

Table 2.5 Criteria for tangible effects evaluation in Deming Prize recipient company (178 recipients 1950 – 1999)

order	Tangible effects	Use	1	2	3	4	5	6	7	8	9	10	
1	Managerial aspect	1 Growth rate	Sales	Export amount	Sales growth rate	Profit before tax (amount / rate)	Profit after tax (amount / rate)	Return on assets	Recurring profit per employee	Net profit	Capital turnover		
		2 Profitability rate	Recurring profit (amount / rate)	Profit	Break-even point ratio	Profit (amount / rate)	Profit (amount / rate)	Break-even point					
		3 Productivity	Added value productivity	Sales per employee	Added value productivity per employee	Labor productivity	Equipment investment	Equipment investment	Break-even point operation capacity				
		4 Stability	Owned capital ratio	Loan dependency (ratio)	Sales and financial cost ratio								
2	Managerial element	1 In-process defects and process control	Process defective rate	Cost of defects	Process defective rate per machine	Yield	Product standard revision number	Product quality evaluation	Direct rate				
		2 Final product inspection	Acceptance rate of inspection by QA Dept.	Shipment inspection passing rate									
		3 User demerit decrease	Complaint (cost, rate, no. of cases)	Defective rate of incoming inspection of customer delivery	Returned products rate	Compensation with customer	Customer line complaint rate	Customer line complaint rate	Market complaint (cost, rate, no. of cases)	Annual failure rate	Recall number		
		4 User merit increase	Market quality evaluation comparison	User satisfaction rating	Comparison with international level	Quality issue content transition	Customer cost reduction	Customer cost reduction	Extension at guarantee period				
		5 Market competition	Market-share	No. of important quality issue solution	Nuclear power use rate	Corporate image	Quality domination evaluation	Quality domination evaluation					
3	Divisional activities	1 Cost Reduction	Cost reduction amount	Rate of defect cost	New product mass production start up cost	Improvement of standard physical unit	Target cost achievement situation						
		2 Rationalization	Amount of rationalization	Improvement of delivery price	Effect of saving resource energy conservation	Equipment improvement number	Equipment improvement number						
		1 Production rate	Production quantity	Production per employee (machine)	Amount of in-process product	Equipment utilization rate	Equipment utilization rate						
4	General	2 Inventory	Stock turnover rate	Inventory turnover	No. of stock holding days (month)	Stock reduction	Delivery trouble (no. of cases and rate)						
		3 Delivery date	Delivery date achievement rate	Late delivery (no. of cases and rate)	Out-of-stock rate	Lead time	Lead time						
		1 Safety /environment	No. of accidents	Accident rate	Severity rate	Poisonous gas discharge rate	Amount of toxic waste	Amount of toxic waste	Non-recycling rate				
5	Remarks	1 Human resources development	No. of completed QC Circle themes	No. of suggestion	Number of qualification acquisition	Attendance rate	No. of employee receiving education	Use of SQC technique	Improvement of raise rate	Fixing rate	Improvement activity level evaluation point	Own house no. and public welfare satisfaction rate	
		1 Social contribution	No. of exchange events with region	No. of foreigner trainee receipts	No. of volunteer work blood donors								
		1 Development capability	New product sales (amount and ratio)	Patent application number	Number of new products	New product development period	Design change number	Design change number	Improvement of new product mass production start up	Enlargement of product lineup	Possession technology	Technological level self-evaluation	
6	Remarks	2 Marketing capability	Order amount	Achievement rate of Sales plan	Expectation constraint	Consal number							
		3 Informationization	Economic outside and in-house effect	Competitive information total number	Monthly average frequency of use of the E-mail	E-mail volume of information	Monthly closing days of accounts	Use number to designs of complaint	LAN use system number	Number of registration of LAN of slit format	Computer operating time of year		
		1 Self-evaluation point	Self-evaluation in business structure	Innovation activity level evaluation point	President QC diagnosis evaluation	Policy Management evaluation point	TQM promotion evaluation point	TQM promotion evaluation point	Level evaluation according to ISO item	Function image of independent enterprise			
Noriaki Kano and Kozo Koura (1991): "Development of Quality Control Seen through Companies Awarded the Deming Prize", Report of Statistical Application Research, Vol.37, No.1-2, 1990-1991, pp.79-109. JUSE be revised 1995. *Note CFC: Chlorofluorocarbons (fluon usually)													

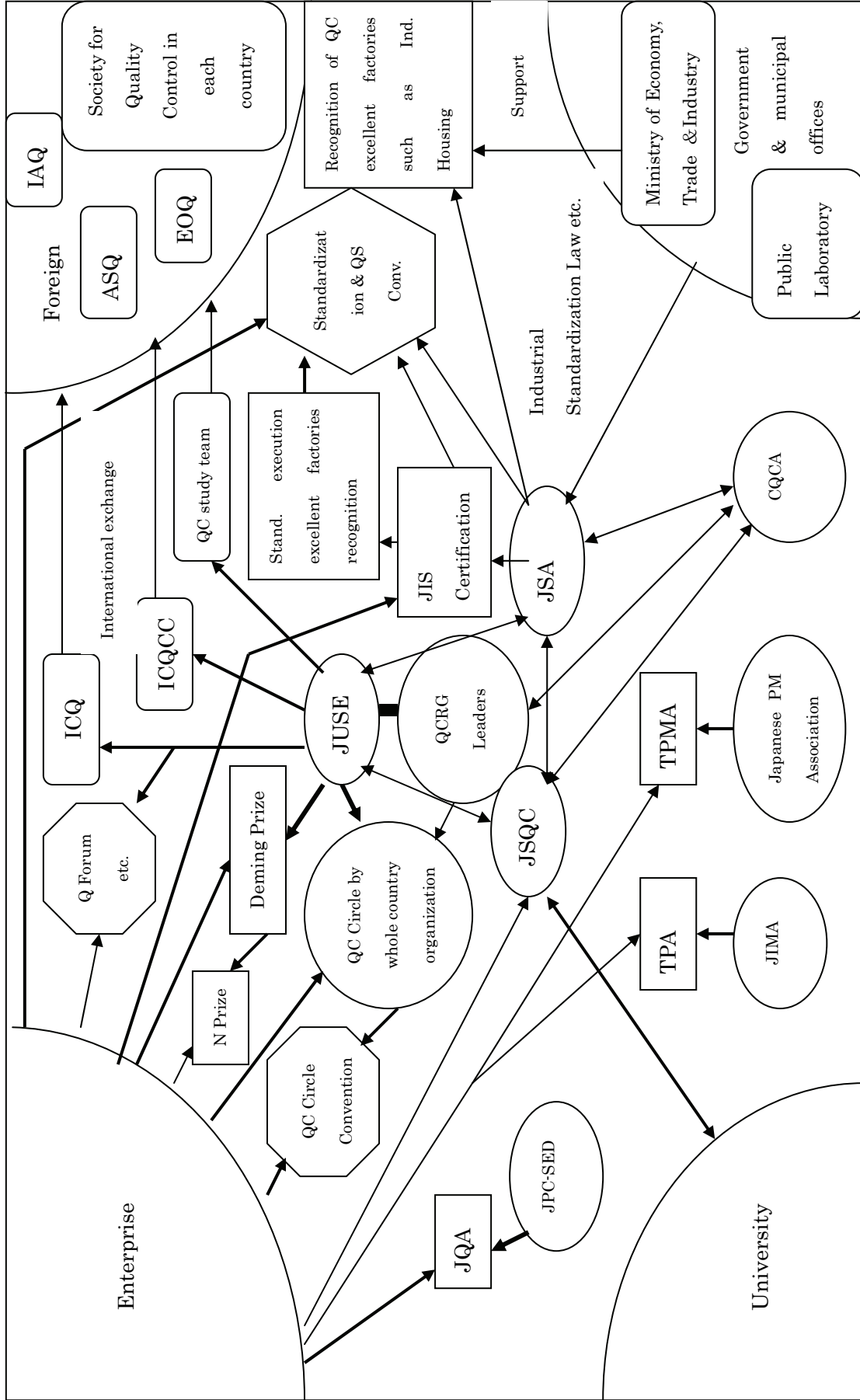


Figure 2.6 Social Systems around TQM

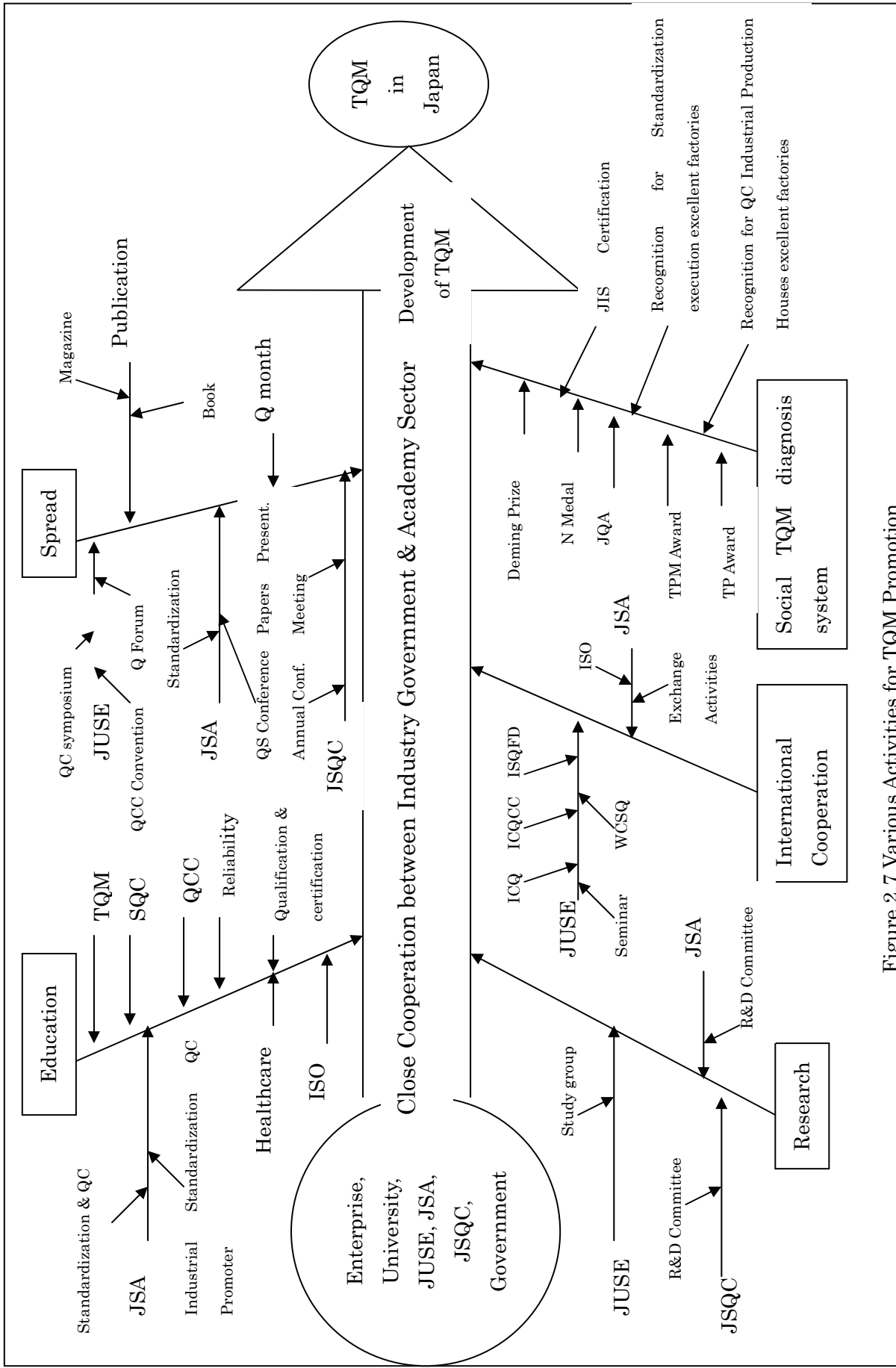


Figure 2.7 Various Activities for TQM Promotion

Table 2.9 Example of company group of GWQM in Deming Prize recipient companies (53 company 3 factories)

