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# QFD Applications for the Board of Directors

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**Abstract:** QFD is not just a methodology that is useful for engineering or marketing — it is also helpful for organizing the design and development of policy by the Board of Directors. The International Academy for Quality (IAQ) has been developing the concept of "governance quality" over the past 15 years. Recently, IAQ has published an assessment methodology for Boards of Directors to apply in assessing their level of maturity in application of quality in the practices of their activities. This paper and presentation will extend this work by developing infrastructure for the leadership initiatives of a Board in the encouragement of continuous improvement of the organization from their level of executive oversight. The methodology for developing a strategic approach to quality definition and deployment will be the "Voice of the Customer" as developed using QFD.

**Key Words:** Corporate Governance, QFD, Boards of Directors, policy deployment

## 1 The Role of Corporate Governance Today

Corporations today face many challenges in globalization of customers, suppliers, competitors, and regulators, as well as rapidly changing technology, information, and market opportunities. The corporate board of directors guides the organization's performance in ways that make it distinct, beginning with strategic direction, policy formulation, and management direction at the operational level. An increasing focus on corporate roles in society, the environment, and the financial communities are adding pressure to boards of directors to emphasize quality as part of their responsibility.

Governance of commercial enterprises has been traced back as far as Phoenician traders in the 35<sup>th</sup> century BC under royal control. Its evolution by the 20<sup>th</sup> century AD led to English court cases determining that shareholders control is through powers invested in directors and the articles of association, and can be altered either by changing the articles or changing the directors.<sup>1</sup> Directors seeking to continue their duty are expected to act honestly and in good faith in representing the rights of shareholders. Typically, this has been related to finance, but other arenas

are becoming more visible. Matsushita Konosuke, founder of Panasonic Corporation and a noted Confucian scholar of the early 20th century wrote that an industrialist has a valuable mission that is no less noble than religion which brings spiritual peace and happiness to people; the mission of industries and business is to enrich society and wipe out poverty, and that development and prosperity of individual corporations is socially accepted for the very purpose of them accomplishing such mission; therefore attaining the social mission must come first and prosperity of individual companies second.<sup>2</sup>

The last few years have brought the role of directors into more public and unfavorable light with recent financial and environmental crises in the energy sector, the financial crisis of 2008 with banks, investment companies, insurance companies, and even manufacturers there were “too big to fail,” and the recent improprieties and mistakes within the Japanese energy and other industries.<sup>3</sup>

## **2 The Need for Quality in Corporate Governance**

Instrumental to quality thinking is Dr. Walter Shewhart's plan-do-check-act approach to set measurable objectives to determine goals and the actions needed to achieve them, and then to track performance to assure the goals will be met or to take timely corrective action.

Information in modern corporations varies in terms of measurability. Physical data relevant to manufacturing or technology, for example, is very tangible, but data related to moral values is extremely intangible as it reflects the attitudes and ideals of society. Effective leadership of an organization requires both – the elements of the technical leadership are the realm of management and the elements of the moral leadership are provided by the Board of Directors.

This moral leadership includes determining the long-term vision of the organization. In quality methods such as Policy Deployment,<sup>4</sup> this is called target-means deployment; the vision being the target and the management activities being the means to achieve the target. Business policy is the choosing and implementing of long-term purpose that affects everyone in the organization and governs how they act in response to the external environment. Policy Deployment offers several advantages for Boards to consider, including developing metrics for both the target and means, as well as ways of tracking their progress and taking timely corrective action; integration of long-term strategic objectives with short-term operational objectives; and identification of roles and responsibilities to achieve these objectives.

Marcos Berlin and Hugo Strachan, members of the IAQ, have developed a scorecard approach to evaluating a Board of Directors.<sup>5</sup> In their report, core values and self-assessment criteria are identified along with four maturity levels that boards can

use to evaluate their strengths and weaknesses. Scores are entered and tabulated using the form in Figure 1.

LEVEL	SCORE	Mission & Principles	Structure	Board Oper. Procedures	Board & MGMT	Board & Shareholders	Board & Community	Board Contribution	Total Evaluation
1	0-1								
2	>1 to 3								
3	>3 to 7								
4	>7 to 10								
Score		0	0	0	0	0	0	0	
Factor		20	7	7	10	10	6	40	
Total		0	0	0	0	0	0	0	0

**Figure 1 Board evaluation matrix (unfilled)**

For example, one criterion is the strength of the Mission statement and Guiding principles. Level 1 indicates the Board is not active in establishing company values and mission; the values and mission are not established or used; there are no signs the company uses the laws of the country as a complete operational framework; board activities and information are not shared with all board members; policies regarding risk and crisis management; or board has not adopted a Code of Best Practices relating to ethics, conflict of interest, or internationally accepted standards. Levels 2-4 indicate greater compliance with the above statements, as well as other criteria. This pattern is repeated for the other self-assessment criteria.

