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Hoshin Kanri and QFD

An integrated QFD/Hoshin Kanri approach at an engineering service organization!

An organization is a chain of units, each adding value. Thus it is fair to say that the *chain is as strong as its weakest link*. Armed with the value chain, organizations stretch capabilities to attract new customers and target bottom-line improvement.

With large-scale competition, the margin for error is less. Too much competition can cause the value chain to snap and the strategic alignment between the customer and the organizations is accordingly lost.

Clearly there is a strong need to ensure a robust value chain. This in turn demands effective organizational policy deployment. One such efficient method is policy deployment through Hoshin Kanri.

What is Hoshin Kanri?

Hoshin Kanri is a concept that helps organizations realize a vision by transforming the same into actionable and measurable strategies throughout the company.

'Hoshin' in Japanese means a shining metal, or compass, or pointing the direction; 'Kanri' means management or control. In the industrial context, Hoshin is usually referred to as a policy, vision, purpose, and long-term direction of the company. Hoshin Kanri in short means policy management or policy deployment.

Success comes from proper planning and execution. Successful organizations take short-term decisions with respect to long-term strategic objectives. This is called effective policy deployment.

Effective policy deployment - the need

For quality gurus like Deming and Feigenbaum, the focus is on the customer. Companies today, view customer satisfaction as a yardstick to measure success. Deploying quality strategies effectively throughout the company can help satisfy customers and respond to socio and economic challenges.

This article is based on a case study at an engineering service organization, MEL (Manufacturing Engineering Laboratory) of City University Hong Kong. It details Quality Strategy Deployment (QSD) and how an integrated Quality Function deployment (QFD)/Hoshin Kanri approach can be used to achieve this objective.

(The main aim of this study was to integrate QFD and Hoshin Kanri to accomplish service quality deployment.)

QSD aims at customer satisfaction and QFD helps achieve this objective.

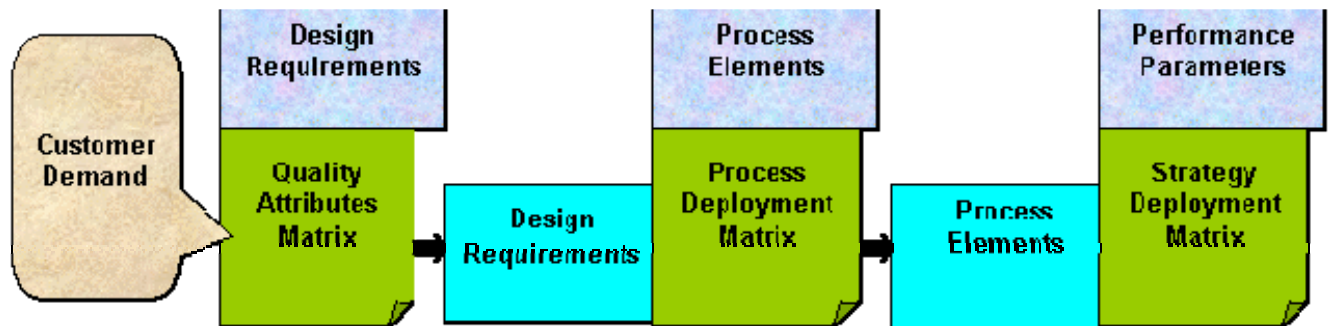
QFD – provides a systematic approach to build a team perspective on what needs to be done, the best ways to do it, the best order to accomplish the tasks proposed and the staffing and resources required to enhance customer satisfaction.

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It uses customer preferences as guidelines to set performance metrics. QFD facilitates conversion of customer demands into design targets, thereby ensuring the manufacture of a high quality product.

QFD uses visual planning matrices that align customer demands with design requirements and commercial viability. It aims at value addition to the product and the customer by transforming plans to actionable and measurable strategies, throughout the organization.

Given below is a typical QFD cycle for a service quality planning.



QFD and Hoshin Kanri

Hoshin Kanri facilitates alignment between day-to-day activities at an organization and its strategic objectives. A framework to convert the strategies into actionable and day-to-day activities can be developed and employees could follow this. Metrics to measure these strategies could also be devised and implemented.

QFD uses visual planning matrix to determine customer demands, design requirements, target goals and performance parameters. Hoshin facilitates the implementation of these ideas throughout the organization. This allows the entire workforce to holistically contribute towards the final goal/objective.

Use PDCA

Measurement and constant appraisal are critical when it comes to policy deployment. Researchers recommend the use of the PDCA cycle to improve reliability of a policy deployment program.

