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Strategic management by policy in total quality management

- *In Japan there has been a realization that total quality control does not by itself ensure long-term competitive success.*
- *As a consequence, management by policy has tended to replace the traditional bottom up approach to TQC.*
- *MBP is a simple tool for deploying policy, but does not aid policy formulation.*
- *The author argues the need for a more strategic approach, and suggests what this might be.*

1. Introduction

TQC, as an important pillar of Japanese management, was certainly a key factor behind the rapid growth of Japanese industry. The practice of TQC is not limited to Japan; it has been, and continues to be, adopted by firms the world over (Osada, 1989). Yet many are coming to realize that, while a necessary element, TQC alone does not guarantee competitive success. A new concept and methodology is needed to take TQC a step further—for companies to differentiate themselves, survive and thrive.

As opposed to a traditional 'bottom-up' management system, management by policy (MBP, or policy management) in TQC represented a fresh approach by introducing a 'top-down' way of thinking. While MBP is a simple tool for effectively deploying a given policy, and has therefore been broadly adopted by Japanese industry, it does not aid in policy formulation. Even when employing MBP, therefore, the question of whether or not a given policy is appropriate will remain. It is thus possible for an inappropriate strategic policy to be effectively deployed—to counter-productive effect.

The problem in such a case has nothing to do with any shortcoming of the policy deployment mechanism, but illustrates the lack of a simple tool to aid in the formulation of strategic policy. It is to address this need that I have been advocating strategic management by policy (SMBP) as an integrated tool which goes beyond MBP as presently employed, by including a process for strategic planning. In effect, this means complementing the existing TQC system (a 'how to' management system, employed to bring efficiency given clearly established aims) with a *strategic* TQC system (a 'what to do' system, employed to establish those aims.) I therefore believe that, as total quality management (TQM) supplants TQC, SMBP becomes a more appropriate management methodology than MBP.

2. The shortcomings of MBP

The shortcomings of MBP can be summarized as follows:

- i. It is difficult for those at the middle management level and below to understand the process of formulating strategic policy. Compared with policy deployment, the process of policy formulation is unclear.

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- ii. Strategic policy is ostensibly based on the long-term interests of the firm, but there is no way to judge whether a policy is appropriate, or even truly 'strategic.'
- iii. Several problems in formulating a long-term plan are not addressed, for instance
 - a) Changes in the operating environment and other uncertainties are not adequately accounted for; possible difficulties are therefore not foreseen.

- b) Positioning of business is not perceived objectively. The question of whether business aims are optimum and clear is not addressed.
- c) Only one part of the staff, at the top level, participates in strategic policy formulation; it is therefore difficult to judge whether a policy reflects the reality at the 'front line' of operations.

The problem in c) has occasionally been pointed out, not least by Jack Welch when he became chairman of GE. Yet, no small number of firms continue to overlook this problem in formulating policy. Rather than having only upper management involved in drafting strategy, it would be preferable if employees in a variety of divisions (marketing, R&D, etc.) and at various ranks throughout the corporate hierarchy were involved in the processes of strategic planning and policy deployment. To make this possible, a flattening of the corporate organization—giving every employee an interest in matters of strategic policy—is usually necessary.

3. The importance of business strategy

'Policy' in MBP consists of a goal based on a given management strategy and the means to achieve that goal. Management strategies can be classified into three types—corporate strategy, business strategy, and functional strategy—depending on the level of the corporate organization to which they apply.

The corporate strategy, which delineates the fundamental direction for the whole company, is certainly very important for realizing a management vision; but it would be no exaggeration to say that the success or failure of the corporate strategy is determined by particular business strategies, since it is through these business strategies that the aims set forth in the corporate strategy are actually implemented.

Because the business strategy *is* the corporate strategy in a specialized firm; and because for a firm seeking to develop a new field of

business, optimum business strategies which secure the profitability of existing operations, in addition to an appropriate business strategy for the new business, are indispensable; business strategies are extremely important for any firm.

4. The concept of SMBP

4.1 Business strategy and MBP

How does business strategy work in actual practice? Standard theories of management strategy do not provide a complete answer, because management strategy only shows *what* to do, and does not deal with the matter of *how* to do it. MBP in TQC, on the other hand, is an extremely efficient tool to execute a plan and achieve an objective by deploying a given policy throughout the organization (policy deployment) utilizing QC techniques and similar means. MBP has been proven as an outstanding 'how to' methodology. By the integration of MBP with business strategy, therefore, it would be possible to achieve a consistent system of business administration from the planning of strategy to its execution; beginning with the process of establishing a management vision, through devising an effective strategy, and efficient execution using MBP.