Capturing stakeholder or constituent needs is important in prioritizing the above self-assessment criteria. The above model assumes that all the criteria are equally important. In practice, however, it is often the case that the Board could determine for themselves that their relationship with management is more important than with the community, for example. The authors have several concerns regarding this, among which are:

- No transparency in how such priorities are determined. The Board may simply pay more attention to management than the community because they are more immediate, have a louder voice, more assertiveness over the Board, or other reasons.

- The Board does not have unlimited resources to address issues. Boards may meet only one day per month and have insufficient time for too much detail. Prioritization gives focus.
- The self-assessment criteria are based on what the Board thinks are important. Could stakeholders and constituents consider other criteria to be evaluated and could their evaluation methods be different? Unless the Voice of the Stakeholder (VoS) is captured and analyzed, self-assessments risk becoming irrelevant to the real world.
- There are some mathematical concerns with the above scoring system that can be easily resolved by changing the ordinal scale points to ratio scale values.

One quality method, Quality Function Deployment (QFD) adds another capability – to capture, translate, and prioritize fuzzy stakeholder or constituent needs into specific actions. This paper will explore how this method can be used together to help Boards better understand the intangible moral requirements of Boards and translate them into specific roles and responsibilities.

### 3 Quality Function Deployment

QFD was developed in Japan during the 1960s<sup>6</sup> (during its period of modernizing traditional approaches to quality management) to assure that not only is negative quality prevented but positive quality is enhanced. In other words, a lack of problems does not guarantee everything is right; i.e. nothing wrong ≠ anything right. Figure 2.

The concept was extraordinary at the time. Traditional approaches to product design were typically driven by technical advancements that often failed in usability or made downstream manufacturability or service delivery a nightmare. The QFD approach recommended that:

- Assuring quality is a team approach.
- Customer driven quality required acquiring and analyzing the Voice of the Customer (VoC) to determine what matters most.
- Different customer segments have different needs with different strengths. It is important to get an accurate priority from them.

QFD journeyed to the U.S. in the early 1980s at the behest of the automotive industry. Early QFD efforts through the 1990s focused on creating elaborate matrices to help the multi-functional teams visualize the complex cause-and-effect relationships

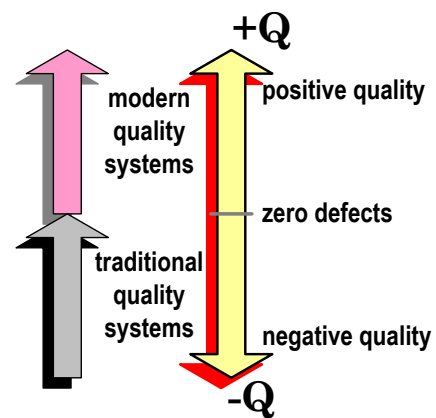


Figure 2 Nothing wrong ≠ anything right

among users, developers, builders, and deliverers of products and services. Mathematical models were incorporated so that market priorities could be maintained and tracked as they drove priorities for engineering and manufacturing.

The Japanese automotive quality experience continued its influence into the 21st century. Customer focus was joined with process efficiency called Lean Thinking, which demanded examination of all activities to remove wasted effort. QFD, appropriately, became leaner to assure that maximum value could be realized with a minimum of resources. This lean approach is called Blitz QFD®.<sup>7</sup>

QFD essentially means that to deliver quality to customers that will add value to their lives, efforts must begin early on. While QFD has its origins in chemical processes and automobiles (the first published case study was by Bridgestone Tire in 1966<sup>8</sup>), its applicability to other business areas including strategic planning and executive management activities was recognized. Corporate governance may now benefit as well.

## **4 Using QFD to Improve Corporate Governance Quality**

Directors of an organizational board are not serving as salaried employees but rather are elected or appointed to represent the interests of the stakeholders. They meet infrequently but regularly for the purpose of conducting board business. Activities to improve the quality of their directorship must not be burdensome to their time or skill level otherwise the effort risks being ignored. The authors recommend starting with the Blitz QFD® approach to maximize the results for the minimum effort on the part of busy Board members. This approach may differ with each organization according to its management structure and profit/non-profit status.

### **4.1 Where are the boundaries between the Board and the CEO?**

As a quality method, QFD seeks to quickly establish clarity and focus. In product development projects, it is useful to determine what is in-scope and what is not, in order to prevent scope creep (scope grows beyond what is originally chartered) or scope drift (scope changes direction from what is originally chartered). If we follow a parallel process for Boards of Directors, a good starting point, then, would be for the Directors to clearly determine what is in-scope and out-of-scope for them, as well as areas which may be either. A QFD Scope Boundary table as shown in Table 1 can clarify to the Board those areas where, by corporate charter, they have sole, shared, or delegated responsibility. The value of this table is in its simplicity and transparency. Content that is not clearly articulated in the corporate charter or articles should be clarified and agreed upon by the Board and the CEO.

