CHAPTER

2

National Movements for Quality and Productivity Improvement in Japan and Singapore: From a Perspective of Translative Adaptation[1]

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1. Introduction

This chapter focuses on the experiences of national movements for quality and productivity improvement in Japan and Singapore. These are two countries that successfully learned management technologies to improve quality and productivity from abroad, with customization, and diffused them at the national level by elevating them as a national movement (Ohno 2011; Yanagihara et al. 2018). The chapter conducts case studies of the two countries and analyzes key factors for success, to provide concrete information to today's developing countries which are keen to learn and develop home-grown national mechanisms for quality and productivity improvement.

1.1. What is national movement and why necessary?

National movements are nationwide engagement to involve the entire population for a decade or more, to transform the popular mindset toward hard work, teamwork, and creativity (Ohno 2011). In the 1950s, Japan launched a *Kaizen* movement for quality and productivity improvement, as a collaborative effort among the private sector, government, and academia. A rural life improvement (*seikatsu-kaizen*) movement was also implemented by the government with dedicated livelihood extension workers (women) playing a key role (Sato 2003). In the 1970s, Korea launched the *Saemaul* Movement which transformed Korean villages significantly. In the 1980s, Singapore engaged in the Productivity Movement during which even taxi drivers talked about productivity.

[1] This chapter is based on the authors' published papers (Ohno 2011; Ohno and Kitaw 2011) with additional research and updated information. It also relies on the work by Kikuchi (2011), Woon and Loo (2017), and Yanagihara, Kuroda, and Kikuchi (2018).

Subsequently, these countries became more productive and competitive.

A national movement does not consist of just one or two projects that last for a few years, or time-bound, foreign-assisted development projects. It must be a national project including a comprehensive program package with many components that require continued effort often for a decade or more. To be successful, these movements require a self-sustaining system of principles, implementing mechanisms, and necessary resources backed by strong passion and deep commitment, involving everyone from top to bottom (VEPR and GRIPS Development Forum 2021). How these mechanisms should be best arranged depends on the nature of politics, administrative capacity, private dynamism, social structure, popular mindset, and other unique features of each country.

Particularly, the movement for quality and productivity improvement requires a national effort of many public and private stakeholders to attain economic and social progress, involving the active participation of business, industry, workers, government, academia, community groups, and other interested parties (Prokopenko 1999). In this sense, it is worth analyzing the experiences of Japan and Singapore because they are outstanding examples of successful home-grown national movements. The two countries learned and customized foreign models, created the necessary institutional mechanisms, and organized a series of nationwide activities for igniting mindset change of their people.

Japan imported the productivity movement and the quality control (QC) method from the United States (US) and Europe during the post-World War II (WW2) era. Japan quickly assimilated and developed this as its own management practice method. Compared with the original US model, the adapted method emphasized process orientation, worker participation, and hands-on pragmatism. This method, which came to be known as *Kaizen*,[2] spread rapidly among Japanese companies, large and small, to

[2] *Kaizen* means 'continuous improvement' involving the entire workforce from the top management to middle managers and workers (Ohno et al. 2009). More specifically, *Kaizen* is an umbrella concept for a large number of Japanese business practices, such as 5S, suggestion system, Quality Control Circle (QCC), Total Quality Management (TQM), the Toyota Production System, the Just-in-Time System, the *Kanban* System, etc. Masaaki Imai argues that *Kaizen* is a unifying thread running through the philosophy, the systems and the problem-solving tools developed in Japan during the 1950-80s (Imai 1986, xxxii). These three major components define *Kaizen* as a full-fledged management philosophy.

form a core of the Japanese monozukuri (making things) spirit. Masaaki Imai (1986) argues that *Kaizen* is not just a management technique but a philosophy outlining how a person should conduct his or her life. *Kaizen* shows how management and workers can change their mindsets together to improve their productivity (see Chapter 1 for the definition of *Kaizen* in this volume). Based on its own experiences, Japan assists in introducing *Kaizen* in many developing countries through private channels such as intra-company technology transfer and support for local suppliers, as well as through public channels such as official development assistance (ODA) and guidance provided by various public organizations. By now, *Kaizen* assistance has become one of the standard menu items of Japanese industrial support in developing countries. The Japan International Cooperation Agency (JICA) supports *Kaizen* projects in various countries and regions including Asia, Africa, and Latin America.