4.2 SMBP

The integration of business strategy and MBP is not a matter of simply combining the two. With MBP in mind, the process of establishing business strategy must be made to match MBP on a practical level. It is the result of such integration that I call SMBP. With SMBP the aforementioned problems of MBP are solved. Today, as TQM emerges as a derivative of TQC in accord with current management practices, SMBP is clearly a more appropriate methodology than MBP (Figure 1).

4.3 Viewpoints needed for strategic technique

In order to overcome the shortcomings of MBP, SMBP incorporates the following concepts

which reflect the viewpoints needed for strategic technique.

i. Recognition of product life stage (product life cycle analysis)

Just as living organisms have a life span, businesses and products have a certain life span. The Nihon Keizai Shimbun once did an

Businesses and products have a certain life span

elaborate survey of the rise and fall of businesses and corporations, the results of which supported the hypothesis that companies have a life span, an idea which became very prevalent at that time. If this hypothesis is right, then it naturally follows that the products which support companies must also have life spans.

The term 'life span' used here means the period of time that a product is present in the market; not merely the period of time that an individual customer uses a single unit of a given product before replacing it. Life span begins when a product (e.g. a TV, stereo, or car) is first put on the market, and ends when the manufacturer inevitably ceases to produce the product and withdraws it from the market. Indexing a product's occupancy of the market

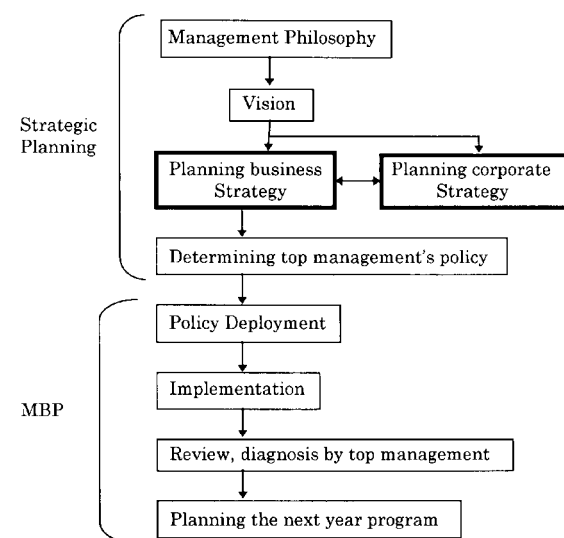


Figure 1. Scope of SMBP.

(demand, supply volume) during its life span reveals clear 'stages' which are also analogous to the life of a living organism: beginning with infancy or sprouting, growth, and ultimately a period of decline.

When formulating or examining a business strategy, it is extremely important to objectively comprehend the stages in which the business's products lie. This has great implications for understanding the importance of a product to the business and the proper level of resources to invest in a product. For example, a black and white TV which has made a large contribution to a consumer electronics maker over many years would be lucky to be counted in the declining stage in today's market. On the other hand, a high-definition TV newly introduced to the market is a product for which the stage of healthy growth lies ahead, and it would be natural to invest significant resources in such a product early with the expectation that this investment will pay off at a later stage. This obvious example also illustrates another analogy to humans: the new product is the successor to the old product. Just as with living organisms, the decline of old products is harsh and unpleasant; and new products with greater competitive strengths are incessantly being born, in turn hastening the decline of their predecessors. The first indispensable step to establishing a business strategy, therefore, is to clearly and correctly recognize the life stages of a given business's existing products.

ii. Objective evaluation of business and product position (positioning analysis)

Next, an analysis revealing what position a product occupies in the market is necessary. This is fundamental for business expansion, both for expanding the market for a given product and for raising the share of a given market that a product holds. Elucidating the position that a given product occupies in a given market is called positioning analysis. It is necessary to classify a business's products in terms of market segment. Usually, dividing a market into layers or other segments and determining a product's sales share in terms of that market segment will reveal a product's market position. It is important that this kind

of positioning analysis be carried out incessantly, in order to keep objective track of a product's position in relation to its market and a business's position in relation to its industry.