**Table 1 Scope Boundary table example**

In-Scope	In/Out of Scope	Out of Scope
Represent interests of owners/investors	Set organizational direction	Set business strategy
Establish framework under which corporations are managed and operate		Advise Board of Directors
Managerial oversight		Execute final decisions by Board
Affirm choice of auditors	Choose accounting practices and outside auditors	

## 4.2 What are the Goals of the Board of Directors?

Quality methods are built on developing metrics for which a plan can be set and results tracked in order to make timely corrections. How does a Board measure their purpose, their goals, and their effectiveness in achieving them? What is the current level of performance, the target level of performance, by when must they achieve it, and what decisions or actions might they consider? In the product development world, QFD first evaluates how a project would contribute to the business (sometimes called VoB or voice of business), such as revenue, profit, market capture, loyalty, etc. even before evaluating the voice of the customer (VoC). The logic is that if VoC were considered first, a company could simply give its products away for free and satisfy that all-important customer need for a cheap price. Similarly, a Board could deem that all corporate revenues should be paid to shareholders as dividends. A Directors' Goal table is suggested to identify and quantify these goals as shown in **Table 2**.

**Table 2 Directors' Goals table example**

Goal Statement	How measured?	Current level	Target level	By when?	Who judges success?	How? (optional)
Shield shareholders from legal liability	# of successful lawsuits against shareholders	2	0	2015	Chief Legal Officer	act honestly, in good faith in representing rights of shareholders
Preserve/grow share value	price/earnings to growth ratio (PEG)	0.80	1.07	2015	NYSE	represent the shareholders in matters of trust and confidence related to finance
Business growth	year over year topline revenue change	11.00%	17.00%	2014	Chief Finance Officer	move organization in a strategic direction
	annual market share growth	5.00%	6.70%	2013	VP Technology VP Marketing	innovation, new markets

## 4.3 Stakeholders and Constituents

Historically, directors are elected by the shareholders to represent their rights as owners. Recent complaints regarding labor, environment, jobs, and community relations suggest that the stakeholders in corporations go beyond the matter of stock ownership and must recognize moral and social obligations. Identifying the stakeholders of the Board is a necessary step towards understanding their needs and how they can be met. In QFD projects, marketing is responsible for defining the customers that most critical to the acceptance of the product, and how they might use

the product. This use mode provides the “stage instructions” to the voice of customer dialog; it explains the scenarios the customer is facing and provides insight into their inner dialog about what they need and why. Similarly, a Constituents Segments table could be helpful in clarifying the key stakeholders and defining critical interactions to help the Board understand what these constituencies want, understand, misunderstand, see, question. **Table 3** describes the segment shareholders as U.S. pension funds and individuals buying stock for retirement savings and education funds for their children and having concerns, their relationship is examined when making new investments and at annual shareholder meetings, because of their concern for growth in value as well as the safety of their investments, and that they manage their relationship according to the company’s corporate articles or charter, as well as through Board elections.

**Table 3 Constituents segment table example**

Constituent Segment	Who	What	Where	When	Why	How
Shareholders	Pension Funds Individuals	Retirement savings Children's education	US	When making contributions or adjusting portfolios. Shareholder meetings.	Growth Safety	Exercise or change corporate articles, not re-elect directors
Employees	Managment Hourly employees Retirees Part-time	Family income Benefits	Communities near corporate facilities	Throughout employment and after retirement	Security for family	Carry out Board's instructions
Communities where a major company has its facilities	Local government Neighbors Other businesses	Tax revenues Property value Supplier/Services	Municipalities within commuting distance	Prior to building facility, during operations, after facility leaves	Manage taxes, building codes, traffic, quality of life, schools, police, fire	Zoning, codes, provisions for public space
consumers						

#### 4.4 Voice of the Stakeholders/Constituents

Collecting the Voice of the Stakeholders (VoS) is critical in establishing buy-in to later decisions as well helping the Board focus first on what matters most. Typical survey instruments such as focus groups and questionnaires can be used to acquire VoS. In QFD, we have learned that the raw narratives gathered in these instruments are just the starting point to analyzing the spoken word to discover the unspoken needs. Often, the unspoken needs provide the richness to differentiate a superior solution. The relationship between a need and a solution is similar to that between a goal and the means to achieve it mentioned above. A need or goal should be solution or means agnostic, meaning they are independent, thus allowing innovative new ways to achieve the solution or goal. This common quality analysis takes each raw narrative and examines whether it is a need or solution, and if it is a solution, determine the underlying benefit or need it fulfills. For stakeholders, needs would reflect the benefit the Board provides to them and the solution would be the activities the Board engages in. The Stakeholder/Constituent Voice table shown in Error! Reference source not found. illustrates this analysis.