Group	Enterprise name	Deming Prize		Japan Quality Medal		Group	Enterprise name	Deming Prize		Japan Quality Medal		
		The 1st	The 2nd	The 1st	The 2nd			The 1st	The 2nd	The 1st	The 2nd	
Toyota group	Toyota Motor	1965		1970		ditto	Toyo Seiki	1995				
	Kanto Auto Works	1966					AISIN AW Industry	1998				
	Toyota Auto Body	1970		1980		Toyota	Hino Motors	1971				
	Toyota Industries	1986					Saitama Casting	1972*				
	Toyoda Machine Works	1985					Sanwa Seiki	1973*				
	Toyoda Gosei	1985					Saitama Kiki	1973*				
	Aichi Steel Works	1987					Horikiri Spring	1974*				
	AISAN Industry	1992					Takebe Ironworker	1975*				
	Kojima Press	1967*	1997				Riken Forge	1975*				
	Tokai Chemical Industry	1975*					7 Co.s	Nissan Motor	1959-60			
	Tokai Rika Electric Machine	1978						Fuji Ironworks	1988			
	Hoko Industry	1989*					Nissan Motor group	Nissan Motor/Oppama	1992			
	DENSO	1961				Nissan Motor/Murayama		1995				
Hamanako DENSO	1979*				Nissan Motor/Tochigi	1996						
DENSO group	Kyosan Electric Machine	1981*				Komatsu	Komatsu	1964		1981		
	Anjo Electric Machine	1984*					Komatstsc Machine	1976*				
	ASUMO	1992				Komatsu group	Komatstsc Forklift	1980				
	AISIN	1972		1977	1990		Kyowa Works	1980*				
	AISIN AW	1977		1982	1991		Komatsu Zenoa	1984				
	AISIN Takaoka	1980		1985			Hekuriku Industry	1984*				
	AISIN Shinwa	1982*	1989				NEC	1952			1973	
	Aisin Seiki	AISIN Chemical	1982*	1987	1992		Kyushu NEC	Kyushu NEC	1979			
		AISIN Light Metals	1983*	1988	1994			Yamagata NEC	1982			
		AISIN Hoyo	1985*	1990			NEC group	NEC IC Microm System	1987			
AISIN Shinei		1991*	1996			Tohoku NEC		1989				
AW Industry		1994*				Shizuoka NEC		1990				
Koritu Industry		1994*				Kansai NEC		1991				
NT Techno		1994				NEC Wireless Electronic		1996				
Remarks	*This name is S-M Prize, abolished and has been integrated into the Application Prize now. Moreover, the Japan Quality Control Medal is established, and applicant qualification is generated in the Deming Prize received later for five years. And, because each prize is fiscal year prize, multi time application is possible.											

Table 3.5 Japan Quality Award recipients table

Annual	Company name	Receiving reason
1996	NEC semiconductor group	An excellent evaluation and a high achievement are obtained with prompt and precise response to the market trend by excellent corporate principles and foresight in the business field where technical innovation is violent, and risk require enormous amount investment.
1997	Asahi Breweries, Ltd.	The improvement of the evaluation and the achievement in the market are obtained steadily by adequate grasp of customer needs and prompt response to it in the beer industry where is a big change depending on diversification of preference of the consumers, change of marketing system according to deregulation, and new competing factor by import beers and low-malt beer etc.
	Golf club of Isumi Chiba	Corporate principles of "Enterprise making that is loved and trusted by all people who surround the enterprise" infiltrate even every corner of the daily business in strong leadership of top, under difficult environment with burst of economic bubble and mature stage of golf industry, poor conditions of location is overcome by Customer Service, and it relates to the expansion of the share, the improvement and of the customer's evaluation and the improvements of a financial results.
1998	The Japan Research Institute, Ltd.	The paradigm of the autonomous self-conclusion type management is advocated by creativity, autonomy, and cross-organizational corporation focusing to customer and market needs, and enterprise additional value, it executes voluntarily and concludes successfully. It can be said that the model of a new management will still be presented to the industrial world that doesn't see the symptom slipping out confusion.
	Yoshida original	It challenges "Wall of the wholesale store circulation structure" in the forehead that becomes a problem for the customer value creation in the bag industry, in the forehead to pursue thoroughly the customer needs that truly understand "Goodness of original goods that make the best use of leather original peculiar characteristic", the project, production, and sales is integrated and high customer satisfaction measurement, customer retention rate, and superior achievement are achieved.
1999	Ricoh	The corporate principles "We aim at the trust and charming world company of by inventing and offering world useful and new value in relations of person with information" be hung in depression of Asian economy must spread all over the world and business risk by the exchange change, and the very high customer satisfaction degree and share in the industry are secured, and the continuous increase of income and profit in five terms has been accomplished by advocating "Image Communication" as enterprise slogan, and devoting "CS Management".
	Fuji Xerox the first center sales part	It aims at revolution of the document solution business related to efficiency of customer's business and a high value creation from the rental and maintenance business of copy machine that makes the major company in Japan a customer. It works on a lot of revolutions aiming at the first class solution provider that understand customers and can create best document solution with customer from the business model of setting hardware, and obtaining an advantage by use of supply goods and charge for maintenance.
2000	IBM Japan, General Business Division (GBD)	It gives priority to the improvement of the customer satisfaction rating for the agile management realization requested in the age which technical innovation is violent, and the strategy original "Improvement of the productivity of an existing business" and "Great shift to a new business" under strong leadership. The promotion of, the shares of management vision, the use of information technology (IT), special, high employee development, furthermore, the role that one sales person in charge of business has done deploy to the business that makes to the division of labor and is specialized in by division top management. A high customer satisfaction rating and the productivity improvement have been achieved at the same time as a result by constructing and driving through of in original GBD system in all companies system.
	Musashino	Original "Management by the management plan" and "Speed management by the information use" of a strong top leadership are practiced, a continuous management improvement that makes "Management quality improvement program" a tool is done, and a competition dominant system has been established in severe industry environment. Moreover, a series of activities "The working system is improved by customer's aspect, and tie to the improvement of business results" are widely deployed mainly "Eight team activities" to request the employee's independent participation with all companies, and functions to as a mechanism of promoting employee individual growth for corresponding flexibly to an environmental change that surrounds the business. It is one model of the success of the small and medium-sized enterprise management.
2001	Dai-ichi Mutual Life Insurance	A lucid strategy "Life Design" for the achievement of "Partner at the whole life" under original of corporate principles "The first contractor principle" since establishment and is consistently progressed. Each process of "Commodity and service development", "Sales, maintenance, and deep plowing", "Under writing", and "Asset management" demonstrates originality in the key process to achieve the strategy based on the customer satisfactory improvement. In addition, an excellent result is achieved in the life insurance industry under the contrary wind by thorough use of the information technology, the vital organization climate-making that centers on the conversation of manager and site staff, special, high staff development, and executing a continuous assessment. This respect can be admitted from an overseas ranking agency by even evaluating the promotion.
	Seiko Epson, Information Image Business Headquarters	The competitive management system is constructed as an inkjet printer domestic No.1 enterprise in violent changes of market environment. Especially, the high appraisal was obtained for "Taking the leadership-Setting an example" by topmanagement, demonstrating the leadership with speed feeling by the IBU system rearranged with the customer aspect, a continuous improvement in the competitive product planning process etc.
2002	Pioneer Mobile Entertainment Company	The industry-leading position built in the field of the car audio - car navigation by thorough customer focus. The activities that makes the environment can do open conversations with all parties concerned in the inside and outside of company including the customer, and creates high customer value with unites through the first technological pursuit in the world original under the spirit since establishment that keeps challenging the creation of an original commodity and new markets in the basis "Challenge to the pioneer departure and the first in the world" is widely executed over the management whole. It creates and proposes the product and service with new value to which the other companies is not permitted to follow in the car audio - car navigation field continuously as a result of such an approach, and the customer satisfaction rating and the achievement at the industry-leading level have been acquired.
	Calsonic Harrison	It demonstrates it in the revolution to "Global company of the strongest competitive edge" as part producing company of the car industry that changes suddenly, and it is possible to peel off, and a strong leadership is demonstrated by a top initiation in strengthening the organization power. Moreover, to strengthen competitive edge and the management foundation in the future, the mechanism of original management "Integrated production technology management" to answer customer, business partner, and employee's voices in sincerity is constructed. The climate in which it works on the management quality improvement activity at a top center in all companies is brewed to polish such its own originality, the talent promotion activity etc. related to a discussion and an improvement activity thorough of the top an
	Toyota Vista Kochi	In a severe car sales industry from which the decrease in the profitability because depression of a new car sales and Car cycle prolongments is not avoided after burst of the economic bubble, the mission "It challenges a new sales technique for not catching in an existing concept, and aim at highly effective sales and a highly effective management" since establishment is hung. In president's strong leadership, the system and activity that improves the employee's satisfaction are progressed as for "High customer satisfaction by the challenging workshop and the employee who thinks". Moreover, the business policy "The satisfaction rating of an existing customer is maximized" is assumed to do, and the various contact point activities with customer who made the best use of the strong point of one base to its maximum.. The result of such activities has been achieved the business result of top-level in dealer of Toyota group and high customer satisfaction.
2003	NEC Holding	In the support service business area of the IT industry with an extreme change, that a steady management is done while clarifying as directionality that should be advanced in the revolution to the service provider that creates new value, and constructing a management system necessary for its achievement in the balance, and the excellent customer satisfaction and business results of industry-leading level is have been acquired. Especially, a multipronged activities for the achievement of "Management based upon CS" had a strong contribution desire for original and the business of the effort of the creating environment that NEC was able to provide service without reserve, was executed steadily and continuously by supporting of alive living and working employee, and the high appraisal was obtained in the point to have strengthened mutual trust with the customer.