iii. Analyzing competitiveness (competitive analysis)

Once a business and product's position has been determined, the next step is an analysis of your rival firms and products. In other words, 'know your enemies.' This is called competitive analysis, and firms outside Japan, especially in America, do this thoroughly. The recent trend of 'benchmarking' is one variety of this analysis in which a firm makes a detailed comparison of its own business and products with those of the leader in a given market. The combination of competitive analysis with positioning analysis makes the position of a business or product extremely clear.

iv. Perceiving strengths and weaknesses of products (S-W analysis)

Comparison of a company with its rivals will naturally make one's strengths and weaknesses apparent. An analysis of these strengths and weaknesses is called S-W analysis, and, like competitive analysis, is carried out incessantly in America. Japanese firms have been slow to adopt this practice, but I believe that they must do so, not in a hit-and-miss fashion, but as an indispensable element of TQM for quality and cost control and a primary factor in strategic analysis, which will be mentioned later.

v. Forecasting future competitiveness using time series data (time series analysis)

The merits of a given strategy are only determined by an evaluation of its effectiveness after it has been implemented. The never ending flow of books being published throughout the world on the subject of business strategy is a clear sign of the ongoing demand for new methodologies and ways of approaching strategy.

To systematize what is too often a trial-and-error approach, SMBP borrows the PDCA (plan-do-check-action) concept from TQM. PDCA establishes a comprehensive cycle of constant

improvement. Based on the same fundamental idea, the evaluation of past strategies and determination of improvements to be made are carried out in SMBP through time series analysis. However, a real breakthrough depends more on comprehension of the business environment and business structure than on analysis of the past; and this is achieved not only through recognition of life stage, positioning analysis, competitive analysis, and S-W analysis which elucidate the present, but also requires insight into the future.

vi. Maintaining transparency through visualization (visual method); involving all employees in SMBP

Rather than just having a few top executives or one part of the management involved in establishing strategy, SMBP requires that all employees in every division have an interest in matters of strategic policy and makes possible their participation in strategic planning. In practice, policy development in MBP takes place through a give-and-take vertically between different organizational levels and horizontally between different functional divisions. A policy takes shape as various ideas and proposals are 'bounced' in various directions in this way.

To achieve this sort of involvement of a large number of people in strategic planning, making the process accessible to everyone and giving everyone a sense of the process, the methodology of strategic planning must above all provide transparency. SMBP makes the process easy to understand by utilizing visualization aids such as graphs, charts, and tables.

5. Seven strategic tools (S-7 tools)

The SMBP process relies on seven strategic tools, which I refer to as the S-7 tools. These are:

1. Environment analysis
2. Product analysis
3. Market analysis
4. Product-market analysis
5. Product Portfolio Analysis (PPM)

6. Strategic Elements Analysis
7. Resource Allocation Analysis

The S-7 tools are outlined in Table 1.

6. The SMBP process

The process and method of SMBP incorporates the viewpoints already described.

6.1 Constructing strategy

As already described, SMBP is a process for determining a business strategy, arriving at the optimum policies based on that strategy, and deploying those policies. For the deployment of policy, TQM has been established as an effective tool; the focus of this discussion is the process through the policy determination stage.

The most important facet of determining a business strategy is the analysis of the surrounding business environment, which is called macro analysis (Table 2), and an evaluation of the business's standing relative to the industry, called industry structure analysis (based on the 'five forces of competition' of Porter, 1980). Following this, comprehension of the structure and characteristics of the industry and clear perception of the maturity of the business by life stage analysis is necessary. This is referred to as *Environment analysis*.

Next is an analysis of the business's products and the markets for those products, through *product analysis* and *market analysis*. *Product analysis* begins with identification of a product's characteristics, and comparison with competing products. *Market analysis* includes analysis of the customer's needs as well as the purchaser's characteristics. In other words, *product analysis* is analysis of the company's 'seeds,' and *market analysis* is analysis of 'needs.'