Table 4 Stakeholder/Constituent Voice table example

Stakeholder/Constituent				
segment	situation	task	problems/ narratives	needs
Community	Nuclear power plant construction	Public safety	We need accurate information so we can respond to a nuclear accident.	Public is safe regardless of natural or man-made disasters.
				Property is safe regardless of natural or man-made disasters.
			Our local responders need training in how to respond to a terror attack.	Public is safe from attack on reactors.
				Property is safe from attack on reactors.

#### 4.5 Prioritizing Stakeholder/Constituent needs

In product development, it is rare that all needs of all customers can be met to the fullest degree due to resource constraints of people, time, and money. Invariably, tradeoffs and generational offerings are made to keep the product pipeline flowing. Using QFD helps product developers make those difficult choices by asking customers for their priorities. For customers to make accurate priorities they must have domain expertise (which they do for their needs), a simple way to make judgments (decision science has shown that people make the most accurate decisions when comparing two things at a time using a simple verbal scale), and the output should be expressed in cardinal or ratio scale numbers. This process has been shown to work with stakeholders as well.<sup>9</sup>

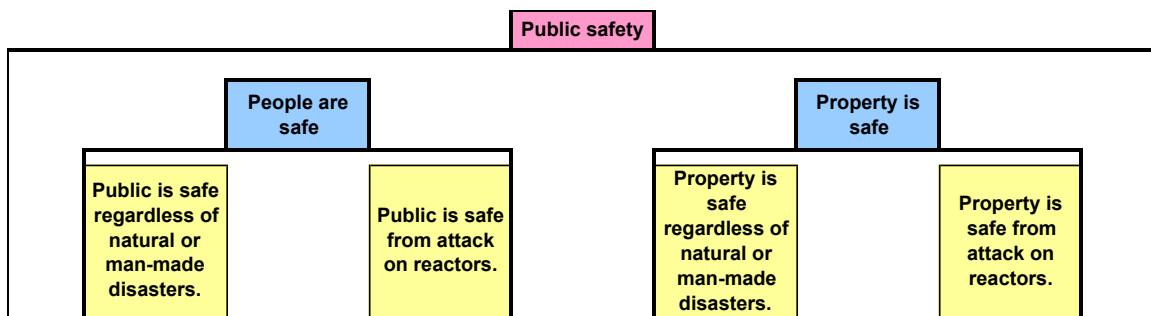
Prioritization in multi-criteria decision-making was advanced by the research of Dr. Thomas Saaty in the 1970s at the U.S. Department of Defense and later at the Wharton School of Business at the University of Pennsylvania. Saaty found that decision makers facing a multitude of elements in a complex situation innately organized them into group sharing common properties, and then organized those groups into higher level groups, and so on until a top element or goal was identified. This is called a hierarchy and when making informed judgments to estimate importance, preference, or likelihood, both tangible and intangible factors must be included and measured.

Saaty's Analytic Hierarchy Process (AHP)<sup>10</sup> technique to manage this process in a manner that captures the intuitive understanding of the participants and also yields mathematically stable results expressed in a numerical, ratio scale. A numerical, ratio scale is preferred for the following reasons:

- Numerical priorities can be applied to later analyses to derive downstream priorities. This will be important in guiding the developers and implementers of new solutions.
- Ratio scale priorities show precisely how much more important one issue is than another. Ordinal scales only indicate rank order, but not the magnitude of importance.
- Numerical scales can be tested for judgment inconsistency, sensitivity, and other useful properties. As AHP does not require rational responses, an inconsistency check will quantify and identify judgment inconsistencies by looking for instances of  $a > b$ ,  $b > c$ , but  $c > a$ , etc.

Creating the hierarchy is a task best done by each stakeholder type so that it diagrams how they think about their needs. Because the AHP process is conducted by comparing two needs at a time, it is necessary that the needs be mutually exclusive. For example, it is easy to choose between an apple and an orange, but it is confusing to choose between an apple and a piece of fruit since that pair violates the mutual exclusivity rule – an apple is a subset of fruit. A second use of the hierarchy is to simplify the task when there are many needs to consider. By starting at the most abstract level of the hierarchy and pursuing only the high priority branches, there will be fewer pairs that the stakeholder must evaluate. A hierarchy can be easily created from the affinity diagram shown in Table 5.

