|-------------------|-----------------------------------|----------------------|---------------------------------|------------------|-------------------------------------|-----------------------|--------------------|---|-------------------------|---|-------|-------|
| | | Anesthesia technique | Surgical techniques reliability | Appropriate care | Meet the demand for hobbies and ego | Cosmetic satisfaction | Minimum wound size | Explanation of measures against complications | Prevention of infection | Prevention of postoperative complications | | |
| No pain | No pain on movement | 0.015 | | | | | | | | | | |
| | Effective medicine | 0.043 | | | | | | | | | | |
| Quick recovery | Attention given to pain | 0.042 | 2 | 4 | | | | | | | | |
| | Can move soon | 0.0275 | | 2 | | | 1 | | | 1 | | |
| | Can eat soon | 0.035 | | 2 | | | | | | 1 | | |
| Good surgery | Can leave hospital soon | 0.047 | | | | | | | | 1 | | |
| | Good care | 0.043 | 2 | 2 | 4 | | | | 2 | 2 | | |
| | Good surgical technique | 0.089 | 4 | 2 | 2 | | | | 2 | 4 | | |
| | Good anesthesia | 0.102 | 2 | 4 | 2 | 2 | | | 2 | 4 | | |
| Small wound | Good postoperative care | 0.0918 | 2 | 4 | 2 | | | | 2 | 2 | | |
| | Good appearance | 0.025 | | | | 2 | 4 | 4 | | 2 | | |
| | Can wear swimsuit | 0.0096 | | | | 4 | 2 | 4 | | 2 | | |
| No complications | Inconvenient in clothes | 0.0443 | | | | 2 | 4 | 4 | | 2 | | |
| | Breathing easy | 0.0699 | 4 | 1 | 1 | | | | 4 | 4 | | |
| Quality of design | No infection occurs | 0.152 | 4 | 1 | 1 | | | | 4 | 4 | | |
| | Good healing of surgical wound | 0.159 | 1 | 1 | 1 | | | | 4 | 4 | | |
| | Unadhesed wound | 1346 | 3 | 86.4 | 8.66 | 143.1 | 1.8 | 3.8 | 37.8 | 127.3 | 267.3 | 204.7 |
| | Disinfectant wound | 100 | 2 | 8 | 8 | 11 | 11 | 3 | 3 | 9 | 20 | 16 |
| | Hospital | | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 4 |

Important Quality Elements

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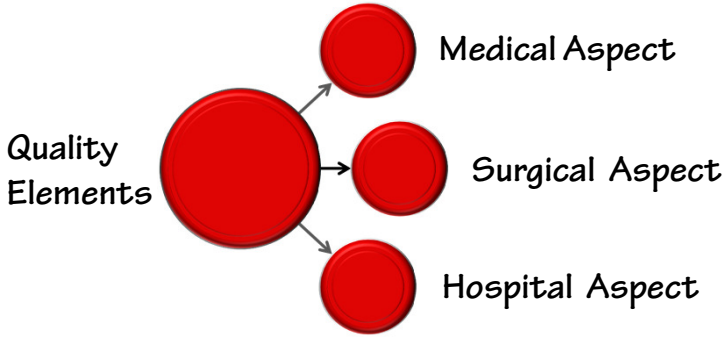
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7. Deploy Important Quality Elements to Related or Planned Aspects



Quality Elements

- Medical Aspect
- Surgical Aspect
- Hospital Aspect

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