The 'needs' and 'seeds' thus identified must then be matched, through *product-market analysis*. This serves to determine how best to conform the product to market needs and identifies the ideal market position. Analysis of

Table 1. Outline of the S-7 tools

	Main objective	Outline
Environment Analysis	Weighing the attractions of the industry Illuminating trends of the business environment (macroscopic analysis), business structure, characteristics, attractive points of the industry (industrial structure analysis)	<i>Macroscopic analysis</i> : Analysing and forecasting various circumstances such as macro- and micro-economy, politics, social phenomena, distribution channels, technological innovation, etc. <i>Industrial structure analysis</i> : Following the method proposed by Prof. M. E. Porter, forecasting based on: 1) competitors, 2) buyers' negotiating power, 3) suppliers' negotiating power, 4) threat of new entrants, 5) threat of alternative products
Product Analysis	Benchmarking products Comparison of product qualities, including service and price, with those of competing products for clear differentiation	Comparison of price and quality aspects, including basic performance, ease of use, reliability, durability, safety, environmental impact, ease of maintenance, service; using the competing products themselves, catalogues and other publicly available literature, substantive information regarding service, etc.
Market Analysis	Attracting users Comprehending customers' needs and purchasing criteria. Elucidating the company's strengths in a market segment	<i>Customer needs analysis</i> and <i>purchasing criteria analysis</i> using a quality table. Analyses correlated with market segments
Product-Market Analysis	Comprehending competition and positioning Optimum positioning determined by a product's suitability to customer needs	Using a product-market matrix based on products and market segments. Mapping the company's and competitors' products to determine competitive positioning
Product Portfolio Analysis (PPM)	Ranking products by priority Products assigned priority based on their market strengths	Using a matrix with one axis indicating competitive advantage of products in their markets, the other axis indicating attractiveness of the industry. Separating this matrix into four quadrants to review the balance of the product line up and affix priority to products
Strategic Elements Analysis	Determine strategic factors Extracting the factors on which policy is based	Using a matrix of business functions (R&D, production, marketing, etc.) and strategic elements (quality, cost, delivery, safety) to determine the factors of strategy which correspond to the business's characteristics
Resource Allocation Analysis	Priority allocation of resources Determining priorities for allocation of limited resources (human, material, capital, time) to achieve strategic goals	Using time series PPM to assign future priority to products. Functions are given priority for resources using a matrix of products and functions

Table 2. Elements of macro analysis

Societal	Population, age structure, gender ratio, education standard, working population, quality of labour, lifestyle, average income, infrastructure standard
Economic	GDP (and its breakdown), interest rates, exchange rate, inflation rate, money supply, savings rate, unemployment rate, production level, inventory level, foreign economic indicators
Governmental	Regulation, deregulation, tax system, industrial policy, administrative reform, foreign policy, pressure from foreign governments
Distribution (Channels)	Renovation, maintenance, simplification
Technological	Innovation, progress

the relationship with competitive products aids in the identification of the optimum market position.

Product portfolio analysis (also called product portfolio management, or PPM) is an analysis of the product line up and the distribution of resources among products. This analysis identifies the products for which priority should be given in the investment of resources. PPM has been adopted by many firms, and is among the most popular strategic techniques. Through these analyses, the framework for a business's product line up and their market segments are determined.

Having arrived at products and market segments, the next question to address is *how* to introduce new products, differentiate products, and prevail over competitors. This is done by analysing 'strategic elements' as revealed by classifying certain 'management elements' according to business function. The management elements are quality (Q), cost (C), demand control and delivery time (D), and safety and environment (S), and business functions are R&D, production, sales, etc. (Table 3). I call this analysis *strategic elements analysis*.

Consideration must also be given to how best to allocate limited resources (human, material, capital, time) among selected strategic elements. This is *resource allocation analysis*. This analysis assigns priority to selected strategic elements according to expectations of future business (Figure 2).

6.2 Determining policy

Concrete policies are determined based on a) policy goals (goals for products and markets) and b) the means indicated in strategic elements. *Strategic elements analysis* is thus the key step in the SMBP process which provides the bridge between strategy and policy.

6.3 Policy deployment

Selected strategic elements and goals are subdivided according to organizational segments by function, as in Table 3. Determined policy

is deployed based on this subdivision. Policy deployment follows the established process of MBP.

A flow chart of the process from 6.1 to 6.3 is shown in Figure 2.

7. Case study

In the absence of any cases in which SMBP has actually been employed, the efficacy of this methodology is studied by observing cases in which companies have utilized analyses equivalent to the S-7 tools. One example which clearly demonstrates the value of SMBP is the development of Canon, Inc.'s copier business. Canon's copier business has four historical stages (Osada, 1996b; Yamashita, 1991).