Table 5 Stakeholder/Constituent needs hierarchy example



The Board may also wish to prioritize the stakeholders and constituencies, if they deem the needs of shareholders to be more influential than that of suppliers, for example. Using the AHP method, directors can pair-wise compare the influence of each stakeholder and derive accurate ratio scale priorities, which can then be multiplied by the ratio scale priorities of the needs of each stakeholder, thus producing what is called a “global” priority for all the needs of all the stakeholders. In doing so, it is important that each stakeholder group prioritize only their own needs and not the needs of other stakeholders to prevent stacking the deck in their favor.

When the members of the hierarchy are pairwise compared with each other, the importance of one need versus another is evaluated on a verbal scale and a corresponding score is input into the AHP grid, an example of which is shown in Table 6. The verbal scale and scores are as follows, and follow this rule: if the row is more important, the integer score is entered into the grid, if the column is more important, the fraction is entered. A row average of the normalized columns yields the relative importance in ratio scale.

- Equally important: 1
- Moderately more important: 3
- Strongly more important: 5
- Very strongly more important: 7
- Extremely more important: 9

Judgment inconsistency can also be tracked and a value of less than 10% is acceptable (as highlighted in the lower left corner in the example). Here we see that of the four stakeholder/constituency needs being evaluated, 59.7% importance is on “public is safe regardless of natural or man-made disasters” and the Board would be directed to focus their oversight of management to assure this is adequately addressed.

**Table 6 Stakeholder/Constituent needs prioritized with AHP**

	Public is safe regardless of natural or man-made disasters.	Public is safe from attack on reactors.	Property is safe regardless of natural or man-made disasters.	Property is safe from attack on reactors.	<i>normalized columns</i>				sum	row avg
<b>Public safety</b> Public is safe regardless of natural or man-made disasters.	1	5	5	7	0.648	0.765	0.536	0.438	2.387	<b>0.597</b>
Public is safe from attack on reactors.	1/5	1	3	5	0.130	0.153	0.321	0.313	0.917	<b>0.229</b>
Property is safe regardless of natural or man-made disasters.	1/5	1/3	1	3	0.130	0.051	0.107	0.188	0.475	<b>0.119</b>
Property is safe from attack on reactors.	1/7	1/5	1/3	1	0.093	0.031	0.036	0.063	0.221	<b>0.055</b>
	1.543	6.533	9.333	16.000	1.000	1.000	1.000	1.000	4.000	1.000
	<b>Inconsistency Ratio</b>									<b>0.09</b>

#### 4.6 Board response to key Stakeholder/Constituent needs

The above steps help the Board to focus first on activities that will address the needs of greatest importance to the stakeholders and constituents. Once the key needs of each key stakeholder or constituency are identified, the Board can begin to prioritize which evaluation criteria, core values, responsibilities, and governance principles will help them develop their response.

Each of these dimensions has several elements among which some will be more highly correlated with addressing the key needs. There are two approaches to de-

ploying the needs into these dimensions – the traditional QFD matrices and the modern Blitz QFD®. There are plusses and minuses to both as shown in Table 7.

**Table 7 Traditional QFD matrices vs. Blitz QFD®**

Traditional QFD Matrices	
+	-
Exhaustive coverage	Exhausting to complete
Timeless	Time consuming, risk of giving up
Easily reusable	Not useful until completed, but only a small part is actionable. Not a good use of scarce resources.
Prevents items "falling through the cracks"	Predetermined elements lock in the existing paradigm
	Problematic math

Blitz QFD®	
+	-
Faster time to complete	Once achieved, must start fresh on next run-through
Sense of focus on high value items	Marginal items may be delegated as "no change" for now
Can get started on improvements immediately. No need to wait until analysis is completed	
Upgradeable to Traditional QFD matrices with no loss of data or wasted effort. Can be used simultaneously.	
Math issues addressed	

Commonly recommended is to run a pilot with the Blitz QFD® approach explained in the above steps and example tables, and then upgrade to the traditional QFD matrices over time once the method has been custom tailored for the Board and its stakeholders. By definition all the high value items identified in the Blitz QFD® will be included in the matrices, so there is no wasted effort. An example of the Blitz QFD® Maximum Value table is shown in Table 8.

**Table 8 Maximum Value table to address key stakeholder need**

Stakeholder/Constituent					Solution Analysis			OECD Governance Principles
segment	situation	task	problems/narrative	needs	critical evaluation criteria and target	critical core values	key responsibilities	
Community	Nuclear power plant construction	Public safety	We need accurate information so we can respond to a nuclear accident.	Public and property are safe regardless of natural or man-made disasters.	Board & Community - Level 4. The board is actively working on Community issues. The Community's perception of the Company is excellent in this regard.	Independence	Appeal: The Board is a disciplinary body to assure management effectiveness.	The role of stakeholder in corporate governance.
						Well-documented processes	Appraise: The Board is a representative of the organization's constituency to assure that the organization delivers are aligned with their expectations. "The enterprise needs a 'public and community relations' organ. It needs easy and direct access to its various 'publics' and 'constituents.' It needs to hear from them and to be able to	"Stewardship acts on behalf of these participating communities to preserve value and exercise due diligence in the management of the organization's resources to achieve its purposeful ends." Marcos E.J. Bertin and Gregory H. Watson. 2007. "Corporate Governance: Quality at the