Table 4.2 Criteria comparison: Table of MBNQA, EGA, JQA, Deming Prize

Name	Criteria for Performance Excellence, MBNQA 2003	EFQM Excellence Model in 1999 EGA Criteria	JQA Criteria, 2001	2003 Deming Prize Application Guide
Purpose	Customer satisfaction, business excellence, and global competitiveness	Customer satisfaction, business excellence, and global competitiveness	Customer satisfaction and business excellence	Customer Satisfaction and Quality First
Explanation chart	Badridge Criteria for Performance Excellence Framework: A System Perspective	It divides "Enablers System" and "Result System" into Model Framework.	Criteria Framework	Examination Viewpoint, Relation and distribution point of Fundamentals of examination
Number of Criteria items	First: 7 items, 2nd: 21 items	First: 9 items, 2nd: 32 items	First: 8 items, 2nd: 23 items	Fundamentals: 1st: 6 items, Feature Activities: 1st 5 items, Topmanagement: 1st 5 items
Evaluation Method	Both of first and secondarily are distributed the evaluation point: 1000 point. 1 Leadership (120), 2 Strategies Planning (85), 3 Customer and Market Focus (85), 4 Measurement, Analysis, and Knowledge Management (90), 5 Human Resource Focus (85), 6 Process Management (85), 7 Business Results (450).	Both first and secondarily are distributed the evaluation %: 100% (Enablers: 50%, Result: 50%), and to 1 Leadership (10%), 2 Policy & strategy (8%), 3 People (9%), 4 Partnership & Resources (9%), 5 Processes (14%), 6 Customer Results (20%), 7 People Results (9%), 8 Society Results (6), 9 Key Performance Results (15%). RADAR Scoring Matrix is announced as a method of evaluating result.	Both of first and secondarily are distributed the evaluation point: 1000 point. 1. Leadership and Decision Making (120), 2 Social Responsibility in Managements (50), 3 Understanding and Correspondence for Customers and Markets (110), 4 Strategies Development and Deployment (60), 5 Ability Improvement of Individuals and Organization (100), 6 Value Creation Process (120), 7 Information Management (60), 8 Results of Activities (450).	In case of one investigation: Fundamentals: Evaluation with median 70 point or more of point number of each judge in 100 point. Feature Activities: Median 3.5 points or more of 5 point evaluation of each judge, Topmanagement: median 70 points or more of each judge in 100 point evaluation. "Pass" by integrated judgement when it is assumed to pass both "Topmanagement", "Fundamentals", and "FeatureActivity". In case of the investigation more than two investigation units: About an investigation unit of passing of the above-mentioned pass or fail at each unit: 1 of evaluation points: When the weighted mean value is 0.5 or more "Pass" and "Failure" assumption as 0.
Feature	1 Purpose, vision, mission, values, and organizational challenge problems are demanded in Organizational Profile, 2 There are Deployment of values, "Organizational Governance", "Social Responsibility" in the leadership, "Ethical Behavior", "Support of Key Communities" in "Social Responsibility", 3 "Knowledge management" in "Measurement, Analysis, and Knowledge Mmanagement", 4 "Value Creation Process (Key Process for creating Customer Value)" in "Process Management", 5 "Governance and Social Responsibility Result" is emphasized and demanded in "Business Result".	1. "Mission", "Vision", "Ethics", "Organization's Culture" in Leadership, 2 There is "Society Result" instead of social responsibility, "Responsible Citizen", Involvement in the Communities", "Reduce and prevent nuisance and harm throughout product life cycle", 3 "Supply chain partnerships", "Technological resource", "Information and knowledge resource" in "Partnership and Resources", 4. "ISO9000/14000" "OSHAS" is emphasized and demanded in "Processes", 5 "Perception Measures" and "Performance Indicators" in five items of "Results" are detailed and are concrete.	1. It is a Japanese version of MBNQA, 2 "Decision Making System" in "Leadership and Decision Making", 3 "Social Contribution" in "Social Responsibility in Management" of the first item, 4 "Organizational Ability" in "Ability Improvement of Individual and Organization", 5 "Rival Comparison and Benchmarking" is emphasized and demanded in "Information Management", 6 "System Structure" in three stages of Each Criterion item such as "Basic Idea and Operation Method", "Setting Objectives and Grasping Result", and "Evaluation and Improvement" is demanded the explanation of as a whole as the range of description.	1 It is the compositions divided into three of "Fundamentals", "Feature Activities" and "Role of Topmanagement and its Demonstrating". 2 The point to have installed "Topmanagement" is important. The inside. "Understanding and zeal for TQM", "Leadership, Vision, Strategic Policy, Discernment for Environment Change", 3 "Development, Control and Improvement of Product Quality, Business Quality" "Management System" are emphasized and demanded in "Fundamentals", 4 "Feature Activities" is only Deming Prize, 5 "Effectiveness", "Consistency", "Continuance" and "Thoroughness" set in Evaluation Axis of "Fundamentals", the similar idea is only RADAR

Table 4.4 Comparison of expenses related to MBNQA and Deming Prize Examination

Malcolm Baldrige National Quality Award					
2003 MBNQA					
2003 Deming Prize Application Guide	Category	Application Qualification Recognition Commission *1	Application Examination fee *2	Local Examination Commission *3	Examination Committee Handbook in 1996
Expense concerning the examination is an investigation unit one place: 500,000 yen, and 2-places or more places: +100,000 yen/place. However, transportation, staying expense, and the Diagnosis Report making cost of the examiner and one Deming Prize Committee person are borne to the application company for the site visit.	Manufacturing division	\$ 150	\$ 5,000	When the visit schedule is decided, the local examination commission is decided. Expense is decided the nominated number of examiners at site visit period. The local examination commission contains all expenditures and traveling expenses related to write the local visit report.	Repayment of Expenditures The Award Program should be had in the Maximum voluntary support and be operated, because the Federal Treasury is not at all the local examination commission of Award and the application examination fee is maintained to the minimum. Formal rate according to Federal Traveling Expenses. 1. Transportation: (1) Private car: \$0.30 + traffic fee on the road/one mile. (2) Air route: Economy class charge rate. (3) Rent-a-car: case b case. 2. Daily allowance: Staying, meal, and other accompanying expense. 3. Telephone: Person-to-person is \$3.00. 4. Express delivery mail of next day: MBNQA Federal Express account of the next day of material to Award Program. 5. The charge to those who applied about manufacturing and service division in 2002 was \$ 20,000 - \$ 35,000.
	Service division	\$ 150	\$ 5,000		
Small and medium-sized enterprise division	Small and medium-sized enterprise division	\$ 150	\$ 2,000	The above-mentioned 1/2	1. Transportation: (1) Private car: \$0.30 + traffic fee on the road/one mile. (2) Air route: Economy class charge rate. (3) Rent-a-car: case b case. 2. Daily allowance: Staying, meal, and other accompanying expense. 3. Telephone: Person-to-person is \$3.00. 4. Express delivery mail of next day: MBNQA Federal Express account of the next day of material to Award Program. 5. The charge to those who applied about manufacturing and service division in 2002 was \$ 20,000 - \$ 35,000.
	Organization in enterprise	\$ 150	\$ 2,000	Ditto	
	Remark	*1: Application qualification recognition cost to all qualification requirements candidate (Do not repay it.)	*2: Cost that distributes of application vote and inspects it related to feed back report (examination report) making.	*3: The local examination commission is paid only by the application enterprise that reaches the local examination stage.	

Attached Table TQM Quality Award Element Comparison Matrix (transporting version)

Quality Award TQM Element Deployment		TQM Quality Award Element Comparison Matrix (transporting version)										
		1 Top's role and mission are established	2 Management plan system is established	3 Response system for customer is established	4 Product and service offer process are established	5 Business management system is established	6 Quality and environment at system are established	7 Information system is established	8 Human resources is developed	9 Mission and result of the organization are improved	10 Social relationship is established	11 TQM is promoted
Malcolm Baldrige National Quality Award	1 Leadership is established.	1182	1632	174	300	912	432	96	1182	1464	1872	1242
	2 Strategic plan is established.	114	2097	330	390	357	54	0	675	734	243	111
	3 Customer and market is focussed.	0	0	1298	971	0	157	34	0	199	259	0
	4 Information is analyzed.	57	450	321	260	278	43	1575	171	870	236	21
	5 Human resources is focussed.	0	215	0	0	709	111	0	3319	31	126	66
	6 Process management is established.	120	169	294	641	899	2091	0	79	145	347	102
	7 Business results are measured and evaluated.	360	2295	7576	4745	3283	2673	0	4880	9218	5145	0
European Quality Award	1 Leadership is established.	1281	1148	600	567	587	974	300	1507	1054	1261	2201
	2 Policy and strategy are established.	74	1148	748	1136	234	343	548	188	582	183	537
	3 People management is established.	0	228	0	62	152	104	332	4407	0	28	76
	4 Partnership and resource control are established.	0	547	228	76	512	519	415	388	353	360	408
	5 Process is established.	90	830	4740	4700	270	1700	120	470	410	580	1520
	6 Customer Results are improved.	200	200	8666	5933	267	2800	0	600	2200	2200	967
	7 People Results are improved.	0	0	60	30	150	0	270	3840	270	270	0
	8 Society Results are improved.	45	120	90	15	323	278	23	23	270	1553	173
	9 Key Performance Results are improved.	169	1481	844	1238	713	1294	338	206	1556	975	375
Japan Quality Award	1 Leadership and decision making are established.	1717	3878	451	257	1111	1022	282	1627	2125	1410	237
	2 Social responsibility in management is accomplished.	578	356	45	68	521	461	0	11	743	1676	23
	3 Customer and market are understood and responded.	0	437	5916	5618	113	552	139	0	523	1052	0
	4 Strategy is settled on and deployed.	282	2131	193	205	51	64	103	385	719	77	13
	5 Ability of individual and organization are improved.	12	661	0	12	333	209	36	4294	76	147	0
	6 Value creation process is established.	0	223	350	1935	1072	3021	120	0	80	410	443
	7 Information management is established.	0	288	864	1056	180	454	1197	0	400	279	0
	8 Results of activities are declared.	1320	3650	6700	7410	2270	9090	1590	3030	3337	5700	330
Deming Prize Application Prize	F.1 Management policy is established and deployed.	1042	2443	277	341	358	130	33	211	781	401	1481
	F.2 Product development and business are reformed.	42	648	1230	2023	698	1087	372	1022	297	209	489
	F.3 Quality of product and business is controlled and improved.	0	148	575	899	523	1652	0	167	115	84	383
	F.4 Management system such as QDCSE is maintained.	0	335	397	565	460	502	42	84	105	188	105
	F.5 Information analysis and IT are used.	0	0	667	480	24	171	1049	0	122	0	293
	F.6 Human Ability is developed.	0	27	174	265	174	393	18	4026	0	174	311
	S.1 Feature of TQM is created.	36	24	0	12	36	24	12	36	36	24	243
	S.2 Vision, strategy, and leadership are demonstrated.	27	67	2	18	22	16	4	8	37	10	92
	S.3 Customer value is created.	0	0	162	243	0	49	4	0	0	0	61
	S.4 Performance of organization is improved greatly.	0	12	24	45	18	33	0	6	4	2	69
	S.5 Management base of organization is established.	2	17	24	39	5	15	28	46	7	0	73
	S.6 Others.	0	0	0	0	24	0	0	0	0	41	73
	T.1 Understanding and zeal to TQM are shown.	399	0	133	67	466	399	67	798	266	399	2462
	T.2 Top has leadership, vision, strategy, policy, and discernment to environmental change.	2063	3039	1597	1597	399	399	67	0	1730	798	1264
	T.3 Organization power (core technology, speed, vitality) is maintained and strengthened.	0	200	0	0	0	133	333	67	67	0	266
	T.4 Human resources is improved.	0	67	0	0	200	133	0	3793	0	0	200
T.5 Social responsibility of organization is accomplished.	1530	665	0	67	1242	311	67	1397	1464	1863	599	
ISO9000 Quality System	1 Basis of quality management system is established.	481	592	37	185	259	851	123	37	222	407	111
	2 Management responsibility is clarified.	2925	4467	3838	4553	926	2665	296	666	1555	1999	296
	3 Resource management is established.	0	74	370	321	851	654	74	1814	0	0	37
	4 Product realization process is established.	0	333	2863	3998	518	6182	74	0	148	284	74
	5 Basis of measurement, analysis, and improvement is established.	111	370	1814	1666	74	4516	555	0	148	851	259