Stage I—Preparatory stage (1959-1961)

The existing core business, cameras, represented about 95% of Canon's total sales, and the business was maturing. Following PPM and *product-market analysis*, Canon determined that a long-term plan for diversification was appropriate under these circumstances. *Environment analysis* indicated that copiers and electronic pocket calculators had excellent potential as new areas of business.

Stage II—Introductory or embryonic stage (1962-1966)

The following top management policies were determined:

- a) To develop PPC (plain paper copier) and EF (electronic facsimile) type copiers in parallel, by using Canon's original technology. Prospects for PPC in the copier market were judged to be especially good.
- b) To build sales channels.
- c) To develop a low-priced, popular type of copier tailored for the small business market.
- d) To establish a strong position in the copier market by 1970, when Xerox's basic patent was to expire and many new players were expected to enter the market.

Table 3. Strategic elements matrix

Management element Function	Q (Quality)	C (Cost)	D (Demand control, Delivery time)	S (Safety, Environment)
R&D, Design	<ul style="list-style-type: none"> ● quality of design ● product cost performance ● reliability ● adaptability to change of customer needs ● design which lends to easy production 	<ul style="list-style-type: none"> ● R&D cost 	<ul style="list-style-type: none"> ● cycle time for R&D 	<ul style="list-style-type: none"> ● product safety ● product liability protection ● recycling ● environmental impact
Technology, patent, and licensing	<ul style="list-style-type: none"> ● patent policy (technology protection) ● core technology system ● licensing strategy 	<ul style="list-style-type: none"> ● cost of applying for and maintaining patent ● cost of surveying competitor's patents ● licence fee 	<ul style="list-style-type: none"> ● period of patent application ● when to apply for patent 	—
Production	<ul style="list-style-type: none"> ● production quality (defect rate or yield) 	<ul style="list-style-type: none"> ● production cost 	<ul style="list-style-type: none"> ● cycle time for production ● production capacity ● rate of operation ● plant investment cost ● outsourcing strategy ● controlling subcontractors ● global operations ● FMS (flexible manufacturing system) 	<ul style="list-style-type: none"> ● waste control ● recycling used products
Marketing and sales	<ul style="list-style-type: none"> ● collecting market information ● product concept and image ● product mix ● advertisement ● product catalogue ● brand ● distribution channels 	<ul style="list-style-type: none"> ● marketing and sales cost ● distributor's margin ● cost of providing financing for customers 	<ul style="list-style-type: none"> ● cycle time for making a sales contract ● frequency of customer visits 	<ul style="list-style-type: none"> ● product liability prevention (sales talk) ● enlightening and educating customers ● recycling used products
Logistics	<ul style="list-style-type: none"> ● accident during delivery 	<ul style="list-style-type: none"> ● logistics cost (delivery cost) 	<ul style="list-style-type: none"> ● delivery time ● inventory level 	<ul style="list-style-type: none"> ● waste control ● recycling
Purchasing and procurement	<ul style="list-style-type: none"> ● quality (defect rate) of purchased product 	<ul style="list-style-type: none"> ● cost of purchased product 	<ul style="list-style-type: none"> ● procurement period ● inventory level of purchased product ● continuous procurement of new material ● networking suppliers 	—
After service, technical service	<ul style="list-style-type: none"> ● claim handling system ● quality of maintenance or repair ● maintenance or repair system 	<ul style="list-style-type: none"> ● cost of maintenance or repair 	<ul style="list-style-type: none"> ● maintenance time ● repair time 	<ul style="list-style-type: none"> ● recycling used product ● waste control
Personnel, organization	<ul style="list-style-type: none"> ● autonomy of organization ● accuracy of information dissemination ● project management style ● managing subsidiary companies ● globalization (global networking) ● merger and acquisition ● promotion system ● award and reward system 	<ul style="list-style-type: none"> ● wage structure ● recruiting cost 	<ul style="list-style-type: none"> ● speed of information dissemination 	—
Finance	<ul style="list-style-type: none"> ● capital resources ● credit ● ratio of shareholders' equity ● ROE 	<ul style="list-style-type: none"> ● working capital ● equipment funds ● interest bearing debt ● interest rates 	<ul style="list-style-type: none"> ● timing of funding 	—