The next step in the process is to define what Board responsibilities are key to address immediately to satisfy the key needs of each stakeholder or constituent, and then to break the responsibility into actions related to Board activities, management activities, and operational activities. Deployment of these activities into specific targets and means for each related function and management layer in the organization could be discussed and negotiated with the executive management team. For this, the Policy Management quality method mentioned above will be very powerful. Examples of Policy Management activities are:

- Identifying critical business assumptions and areas of vulnerability (Board)
- Identifying specific opportunities for long-term improvement (Board)
- Establishing business objectives to address the most imperative policies (Board)
- Setting performance improvement goals for the organization (Board /Management)
- Developing change strategies to address business objectives (Management)
- Preparing an annual policy implementation plan for the organization (Management)
- Defining project charters for implementing each change strategy (Management)
- Implementing the change projects (Organization)

## 5 Policy Management (Hoshin Kanri)

The Japanese word *Hoshin* implies the compass needle keeping the organizational “ship” on course by always indicating direction relative to true North regardless of the weather and environmental challenges. *Hoshin* keeps the organization on track by monitoring ongoing processes and results relative to its forecast, so that corrective actions can be taken regardless of the business environment.



Figure 3 The Japanese word *Hoshin*

Once Board policies are set according to the above QFD study, they are then deployed to all appropriate layers and functions of the organization’s management in order to get their contributions and buy-in before the business year begins. Adequate time, sometimes months, must be allowed for everyone to understand the Board’s directives and to suggest how they can be best implemented. See Figure 4. High-level objectives are defined and quantified at senior management levels and then decomposed as they are passed down and across the organization using a process often referred to as “catchball.” (Figure 5)