Operations at MEL

MEL was a *typical* engineering service organization with R&D departments, student projects and a wide customer base. It provides a wide range of services such as research and technical support. Laboratory Management Committee managed the operations at MEL.

To simplify operations and for administration purposes, MEL classified its laboratories into – Manufacturing systems, processes, mechatronic engineering, design for manufacture, industrial engineering and engineering management.

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MEL envisioned the need for a quality improvement process to sustain widespread competition. MEL decided to acquire information regarding its services to the client. The idea was to use these inputs as attributes of its service. It wished to involve the entire organization through efficient policy deployment. The information would also help in developing strategies for continuous quality improvement.

QFD and Hoshin Kanri approaches were used to identify customer preferences and MEL's strategic needs.

MEL kicked off this operation by initiating a "five objective" method.

- Literature Search
- Brainstorming
- Finite analysis of key factors
- Devising relationship matrix
- Surveys, individual interviews and audits

To begin with, a list of 31 clients/customers was identified. Their needs and expectations were documented and transformed into "quality attributes" by using the QFD. MEL then organized teams to conduct client surveys, interviews and audits to prioritize all quality attributes.

Definitions

Hoshin Kanri - Hoshin Kanri is a concept that helps organizations realize a vision by transforming the same into actionable and measurable strategies throughout the company. 'Hoshin' in Japanese means a shining metal, or compass, or pointing the direction; 'Kanri' means management or control. In the industrial context, Hoshin is usually referred to as a policy, vision, purpose, and long-term direction of the company. Hoshin Kanri in short means policy management or policy deployment.

QFD – provides a systematic approach to build a team perspective on what needs to be done, the best ways to do it, the best order to accomplish the tasks proposed and the staffing and resources required to enhance customer satisfaction.

This article will further explain the case at MEL.

Like all organizations, MEL envisioned unparalleled success. The top management at MEL took a strategic decision to improve its service quality to customers. Thus MEL employed the integrated Hoshin/QFD approach.

MEL began by identifying key information such as key customers, customer satisfaction levels, potential areas for improvement, service provided to the customer and so on. Based on this information MEL decided on continuous improvement in quality as the key to its success.

Once key information regarding customers and services was identified, MEL initiated its QSD process. The steps involved, are discussed hereunder.

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Step 1. Literature search

The literature search is aimed at collating information on similar projects. Background information on prior QSD project facilitates a “sneak preview” into potential challenges in similar projects.

Armed with the literature, MEL initiated brainstorming exercises.

Step 2. Brainstorming

Focus group brainstorming is aimed at identifying key issues essential for bottom line improvement. Cross-functional teams scrutinized service quality at MEL. Issues identified as responsible for poor quality were accounted to individuals/personnel, equipment, service providers (first and second tier) and customers.

Step 3. Scrutinize “key” issues

This step is aimed at creating an accurate list of MEL’s service quality attributes/dimensions. By conducting interviews with personnel from various departments, MEL identified a list of 116 quality attributes. Further analysis allowed MEL to classify, 21 – as not so critical attributes and 20 as critical attributes.

For simplicity these were further categorized into eight different service quality attributes.

1. Working environment and facilities

- Adequate factor floor space and spacious work activity areas
- Clean and organized placing of equipment
- Tidy workshops and laboratories
- Reliable and fully functional equipment
- Adequate working area (avoid crowded workspaces)
- Tidy working conditions
- Proper lighting of work areas
- Proper workspace ventilation systems

2. Reliability

- Adequate workforce to ensure timely completion of projects
- Capability to execute projects efficiently

3. Responsiveness

- Accessibility of resources
- Staff responsiveness
- Timely support and guidance

4. Assurance

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- Induction classes for equipment handling
- Employee competence in problem solving
- Ensuring employee skill in equipment handling

5. Computer network system

- Reliable and transparent information systems
- Proper maintenance of computing facilities
- Easy to use (user friendly) information systems/computers

6. Safety

- Equipment conditioning to ensure operator safety
- Conduct frequent safety audits
- Provision of safety induction programs
- Training employees in safety

7. Workshop

- Communicating technical support/advice/inputs to employees
- Accessibility of resources
- Adequate equipment

8. Laboratory experiments and exercises

- Proper scheduling of laboratory experiments
- Adequate resources to conduct experiments

Step 4 – Aligning voice of the customer to quality attributes

Based on these quality attributes, a questionnaire was prepared and sent to the customers.