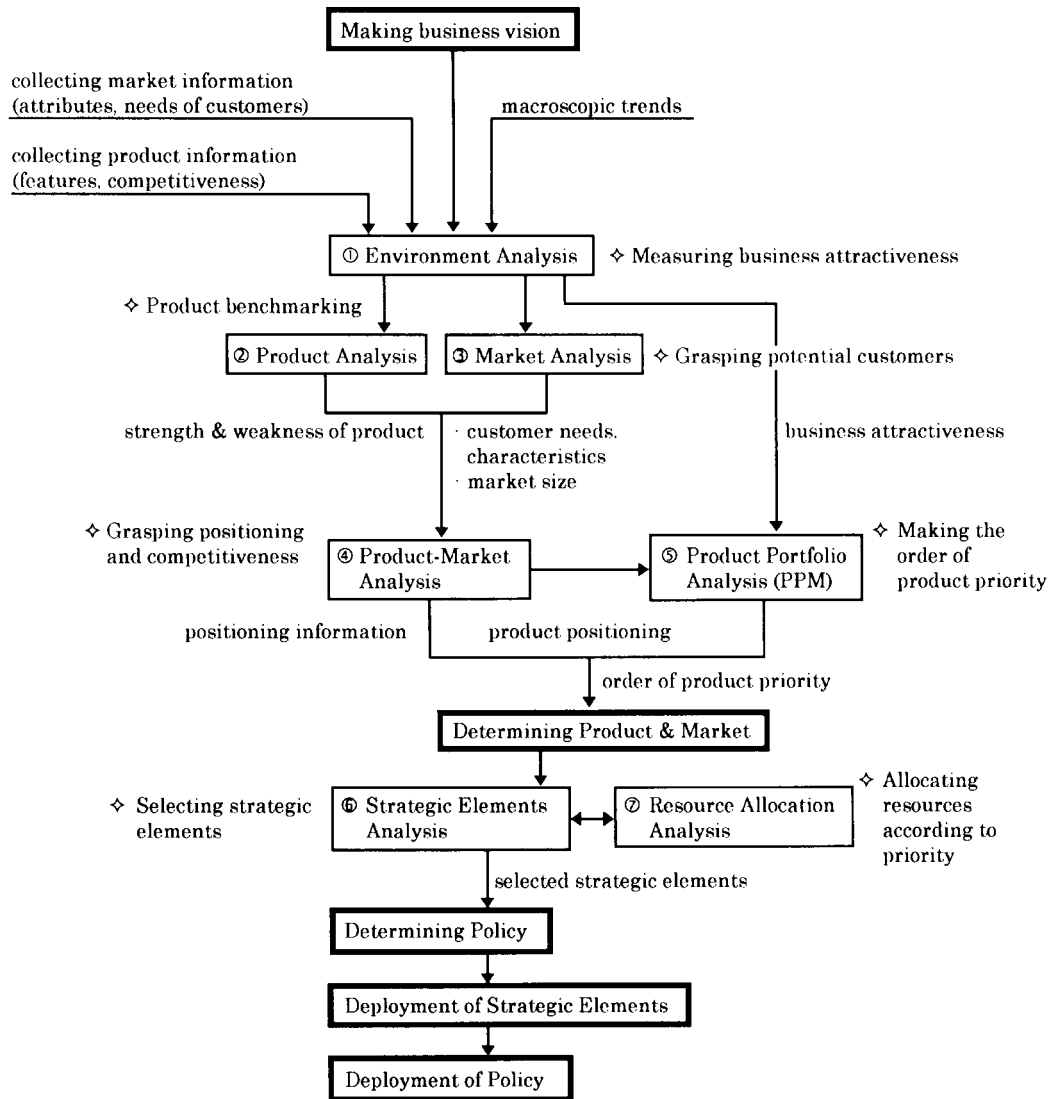


Figure 2. Policy construction process and the S-7.

Examining the process by which Canon determined these management policies in terms of the S-7 tools and the SMBP process, the usefulness of this methodology becomes clear.

Stage III—Differentiation, strengthening competitive advantage (1967–1978)

In this stage, *product analysis*, *market analysis*, and *product-market analysis* were employed to determine management strategy: to develop both popular and mid-level copier markets with low-cost PPCs (the NP product line). Examining Canon’s analytical process at this stage, it is clear that *strategic element analysis* is a valuable tool in the determination

of the following new management policies (Figure 3):

- a) To develop low cost production technology and a stable production system.
- b) To strengthen sales and technical service systems to catch up with competitors’ systems.