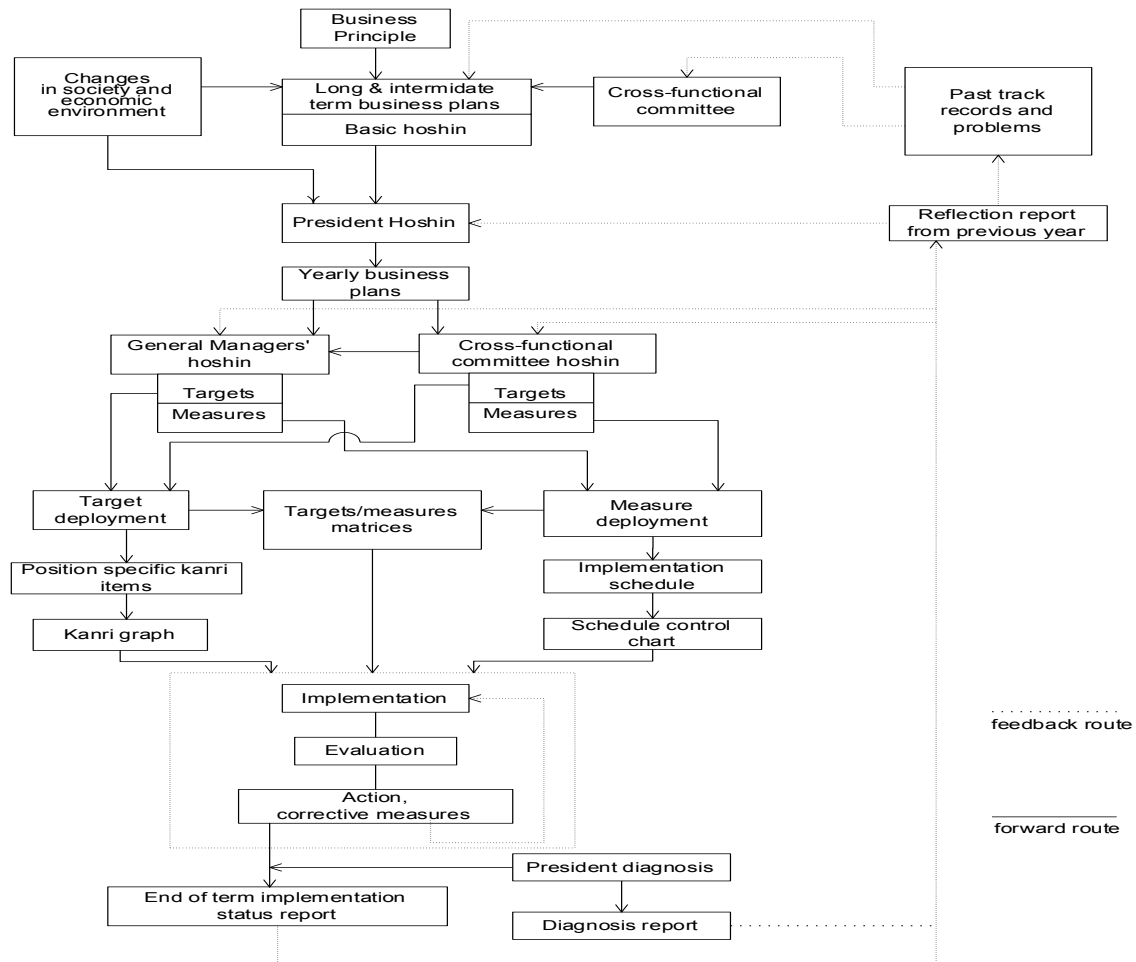


Figure 4 Policy deployed from Board to CEO to each management layer<sup>11</sup>

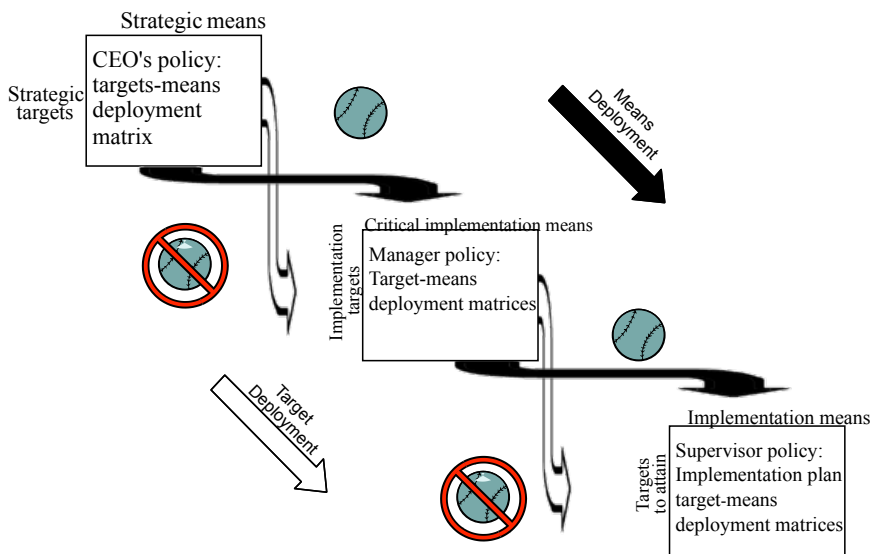


Figure 5 Catchball process

Once policies are put into play, metrics are used to chart actual performance against planned performance. Simple quality tools such as the fishbone diagram or more elaborate A3-X matrices can be used to assure that goals are deployed in sufficient detail and carried out. Figure 6 illustrates the cause-and-effect relationships being deployed in a fishbone diagram. Boards can the CEO to use Policy Management to deploy the critical activities identified in the Maximum Value table or QFD matrices.

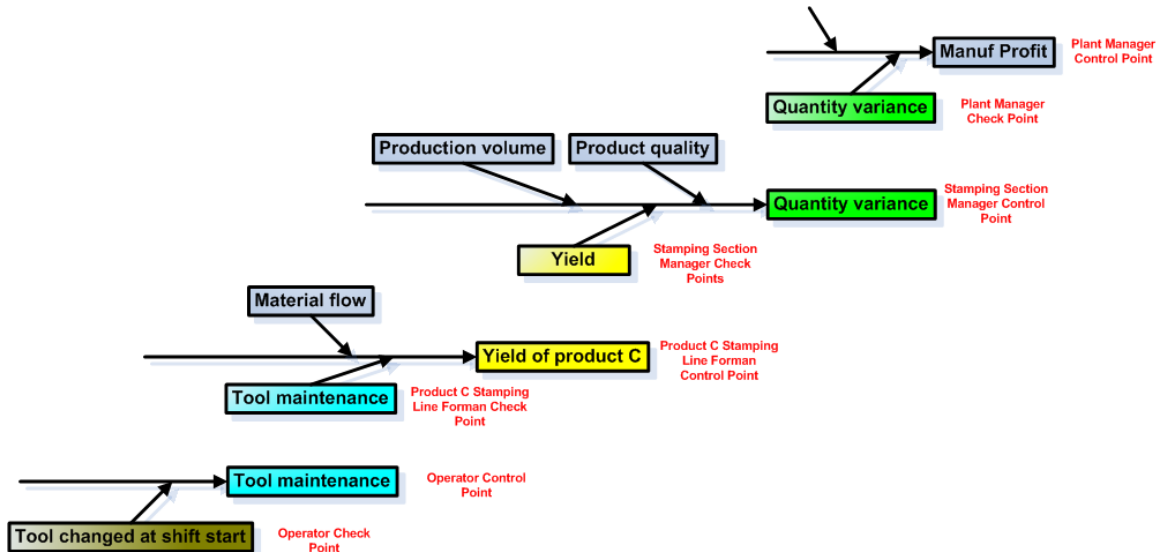


Figure 6 Manufacturing example of deploying high-level goals into detailed actions

Boards should expect management to periodically report on progress and corrective actions taken. Unachieved objectives should be carried forward until completion or other initiatives overtake them. Reports can be presented visually in scorecard format or even using quality tools as show in Figure 7.