The questionnaires aimed at identifying the impact of MEL's quality attributes, on the customer. It allowed customers to rate each quality attribute as a strong relationship, moderate relationship and weak relationship. Out of 200 users, 117 came back with their responses.

In short, the answers (from the questionnaires) allowed MEL to identify the voice of the customer (VOC).

Step 5 – Materialize House of Quality

Until now MEL was successful in developing a framework for its quality improvement process. The initial stages identified three key aspects:

- Where are we?
- Where should we be?

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- What must be done?

Once issues critical to the customer were identified, the next step was developing a quality system i.e. the House of Quality (HOQ).

MEL developed a HOQ to transform VOC into actionable and measurable improvement strategies. A HOQ facilitates strategic alignment between service quality attributes, organizational functions and strategic objectives.

Step 6 – Examination of MEL’s present

This step looked at conducting a detailed examination of the present conditions at the MEL’s testing laboratories. This was to see if MEL’s operational plans were aligned with its business objectives. The examination also focused on employee viewpoint on working conditions/environment and laboratory facilities.

The results indicated “service quality to the customer” as highly critical amongst employees. In other words, issues related to service quality (laboratory health and safety, computer applications, computer network system, instrumentation and calibration, communicating technical support, laboratories facilities, training employees in safety and quality programs) received the highest votes.

This information formed the basis on which MEL formulated its strategic objectives and laboratory design.

Step 7 – The Vision

MEL identified eight attributes as critical to its strategic vision. These were:

1. Quality campaign programs - Improve employee-training quality and foster quality campaigns for the laboratories
2. Modernization of laboratory facilities – Look to incorporate the best technology available to improve service quality to the customer
3. Safety programs – Frequent safety training programs
4. Internal co-operation – Encourage cross-functionality and top management support
5. Technical support –Unconditional guidance from peers and experienced personnel
6. Communication with customer/user –Constant feedback and communication with the customer
7. User services - Maintain user friendly and high quality service to the customer.
8. Understanding of users' needs – Changing according to the customer’s requirements/demands.

Step 8 – Breakthrough/Hoshin Objectives

MEL desired to formulate its breakthrough/Hoshin objectives, to help it realize its strategic vision.

With help from key processes and performance metrics, the breakthrough/Hoshin objectives were realized as the need to rationalize operations at MEL’s laboratories.

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Further analysis revealed that “Quality campaign programs” and “Understanding of users' needs” influenced MEL laboratories performance.

Performance metrics for “Quality campaign programs” and “Understanding of users' needs” were initiated. Further, charts were developed to locate gaps/alignment between MEL's strategic objectives and current status. The charts showed large gaps (lack of alignment).

MEL realized that for high service quality they had to encourage “Quality campaign programs” and “Understanding of users' needs”.

Step 9 -- Development of MEL's objectives

An annual business plan was devised to display the goals and strategic objectives. The plan also detailed *responsibility* and *accountability* of each objective. Departments and managers were given clear instructions and guidelines to realize the strategic vision.

Step 10 -- Deploying strategies

The step focused on transforming the strategies into actionable and measurable plans. Short-term strategies were identified based on the long-term strategy. A strategy tree was devised with the ultimate goal of high service quality. Accordingly a strategic ladder with various levels was created. This entire process was known as the Quality campaign at MEL.

Step 11 -- Assessing the progress (plan)

Given that the Quality campaign at MEL was time consuming and lengthy, monitoring and assessment was imperative.

This step focused on rolling back the process to the start and detecting problems and discrepancies. Then they checked for duplications, inconsistencies, resource shortages and any possible financial constraints. This step was thus a review of the progress of the quality initiative at MEL.

Step 12 -- Scrutiny of Hoshin process

This step was to ensure MEL's progress in the right direction. It facilitated realization of improvement activities and enhancing MEL's overall effectiveness.

MEL conducted interviews with employees to see how they reacted to the quality improvement initiative. This provided a broad perspective of the process and allowed MEL to determine areas and issues that could be improved. Further, this approach also aimed at improving MEL's existing management system.

Conclusion

With business environments threatening to change, organizational progress relies on sound strategic development and deployment. It demands transforming goals into actionable and measurable plans. This in turn demands allocation of resources to achieve the objective.



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Successfully delivering value to the customer is no mug shot. The integrated Hoshin/QFD approach allows organizations transform QSD into management principles. This in turn facilitates identification of customer satisfaction and act accordingly. Moreover, it is easy to flex the QFD/Hoshin approach as per the organizations needs irrespective of the industry or social demands.