Stage IV—Matured stage (1979–1992)

As the copier market matured, Canon was obliged to change their business strategy in the following ways:

- a) To create a new market for personal-use copiers. This personal-use market was

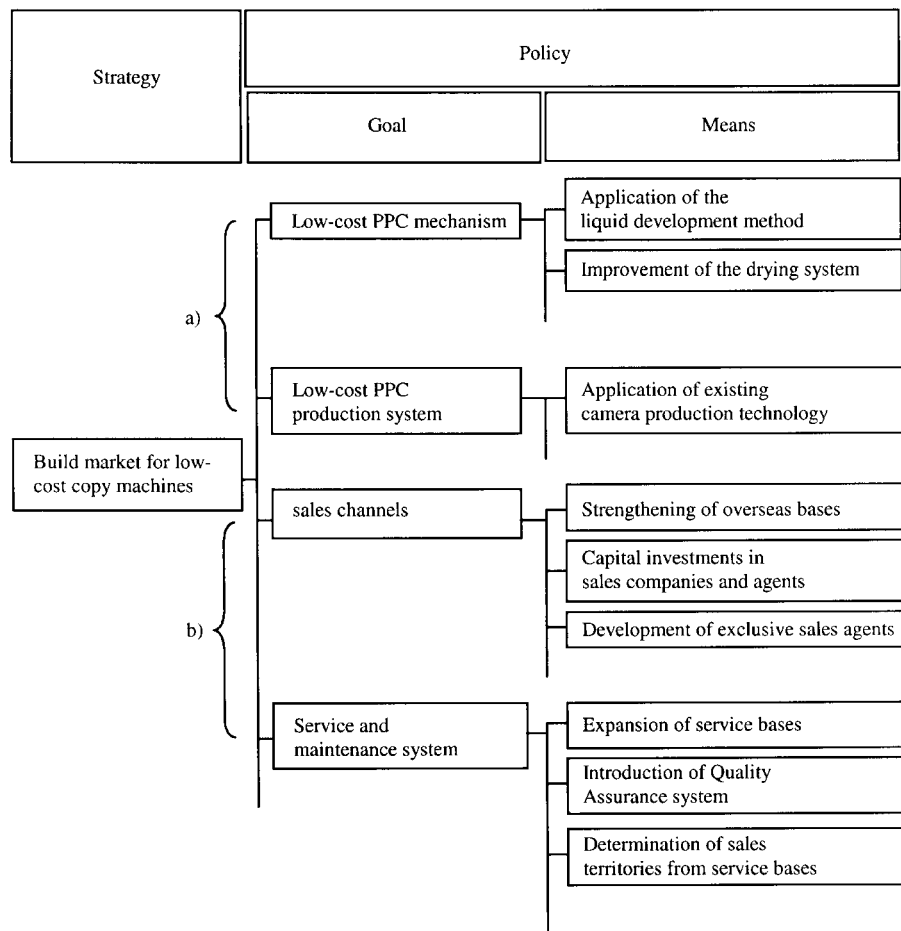


Figure 3. Example of strategic elements analysis.

brand new, and included small business offices and homes in addition to desktop-use in large companies.

- b) To develop copiers for easy maintenance or to be maintenance-free, and to develop production systems which allowed for extraordinarily cheap retail pricing in order to cater to this personal-use market.
- c) To build sales channels for small business and personal customers.
- d) To develop colour copiers and digital copiers as next-generation products which meet the new needs of customers, strengthening Canon's position in existing markets.

8. Conclusion

This and other case studies have confirmed the efficacy of SMBP and the S-7 tools. The

value of this new methodology is that it creates a systematic and consistent process for integrating strategic planning and MBP—determining both appropriate strategies and the policies which correspond to them. It is therefore my firm belief that this methodology will be widely adopted in place of MBP, and play an important part in TQM.

Biographical note

Dr Hiroshi Osada is a director of the Asahi Research Center. He has been involved in TQM for more than 20 years. A graduate of Tokyo University, he was general manager of the High Performance Plastics Division of Asahi Chemical Industry, where he promoted a strategic globalization of engineering plastics operations.

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