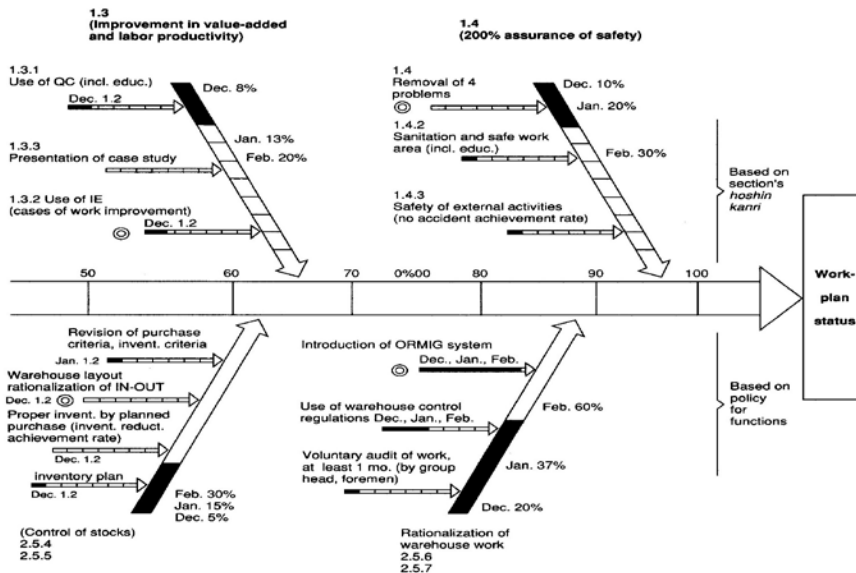


Figure 7 Fishbone diagram used as scorecard

## 6 Conclusion

The International Academy for Quality has extended the domain of quality thinking to the Board of Directors of an organization. Total Quality Management has achieved its greatest penetration yet by bringing the discipline, measurement, process control, and documentation rigor of the engineering field into the highest levels of management responsibility and accountability. Quality Function Deployment adds the Voice of the Stakeholder to this process to assure fidelity to the widening responsibilities of corporate boards.

The process is demanding but less so than dealing with the financial, environmental, and social ills that can result when Boards ignore their greater moral and social role and merely endorse management recommendations.

### About the Authors

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**Glenn H. Mazur**, BA, MBA, QFD Red Belt® has been active in QFD since its inception in North America, and has worked extensively with the founders of QFD on their teaching and consulting visits from Japan. He is a leader in the application of QFD to service industries and consumer products, conducts advanced QFD research, and is the Conference Chair for the annual North American Symposium on Quality Function Deployment. Glenn is the Executive Director of the QFD Institute and International Council for QFD, Adjunct Lecturer on TQM at the University of Michigan College of Engineering (ret.), President of Japan Business Consultants Ltd., and is a senior member of the American Society for Quality (ASQ), and the Japanese Society for Quality Control (JSQC). He is a certified QFD Red Belt® (highest level), one of two in



North America. He is a certified QFD-Architekt #A21907 by QFD Institut Deutschland. He is convenor of the ISO Technical Committee 69 Subcommittee 8 Working Group 2 to write an international standard for QFD. He is an academician of the International Academy for Quality. [Glenn@Mazur.net](mailto:Glenn@Mazur.net)

**Yoji Akao** Ph.D. is the Chairman of International Council of QFD. Along with the late Prof. Shigeru Mizuno, Prof. 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 fishbone diagram, his more complex analyses led to a matrix to identify the design elements which would impact customer satisfaction the greatest. Prof. Akao received the prestigious Deming Prize for Individuals in 1978. He was awarded Honorary Member of JSQC in 1999, Distinguished Service Medal of ASQ in 2001, Shainin Medal of ASQ in 2007, Ishikawa-Kano Award of ANQ in 2010, and, awarded Honorary Members of ASQ and IAQ in 2010.

## Notes

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<sup>1</sup> Bertin, Marcos E. J. and Gregory H. Watson.2011. “The Requirement for Quality in Corporate Governance,” European Organization for Quality.

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