Table 5.5 Summary of factor structure of each Award

Name of Quality Award		Criteria Item	2 Social Responsibility	10 Management Responsibility	4 Leader Philosophy	5 Strategic Plan	1 Partner	6 Customer Market	11 Process	3 Cross- Management	8 Information Utilization	9 Human Resources Development	7 Revolutionary Innovation
Malcolm Baldrige National Quality Award	MB1 Leadership is established.		0.4	0.4	0.4								
	MB2 Strategic plan is established.					0.6							
	MB3 Market and customer are focused.							0.6					
	MB4 Information is analyzed.									0.6			
	MB5 Human resources is focused.											0.6	
	MB6 Process management is established.								0.6				
	MB7 Business result is measured and evaluated.		0.4					0.4					
European Quality Award	EQ1 Leadership is established.		0.4	0.4	0.4								
	EQ2 Policy and strategy are established.					0.4	0.4						
	EQ3 People management is established.											0.6	
	EQ4 Partnership and resource control are established.						0.6						
	EQ5 Process is established.								0.6				
	EQ6 Customer results are improved.								0.6				
	EQ7 People results are improved.											0.6	
	EQ8 Society Result are improved.		0.6										
	EQ9 Key performance results are improved.						0.4						
Japan Quality Award	JQ1 Leadership and decision making are established.		0.4	0.4	0.4	0.4							
	JQ2 Social responsibility in management is accomplished.		0.6										
	JQ3 Customer and market are understood and responded.							0.6					
	JQ4 Strategy is settled on and deployed.					0.6							
	JQ5 Ability of individual and organization are improved.											0.6	
	JQ6 Value creation process is established.								0.6				
	JQ7 Information management is established.										0.6		
	JQ8 Result of activities are declared.		0.4						0.4				
Deming Prize	Fundamentals	DF1 Management policy is established and deployed.		0.4		0.4							
		DF2 Product development and business are reformed.								0.4			
		DF3 Quality of product and business are controlled and improved.								0.6			
		DF4 Management system such as QCDSE is maintained.									0.6		
		DF5 Information analysis and IT are used.										0.6	
		DF6 Human Ability is developed.											0.6
	Feature	DS1 Feature of TQM is created.			0.6								
		DS2 Vision, strategy, and leadership are demonstrated.											0.6
		DS3 Customer value is created.							0.6				0.4
		DS4 Performance of organization is improved greatly.											0.6
		DS5 Management base of organization is established.											0.6
		DS6 Others.											
	Topmanagement	DT1 Understanding and zeal to TQM are shown.			0.6								
		DT2 Top has leadership, vision, strategy, policy, and discernment to environmental change.		0.4		0.4							
		The DT3 organization power (core technology, speed, and energies) is maintained and strengthened.					0.4						
		DT4 Human resources is improved.										0.6	
		DT5 Social responsibility of organization is accomplished.	0.6										
	ISO 9001	ISO1 Basis of quality management system is established.		0.6									
ISO2 Management responsibility is clarified.			0.6										
ISO3 Resource management is established.											0.4		
ISO4 Product realization process is established.								0.6					
ISO5 Basis of measurement, analysis, and improvement are established.								0.6					
Relating Award	Relation explanation	Topmanagement leadership			Customer value creation, Product development, production, and offer process								
MBNQA, EQA, JQA, and Deming Prize	Four awards common factor		*	*	*		*				*		
MBNQA, JQA, and Deming Prize	Three Awards common factor	*						*		*			
MBNQA and JQA	Two Awards common factor					*							
EQA and Deming Prize	Factor only of one Award								*			*	

Table 5.6 Common Factor and Factor Loading

Factor Name	Contributory Rate > 0.07, Factor Loading > 0.5	Common Level > 0.8, Factor Loading > 0.5
2. Social Responsibility	MB1 Leadership = 0.6, MB7 Business Result = 0.5, EQ8 Society Results = 0.7, JQ2 Social Responsibility = 0.8, DT5 Social Responsibility of Organization = 0.7	
10. Management Responsibility		DF1 Management Policy = 0.6
4. Leader Philosophy		
5. Strategic Plan		DF1 Management Policy = 0.5
6. Customer Market	MB3 Market and Customer = 0.7, EQ5 Process = 0.7, EQ6 Customer Results = 0.7, JQ3 Customer and Market are understood and responded = 0.9, DS3 Customer Values is created.	JQ3 Customer and Market are understood and responded.
11. Process	MB6 Process Management = 0.6, JQ6 Value Creation Process = 0.7, DF3 Quality of Product and Business are controlled and improved, ISO4 Product Realization Process = 0.8, ISO5 Basis of Measurement, Analysis, and Improvement.	ISO4 Product Realization Process = 0.8, ISO5 Basis of Measurement, Analysis, and Improvement.
8. Information Utilization		
9. Human Resources Development	MB5 Human Resources is focused, EQ3 People Management, EQ7 People Results = 0.8, JQ5 Ability of Individual and Organization = 0.9, DF6 Human Ability is developed = 0.9, DT4 Human Resources is improved = 0.9, ISO3 Resource Management = 0.5	EQ3 People Management, EQ7 People Results = 0.8, JQ5 Ability of Individual and Organization = 0.9, DF6 Human Ability is developed = 0.9, DT4 Human Resources is improved = 0.9,
Remark		Revolutionary Innovation: DS4 Performance of Organization is improved greatly, DS5 Management Base of Organization is established. Factor Loading rounds off two decimal digits.

MIBQDA Criteria in 1988		MIBQDA Criteria in 1989		MIBQDA Criteria in 1991		MIBQDA Criteria in 1993		MIBQDA Criteria in 2001		MIBQDA Criteria in 2003	
1 Leadership	1.1 Senior leadership	30	20	80	80	40	40	80	80	40	40
	1.2 Policy	30	20	30	15	40	40	40	40	40	40
2 Information and analysis	2.1 Use of analytical techniques	15	20	40	13	20	20	40	40	40	40
	2.2 Use of information on quality of products or services	10	15	20	13	20	20	40	40	40	40
3 Quality of strategic plan	3.1 Measurement objectives and strategic objectives	20	20	40	13	20	20	40	40	40	40
	3.2 Planning function	20	20	40	13	20	20	40	40	40	40
4 Use of human resource	4.1 Measurement and administration	30	20	40	13	20	20	40	40	40	40
	4.2 Employee's quality commitment and loyalty	30	20	40	13	20	20	40	40	40	40
5 Quality assurance of product and service	5.1 Reflection of customer's opinion in product and service	20	20	40	13	20	20	40	40	40	40
	5.2 Development of new product or new services	20	20	40	13	20	20	40	40	40	40
6 Quality assurance results of product and service	6.1 Reliability and results of product or service	25	20	40	13	20	20	40	40	40	40
	6.2 Decrease of scrap, adjustment and rework during production	20	20	40	13	20	20	40	40	40	40
7 Customer satisfaction degree	7.1 Quality of product and customer's viewpoint	30	20	40	13	20	20	40	40	40	40
	7.2 Measuring method and results of customer satisfaction degree	25	20	40	13	20	20	40	40	40	40
8 Quality assurance of process	8.1 Reliability and results of process	25	20	40	13	20	20	40	40	40	40
9 Quality assurance of human resource	9.1 Reliability and results of human resource	25	20	40	13	20	20	40	40	40	40
10 Quality assurance of information system	10.1 Reliability and results of information system	25	20	40	13	20	20	40	40	40	40
11 Organizational leadership	11.1 Senior leadership	30	20	80	80	40	40	80	80	40	40
12 Public responsibility and citizenship	12.1 Strategy development	40	40	80	80	40	40	80	80	40	40
13 Strategy development	13.1 Strategy development	40	40	80	80	40	40	80	80	40	40
14 Customer and market knowledge	14.1 Customer and market knowledge	40	40	80	80	40	40	80	80	40	40
15 Measurement and analysis of organizational performance	15.1 Measurement and analysis of organizational performance	40	40	80	80	40	40	80	80	40	40
16 Data and analysis related to employees	16.1 Data and analysis related to employees	40	40	80	80	40	40	80	80	40	40
17 Unique and innovative information analysis	17.1 Unique and innovative information analysis	40	40	80	80	40	40	80	80	40	40
18 Measurement objectives and strategic objectives	18.1 Measurement objectives and strategic objectives	40	40	80	80	40	40	80	80	40	40
19 Planning function	19.1 Planning function	40	40	80	80	40	40	80	80	40	40
20 Quality improvement program	20.1 Quality improvement program	40	40	80	80	40	40	80	80	40	40
21 Unique and innovative strategic plan	21.1 Unique and innovative strategic plan	40	40	80	80	40	40	80	80	40	40
22 Unique and innovative strategic plan	22.1 Unique and innovative strategic plan	40	40	80	80	40	40	80	80	40	40
23 Measurement and administration	23.1 Measurement and administration	40	40	80	80	40	40	80	80	40	40
24 Employee's quality commitment and loyalty	24.1 Employee's quality commitment and loyalty	40	40	80	80	40	40	80	80	40	40
25 Reflection of customer's opinion in product and service	25.1 Reflection of customer's opinion in product and service	40	40	80	80	40	40	80	80	40	40
26 Development of new product or new services	26.1 Development of new product or new services	40	40	80	80	40	40	80	80	40	40
27 Reflection of customer's opinion in product and service	27.1 Reflection of customer's opinion in product and service	40	40	80	80	40	40	80	80	40	40
28 Development of new product or new services	28.1 Development of new product or new services	40	40	80	80	40	40	80	80	40	40
29 Reliability and results of product or service	29.1 Reliability and results of product or service	40	40	80	80	40	40	80	80	40	40
30 Decrease of scrap, adjustment and rework during production	30.1 Decrease of scrap, adjustment and rework during production	40	40	80	80	40	40	80	80	40	40
31 Quality of product and customer's viewpoint	31.1 Quality of product and customer's viewpoint	40	40	80	80	40	40	80	80	40	40
32 Measuring method and results of customer satisfaction degree	32.1 Measuring method and results of customer satisfaction degree	40	40	80	80	40	40	80	80	40	40
33 Reliability and results of process	33.1 Reliability and results of process	40	40	80	80	40	40	80	80	40	40
34 Reliability and results of human resource	34.1 Reliability and results of human resource	40	40	80	80	40	40	80	80	40	40
35 Reliability and results of information system	35.1 Reliability and results of information system	40	40	80	80	40	40	80	80	40	40

Table 7.1 Passage of Management and TQM activities in AISIN Co.,

Business environment	Trade Liberalization	High growth age motorization	Dollar shock	Oil crisis	Low growth age. Conserve fuel cost	Uncertainty age Export expansion	Yen appreciate on	Maturation age and international cooperation	Bubble Economic meltdown	Gentleness to person and environment in a new age.	Long slump of business	Society that invents creative value Society globally opened Society that values dweller Knowledge and information society
Idea of management	Reinforce competitiveness	Challenge to high growth	Challenge to crisis	Challenge to immovable constitution	Aiming to global constitution	Aiming to global excellent enterprise	Aiming to global	Aiming to global	Creating the attractive enterprise.	Global enterprise making future	2000	
Vision & Activities	1965 AISIN Co., Ltd. establishment in Aug. 1965	1975 New V75 Establishment of system of mass production	1978 V80 Challenge to high quality Contribution to the society	1980 V85 Vigor securing according to commodity, basic-making as mechatronics maker, and promotion of new field commodity	1985 (V90) Freezing 140strategies Recovery by annual plan for challenge to bad results Convert to attractive commodity system	1990 V97 Introduction of total commodity strategy Establishment of global management system	1992 V95 SCOPE21 Shape up Cost Reduction Personal Evolution	1995 Setting corporate activities of innovative constitution Commodity-making of creating new market	1996 V2005 CHARGE Creation of New value, sustainable growth in cooperation and competition. Coexistence with society and environment. Respect for individual creativity and spontaneities CHARGE: Creative, Harmonious Responsible, Global and Energetic.	2000		
TQM chronology	Introduce TQC, Apr 1970	Deming JQA recipient, 1972	Introduce TPM recipient, 1977	Introduce PM winner 1982	Deming Individual recipient, Chairman TYODA, 1983	Special PM recipient 1985	PM JQM (2) recipient 1990	Change from TQC to TQM June 1994	Begin Aisin Warner 1977 Deming recipient & follow by AISIN Group Companies recipient Deming Prize & JQA.			
Step	0	1	2	3	4	5	6	7	8	9		

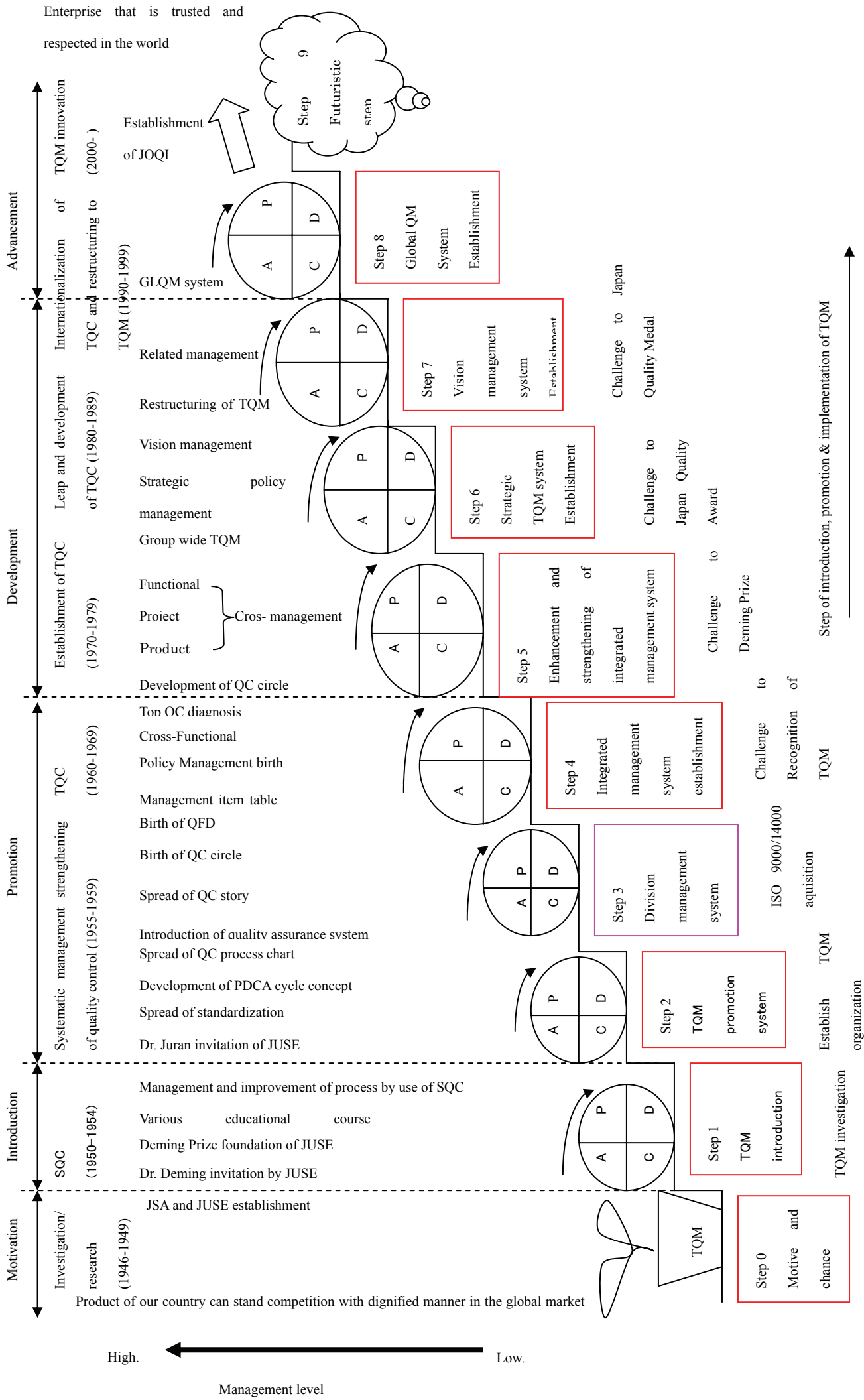


Fig. 7.1 Development of TQM in Japan and Introduction, Promotion and Implementation of TQM in enterprise

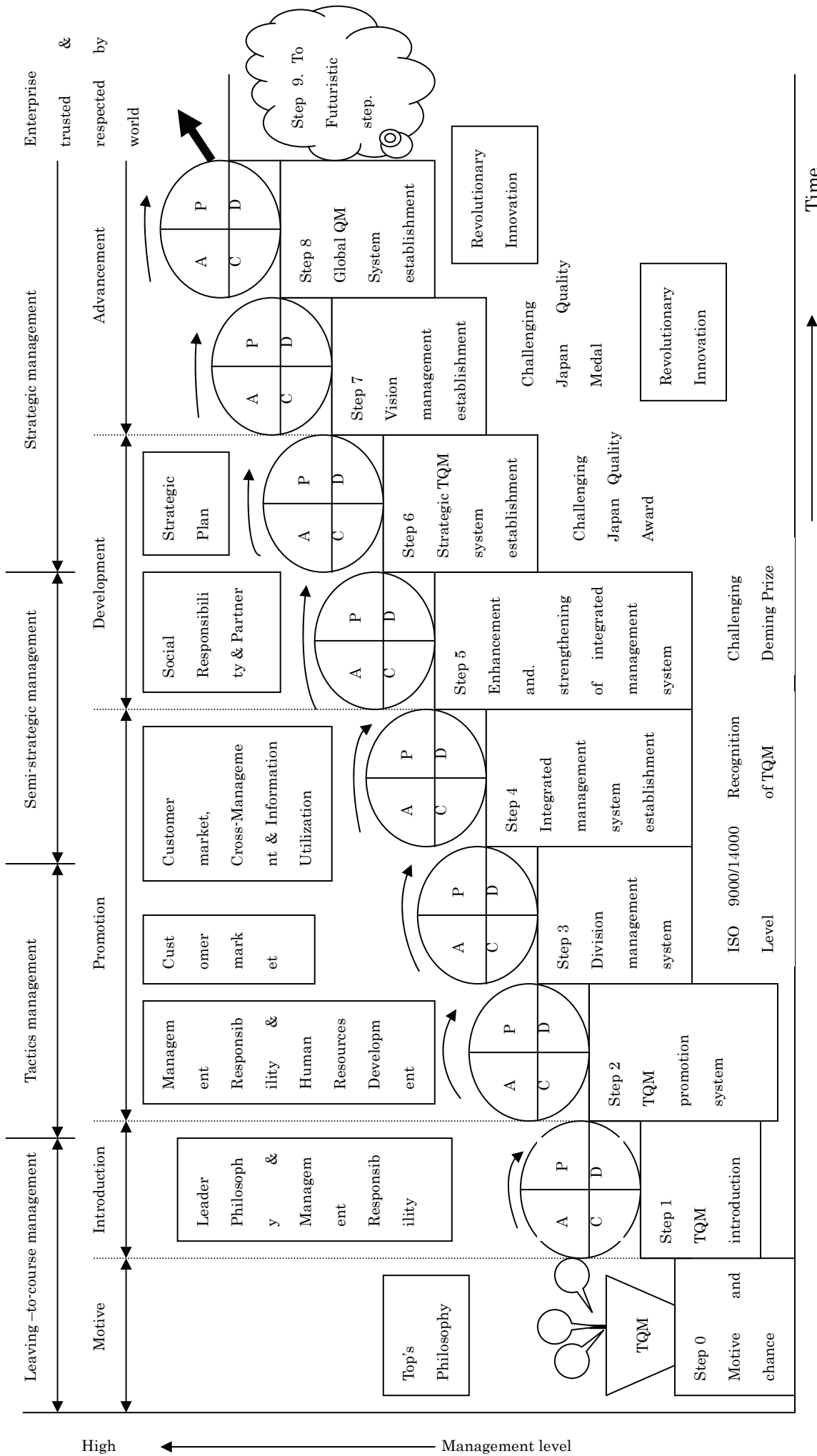


Fig. 7.2 Process of introduction, promotion, development, and advancement of TQM (illustration)

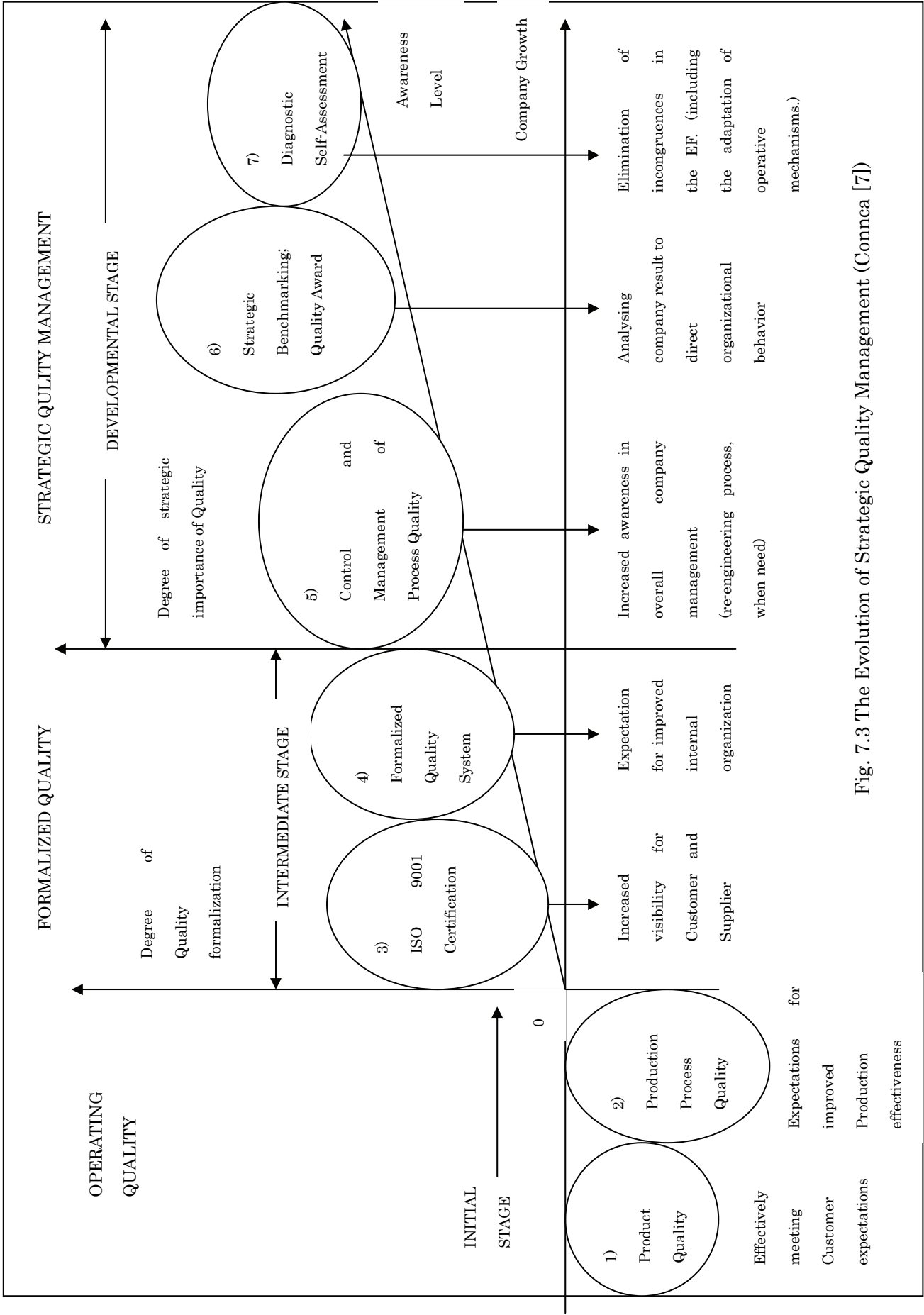


Fig. 7.3 The Evolution of Strategic Quality Management (Connca [7])

Toyota Auto Body Co., Ltd. (car):
1980 Japan Quality Medal

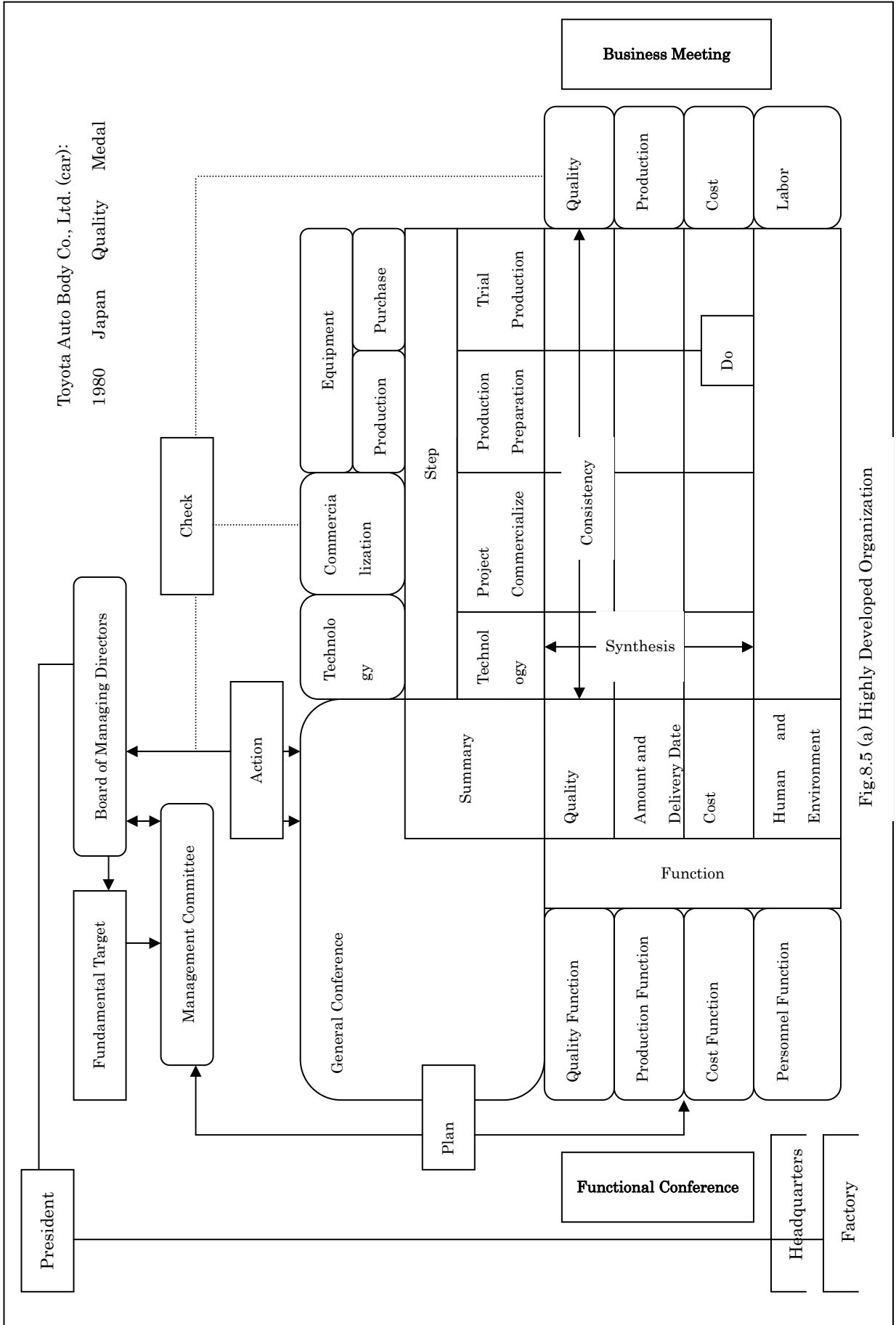


Fig.8.5 (a) Highly Developed Organization

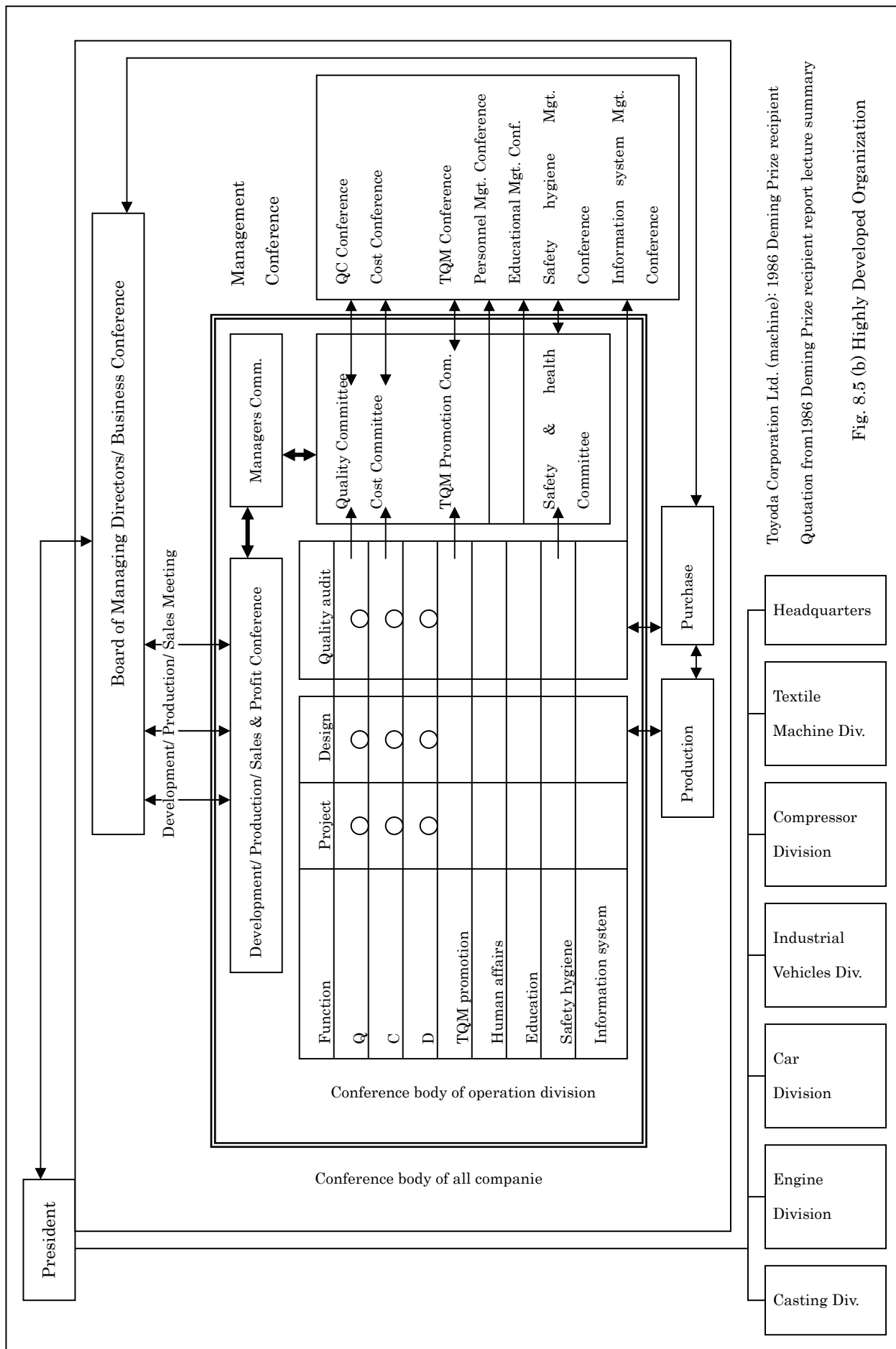


Fig. 8.5 (b) Highly Developed Organization

Table 8.7 Problem before introduction of Cross-Functional Managements (common, quality assurance) (1960-1990) 102 companies

Division	Step	Problem	Key word			
Common	38	Cooperation between divisions	38			
		38	30			
Quality Assurance	507	Whole	53	17		
				11		
				9		
				8		
				5		
		Project	88	25		
				14		
				14		
				11		
				10		
				9		
				5		
				Development	28	9
						7
						5
		4				
		3				
		Design, trial	43	16		
				8		
				7		
				6		
		Production preparation	40	20		
				8		
				7		
				5		
				12		
		Purchase subcontract	37	7		
				6		
				4		
				4		
				4		
		Manufacturing	132	22		
				20		
				18		
				16		
				15		
				14		
				12		
				9		
		Equipment QA		8		
				5		
				5		
		Sales service		26		
				16		
				9		
				7		
				6		
		Total	507	507	507	
		Remarks	The figure of each column is a problem number. Because the cooperation between divisions appeared at each division, it put it in "Commonness" as a total meter. Describing clearly "Problem" was coming after in 1980's and it came to write in detail, after especially 1985.			

Table 8.8 Problem before introduction of Cross-Functional Management
(cost and profit, amount and delivery date, new product development, sales, safety and Healthcare) (1960-1990), 102 companies

Division	Step	Problem	Key word				
Cost and profit management	106	Management system	55	Cost project is insufficient.	14	Built-in cost of development and design stage, target cost	
				Prompt analysis and feedback action of the cost and the profit data is weak.	12	Analysis of data and report to top and action	
				Long term and fiscal year profit plan for an environmental change are incomplete.	11	Long-range management planning, strategy, and target(budget)	
				Cost and the profit management system are insufficient.	9	Cost and profit management system	
				Budget and the cost system are old-fashioned.	9	Rul of thumb, only of management according to items of expenses, extraordinary loss	
		Management consideration	13	Consideration and recognition to profit and cost are weak.	7	Understanding, recognition, and consideration to profit and cost	
				Sales first principle	6	Sales oriented	
		Improvement activity	14	Scientific all company profits and cost improvement activities are insufficient.	14	Reduction in cost, labor cost, and overhead cost	
		Achievement		It is easy to receive the influence of the economic fluctuation.	9	Change of exchange market price, raw material amount, and order	
			Sales and profit target underachievement	9	Sales, profit, and share		
	Increase of stock		3	Stock increase			
		Interest cost and stay claim increase	3	Interest cost and stay claim			
Total	106	106	106				
Amount and delivery date management	79	Management system	10	Production management system to demand for upgrade and diversification of customer needs is insufficient.	10	Sales forecast, upgrade, diversification, product abolition, and part switch	
				Loss by process complication increases.	11	Arrangements switch loss, running out of stock, and line balance	
		Production plan, process organization		20	There are a lot of production plan changes.	9	Production plan change and concentrated production at the end of the month
				14	Trouble at mass production standing up stage is a lot..	8	Standing up is instability, and longbetween periods, initial flow management
		Production preparation, mass production			Design and production preparation system corresponding to diversification of customer needs is insufficient.	6	Drawing multi, drawing leakage, and increase of number of metal molds
				9	Equipment ability and efficiency corresponding to demand are insufficient.	5	Maintenance ability, efficiency, and equipment introduction
		Equipment control			Automating the process doesn't advance.	4	Automating technology, design, and continuous supply for 24 hours
				12	Delay of correspondence to user's needs of short delivery date	7	Short delivery date, long turn, and prompt delivery
Delivery date management			Delivery date accomplishment rate is bad.	5	Delivery date delay and delivery date accomplishment rate		
		14	Increase of amount of stock	11	Stock increase, abnormal stock, and stagnation		
	Stock control	14	Sales and production target underachievement	3	Target underachievement and growth rate becoming duller		
Total	79	79	79				
New product development	108	New product development system	23	Mechanism of the new product development is weak.	12	Organizational development, Cardinal rule of all companies	
				Quality development system has not been established.	11	Quality objective, bottleneck technology, andbuilt-in quality	
		Collection of product strategy information		26	Search, collection, and transmission of product planning information like market, customer, and technology, etc. are insufficient.	15	Information gathering and product planning
					Strategic product development in long range perspective is not planned.	11	Long-term strategic product planning and development plan
		Project power technology		31	Advanced technology shortage corresponding to new field	17	New field, diversifying, high classing, after following technological development
					Project and development power of new product and new technology that took needs in advance in the future are weak	14	Sporadic product planning and passivedevelopment.
Development period prior study		33	Outflow of problem to post-process due to prior study shortage of project, development, and design stage	15	Prior study and problem outflow to post-process		
			New product development period late, and timing.	13	Timing and initial flow management at development period		
Total	108	108	108				
Sales management	77	Business posture	25	Mid/long-term business strategy is lacked.	11	Long-term, strategic, premeditation, foreign	
				It is not business of the attack.	8	Correspondence to customer and user, development of new field	
				It is passive business.	6	Passive. Existing customer, and subcontract constitution	
		System of business management		17	It is not systematic business.	9	Systematic, cooperation between divisions and individual business
					Business management system corresponding to market and customer's changes is weak.	8	Change of market and customer, system of business, and order management
		Use of information		20	Collection, analysis, and use of marketand customer information do'nt do.	13	Information gathering, grasp, and analysis
			It is not process oriented business for best use of information by the result oriented.	7	Result focus, process focus, and best use of information		
Business results		15	The commodity and sales project to new field where the customer needs were understood are weak.	10	Sales project, customer needs grasp, and product planning		
			The order is unable to move upward, and new field and new product are inactive sales.	5	Order amount, and new field and new product order amount		
Total	77	77	77				
Safety and health care management	13	13		Safety and healthcare management activity and system are insufficient.	6	Safety and healthcare management system and prospect danger activity	
				There are a lot of industrial injuries.	4	Industrial injury, closed disaster, fire, andpoisonous material	
				Safety consciousness and safety education and training are insufficient.	3	Disaster prevention guidance, no disaster experience, and safety consciousness	
Total	13	13	13				
Total sum	928	928	928				
Remarks	The figure of each column is a number of problems. The total of the problem of the Cross-Functional Management introduction enterprise was shown as "Total". Environmental protection contains it in the management for safety andhealthcare. The item of the new product development and retail management comes to be explained independently from about 1980, it increased after 1985, and most enterprises have installed the paragraph of the new product development after especially 1987.						

Table 8.10 Effects after introduction of Cross-Functional Management (common and quality assurance) (1960-1990) 102 companies

Division		Step	Effects	Key word			
Common	101	Cross-Functional Management	Cooperation between divisions strengthened.	53	Cooperation between divisions cooperative operation between divisions		
			Cross-Functional Management advanced, and management system strengthened.	9	Cross-Functional Management System and management system		
			It becomes channel of information to clarify, proposal of bottom-up opinion to go out easy, and decision making speeds up.	9	Information root, communications channel, proposal, and decision making		
			Cross-Functional responsibility and authority clarified.	6	Cross-functional responsibility, authority, and management item		
			Corporate constitution has improved.	3	Corporate constitution		
		Idea quality consideration of QC	21	Idea and the technique of QC infiltrate, and problem solving power improves.	11	QC technique, idea, and problem solving power	
				It has advanced from management of result oriented to management of unprevention.	6	Result oriented, prior response, forecast	
				Quality awareness infiltrated, and improvement desire has improved.	4	Quality awareness and improvement desire	
				Idea and consideration of market in, quality first and quality assurance	30	Market in, quality the first, and quality	
				Quality assurance system was maintained.	25	Quality assurance system built-in quality system, and QA diagnosis	
Quality assurance	518	General	Mutual trust with the customer has become strong.	15	Mutual trust and confidence with customer		
			Improvement of product quality and strengthening of quality leadership basis	15	Improvement of quality, highest quality, and quality leadership		
			Standardization concerning quality assurance has advanced.	15	Specification, standard, form maintenance and revision		
			Level of the quality assurance has improved.	14	Quality assurance and built-in quality activity		
			Solving activity of important quality issue advances and it has been improved greatly.	11	Important quality issue		
			Technique of quality assurance was developed and used.	11	QFD, FMEA, and reliability		
			Project	35	It became a constitution that make built-in project quality from the source.	12	Built-in quality from source, quality oriented
					Difference and achievement level of project quality target have been improved	11	Difference and achievement level of project quality
					Project theme and quality objective suitable for customer needs have	4	Project target suitable for needs
					Collection, analysis, and use of information at the project stage have advanced.	4	Information gathering, analysis, and use of market quality information
		Development	6	Trouble by project quality into post-process has decreased.	4	Project quality trouble	
				Built-in quality activity in development stage was established.	6	Development and built-in quality	
		Design making for trial purposes	45	Trouble number decrease in post-process by design factor	18	Design responsibility complaint, trouble, and design change	
				Improvement of quality of design	10	Quality of design	
				Improvement of reliability and reliability technology	10	Reliability, technology, and reliability design	
				Establishment of design review (DR) system	7	DR and design review	
		Production preparation	27	Stabilization of quality at early stage of new product standing up	12	Stabilization at time of standing up	
				Trouble decrease in post-process by factor of production preparation stage	8	Trouble at time of standing up and complaint after start of mass production	
				Enhancement of quality assurance in production preparation and initial flow management	7	Initial flow management and QA of production preparation stage	
		Purchase and subcontract	40	Decrease of delivery inspection failing rate (defective rate)	22	Delivery defect, acceptance inspection failure rate	
				Cooperation trader's TQM has advanced.	10	Cooperation trader's TQM and QC Circle	
				Improvement of subcontractor quality evaluation	4	Quality evaluation and no inspection delivery of cooperation manufacturer	
				Connected quality assurance including cooperation trader	4	Connected quality assurance	
		Manufacturing	101	Decrease of defective in process and defective loss	37	Defective in process and inspection defect rate and defective loss	
				Maintenance of process control system	15	Process control	
				Activation of quality improvement activity	13	QC activity, improvement activity, and quality issue	
				Trouble decrease in process and improvement of direct rate	10	Process trouble and direct flow rate	
				Improvement of process capacity	10	Process capacity	
				Idea of built-in quality in the process persists.	9	Built-in quality in process.	
				Maintenance of process quality evaluation system	7	Process quality evaluation	
		Equipment QA	30	A defective quality decrease in capacity utilization rate improvement, failure rate decrease, and equipment originating	9	Operating ratio, failure rate, frequency rate, and defective rate	
				Promotion of equipment improvement by use of quality development	7	Quality deployment, equipment development, and equipment improvement	
				Making of introduction and standing up of equipment and smooth making to a short term	6	Introduction and standing up of equipment	
				Maintenance of system of production maintenance	4	Productive maintenance and equipment control	
				Consideration of built-in quality by equipment arose.	4	Built-in quality by equipment, equipment is defended for myself.	
		Sales service		Decrease of complaint and customer trouble	45	Complaint and customer trouble	
				Improvement of customer satisfaction degree	15	Customer satisfaction degree	
				Improvement of market quality evaluation point	14	Market quality evaluation	
				Maintenance of Customer Service system	9	Customer Service and after service	
				Improvement activity based on customer quality information has advanced.	9	Customer quality information, data, analysis, and recurrence prevention	
		Total	619	619	619	619	
							Remarks

Table 8.11 Effect after introduction of Cross-Functional Managements
(cost and profit, amount and delivery date, new product development, sales, safety and healthcare) (1960-1990) 102 companies

Division	Step	Effects	Key word
Profit and cost management	Management system	Establishment of profit and system of cost management	13 Profit, cost management system, and management accounting system
		Maintenance of profit and cost project (cost planning) system	10 Profit and cost project, built-in cost at development and trial stages
		Role of each division in profit and cost management	5 Role of division and allotment according to step
		Improvement of financial constitution	4 Financial constitution, financial account balance, and extraordinary loss
		Improvement of profit plan accuracy	4 Plan accuracy and assumption profit
	Management consideration	16 Improvement of profit and cost management, improvement consideration and desire	16 Profit and cost awareness, and improvement desire
	Improvement activity	18 Profit and cost improvement activity are persisted and have been activated.	14 Profit management activity, cost decrease activity, and VE
		Idea and technique of cost improvements of quality cost and design cost, etc. raise the level.	4 Quality and design cost, cost up, and cost push
	Achievement	43 Cost of raw materials and manufacturing cost decrease	13 Raw material, man-hour, assembly cost, and cost down
		Profit and profit ratio have improved.	11 Profit, profit ratio, and target profit
		Achievement of target cost	6 Target cost
		Improvement of added value (ratio)	5 Value-added per person and value added
		Sales have improved by cost competitiveness	5 Sales and export amount
Efficiency of Indirect department has advanced.		3 Management division expenditure rate and indirect division efficiency improvement	
Total	113	113	113
Amount and delivery date management	Management system	13 Establishment of amount management system	13 Production management and efficient production system
	Production plan	12 Shortening at production period	9 Production period and lead time
	Productivity	12 Improvement of production plan accomplishment rate	3 Production plan accomplishment rate
		21 Productivity improvement	17 Productivity and manufacturing efficiency
	Automation of	21 Improvement of design productivity	4 Productivity of designing department and estimate department
	Delivery date	5 Automation of equipment and labor saving	5 Process automation and rationalization, mechanization, and labor saving
	Amount of sales stock	13 Delivery date delay decrease and delivery date observance rate improvement	13 Delivery date delay, accomplishment rate, and observance rate
23 Stock amount decrease and running out of stock rate decrease		18 Stock, asset turnover, and amount of stock	
Total	87	87	87
New product development	New product development system	26 New product research development system was established.	15 New product and technological development, advance development system, and RDM
		Built-in QCD at new product development stage was strengthened.	11 DR, target cost achievement, and development process ability
	Product strategy information gathering	16 Customer needs are understood, and advance new product development is strengthened and enhanced.	10 Market and customer needs, and advance development activity
		New product development in long-term plan came to advance.	6 Emphasis development long term problem
	The customer's confidence securing	13 Customer reliability and corporate image were improved by enhancing new product development activity.	8 Customer's trust and corporate image
		It came to be able to do the joint development to satisfy user demand.	5 Joint development, cooperative relationship strengthening, and commercialization
	Project power technology	19 Independent activity of new product project development became active.	10 New product project activity and independent development
		Improvement of area of differentiation technology and peculiar technology was attempted.	9 Differentiation technology, peculiar technology, and advance technology
Use of idea technique of QC	18 DR, QFD, and new product development tool of reliability etc. are used.	10 DR, QFD, and reliability	
	Importance of market in and source management was recognized.	8 Market in and source management	
Development period	16 Shortening at standing up period of new product development period	16 Standing up period of new product	
	Achievement	78 Expansion of new product and improvement of new product sales	37 New product sales
		Increase in new product development number	25 New product development number
Increase of patent application number		16 Patent application number and utility model	
Total	186	186	186
Retail management	Business posture	14 It came to be able to do business activity of data and process oriented.	9 Data and process oriented, emphasis aim, and QC technique
		It converted from passive business to business of the	5 Sales of attack and proposal sales
	System of business management	14 Strengthening and enhancement of sales management system	8 Sales and order management system, and strategic PDCA
		Sales know how and activity method were enhanced.	6 Technological business knowhow and marketing method and route
Use of information	9 Collection and use of sales information were strengthened and enhanced.	9 Information gathering and use, and grasp of customer demand	
	Achievement	33 Increase in sales, number of products, and number of customers	24 Sales, number of products, and number of customers
Total		70	70
Safety and healthcare management	9	Safety and healthcare accident none	3 Safety healthcare accident
		Safety management standard observance	2 Safety code and independent management
		Safety and danger prospect activity were activated.	2 Disaster case use and danger prospect activity
Total	9	9	9
Total sum	1084	1084	1084
Remarks	Figure of each column is the number of cases in the effect. Item of the new product development and retail management came to be explained independently in around 1980, and it increased after 1985. After especially 1987, most enterprises have installed the paragraph of new product development.		

Table 9.1 Summary of Comparison Analysis of Quality Awards

Name	Malcolm Baldrige National Quality Award	European Quality Award	Japan Quality Award	Deming Prize
Establishment year	1987	1991	1995	1951
Establishment concept	Global competitiveness strengthening	Global competitiveness strengthening	Global competitiveness strengthening	Commemorate Dr. Deming's contribution and friendship and to promote the continued development of quality control in Japan
Organization	National Institute of Standards and Technology	European Foundation for Quality Management	Japan Productivity Center for Socio-Economic Development	Union of Japanese Science and Engineers
Aid agency	APQ, ASQ, ASTD	EC, EU, EOQ		JSQC
Character of Award	Management Quality focus Enterprise Cityzenship	Enterprise Quality as the Citizen	Management Quality plus Society Responsibility	Continuous Promotion and Revolutionary Innovation of TQM
Application qualification	Organization in manufacturing, service industry, small and medium-sized enterprise, education and health care	Prize in big enterprise, unit of business, and public-sector, small and medium-sized enterprise, and the former stage: European	Large-scale division and small and medium-sized scale division	Prize for individual, application prize, quality control award for operations & businss units and overseas enterprise
Criteria item and evaluation point	1.Ledership (120), 2 Strategic Plannig (85), 3 Customer and Market Focus (85), 4 Measurement, Analysis and Knowledge Management (90), 5 Human Rresource Focus (85), 6 Process Management (85), 7 Business Resuts (450)	1leadership (10%), 2 Policy & Strategy (8%), 3 People (9%), 4 Partnerships & Rresources (9%), 5 Processes (14%), 6 Customer Results (20%), 7 People Results (9%), 8 Society Results (6%), 9 Key Performance Results (15%)	1Leadership & Decision Making (120), 2 Social Responsibility in Management (50), 3 Understanding & Responces for Cuatomers & Market (110), 4 Strategies Planning & Deployment (60), 5 Improvement of Abilitis of Individuals & Organization (100), 6 Value Creation Processes (100), 7 Information Management (60), 8 Business Results (400)	Fundamental Mmatters (100): F1Management Policy & Deployment (20), F2 New Commodity Development & Business Improvement (20), F3 Management & Improvement of Commodity Quality & Business Quality (20), F4 Maintenance of Management System (10), F5 Collection, Analyses of Quality Information & Use of IT (15), F6 Human Resources Development (15); Feature Activity (5) : S1 Top's Vision, Strategy, Leadership, S2 Customer Value Creation, S3 Great Improvement of Organizational Performance, S4 Establishment of Management Base of Organizations, S5 Others; Role of Top Management & demonstrating (100): T1 Understanding & Zeal into TQM, T2 Top's Leadership, Vision, Strategic Policy, Discernment to Environmental change, T3 Organization Power (Maintenance & Strengthening of Core Technology, Speed, Vitality), T4 Human Resources Development, T5 Social Responsibility of Organization
Examiner	Public advertisement, examination, and appointment after education in every year	Public advertisement and appointment after education	Japan Quality Award Examiner Board appointment	Deming Prize Examination Committee appoint.
Common factor	Social responsibility, management responsibility, leader philosophy, strategic plan, customer market, process, information use, human resources development			
Individual factor		Partner		Cross-Management and Revolutionary Innovation
Effect	Ratio of Net Social Benefits = 207, customer satisfaction and corporate performance improvement	Social position, corporate performance improvement, and the best practice sharing	Improvement of social recognition to management quality, and customer satisfaction & business results of recipients	Improvement of compny constitution and business results improvement by quality improvement of product and service
International influence	To North America, South America, Asia, Oceania, and European Quality Award	To European whole land and Africa		Malcolm Baldrige National Quality Award reference at enactment.
Study of examination	Self assessment	Self assessment	Self assessment	TQM diagnosis
Evaluation guideline	Scoring Guide	RADAR Scoring Matrix	Evaluation guideline	
Stage of award	From state prize and a regional prize to Malcolm Baldrige National Quality Ward	From national quality award in each country to European Quality Asard	There is movement of the enactment of the prefecture management quality award.	From recognition of TQM achievement to Deming Prize and, further to Japan Quality Medal
Report conference	Quest for Excellence in April	EFQM Forum in October	Japan Quality Award Report Conference in February	Deming Prize Recipient Report Conference after Deming Ceremony in November
Remarks	Investigation Annual of award: Malcolm Baldrige National Quality Award (2003), European Quality Award (2002), Japan Quality Award (2001), Deming Prize(2003)			

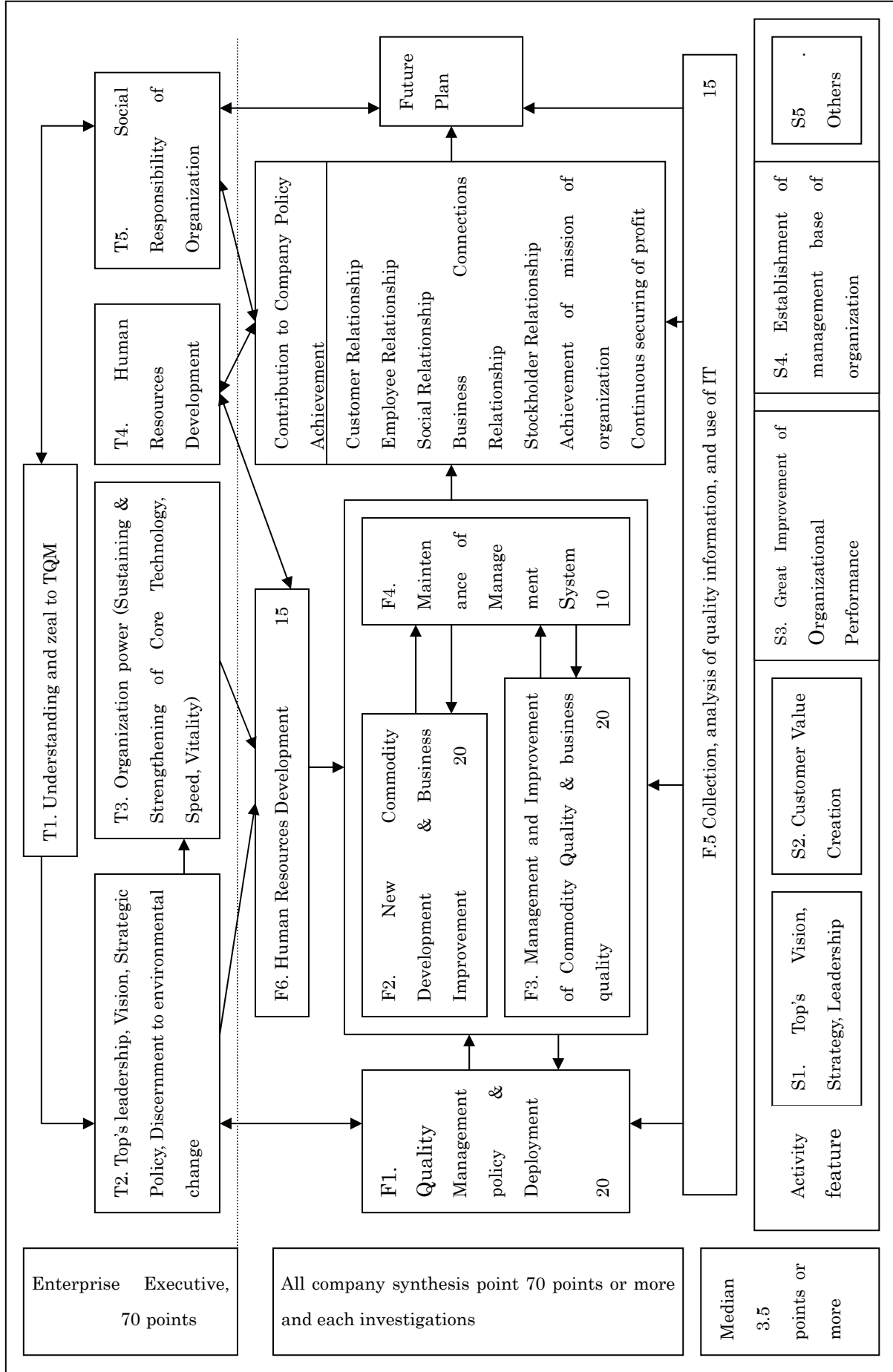


Fig. 9.2 Framework of Deming Prize Application Prize Criterion (tentative plan)