The Singaporean government launched its nationwide Productivity Movement in 1981, under strong initiative by the then-Prime Minister Lee Kuan Yew. Prime Minister Lee lamented the poor work ethics of the Singaporean workers and requested the Japanese government to transfer its know-how in quality and productivity improvement. JICA ran its first comprehensive technical cooperation project in Singapore from 1983 to 1990. Singapore learned the Japanese model and established its own institutional mechanism for the Productivity Movement. The productivity campaign was promoted not only in the business, but also in the public sector, linked with a civil service reform program. Based on this experience, Singapore came to offer technical cooperation for productivity improvement in developing countries, including the neighboring Association of South-East Asian Nations (ASEAN) countries and some African countries.

1.2. A key perspective: Translative adaptation and local learning

Learning from abroad, Japan and Singapore took different approaches to designing and implementing their own models of national movements for quality and productivity improvement. Japan's productivity movement and the QC method were driven by the business community, although public policy also played a supportive role. In contrast, Singapore's productivity movement was led by the government and introduced to both public and private sectors as a conscious policy effort to change the mindsets of broader segments of the society.

These experiences suggest the importance of 'translative adaptation' by latecomer countries when absorbing advanced knowledge and technologies (both soft and hard) in their catch-up processes. Translative adaptation is the terminology used by Japanese economic anthropologist, Keiji Maegawa (1998), referring to the process of systemic merger and the resultant dynamic interaction between a dominant foreign system and a local society. When interaction between foreign and local systems takes place, the local society does not simply accept foreign elements in their original forms. They rather reinterpret and adjust foreign elements to fit their own system and value structure (see Chapter 1 for details). Viewed from a developmental perspective, translative adaptation can be understood as a catch-up process by latecomer countries—namely, acquiring foreign knowledge and technologies (often via foreign direct investment and aid), adapting them to country-specific circumstances, and scaling up and eventually institutionalizing them. Translative adaptation emphasizes indigenous perspectives and 'local learning,' to which Joseph Stiglitz attaches high importance. Emphasizing that knowledge is the most important source of growth, Stiglitz argues that for latecomers' catching-up process, the acquisition and diffusion of knowledge must take place locally and adapt to local differences in culture and economic practice (Stiglitz and Greenwald 2014).

However, not all countries are adept at this learning process. There are countries that face challenges sustaining such momentum, especially after the completion of donor support (JICA and GRIPS Development Forum 2011). Therefore, it is useful to analyze how national movements for quality and productivity improvement were initiated and implemented in Japan and Singapore and to extract key factors for success so that those countries interested in introducing and diffusing *Kaizen* can have practical referential information.

An increasing number of recent empirical studies confirm the tangible results of *Kaizen* implementation on firm performance under JICA-supported projects in developing countries (Shimada and Sonobe 2018; Otsuka et al. 2018). Once positive results are confirmed, the next task for the governments (in case of ODA-supported projects) is to institutionalize approaches and create sustainable mechanisms for scaling up pilot projects and diffusing *Kaizen* practices more broadly. Here, a key question is *how* to design and build such mechanisms suitable for country-specific circumstances, rather than *what* should be done.

This chapter attempts to address such question of *how*, with special attention to the process of translative adaptation and local learning. Following this introductory section, the second and third sections introduce the Japanese and Singaporean experiences with national movements for quality and productivity improvement. Special attention will be given to the processes of how the two countries learned foreign models and developed locally owned practices and institutional mechanisms for diffusion. The final section discusses key factors for successful design and implementation of national movements based on their experiences and draw implications for today's developing countries.

2. Japan: The Experience of a Private Sector-Led National Movement

In Japan, national efforts to learn foreign production management technologies for industrial drive can be traced back to the prewar time when American Scientific Management methods were introduced in the early 1900s. Celebrated books such as *The Principles of Scientific Management* by F. W. Tailor (1911) and *Motion Study* by F. Gilbreth (1911) were translated into various forms, studied, and practiced enthusiastically among both academic and business circles. This was the time when Japan was striving to strengthen its national industrial capacity as well as military power. Based on decades of accumulated experiences, US-originated Scientific Management evolved into the Japanese Way of Efficiency (*Noritsu Do*), which pays greater attention to the human element (Tsutsui 2001).

Then, WW2 came to an end. Japan surrendered and completely lost its production capacity. Japan's national movement for quality and productivity improvement was driven by a sense of urgency for post-war economic recovery and industrial catch-up. The WW2 devastation made it difficult for both the government and business sectors to improve the quality and productivity for exporting processed products. At that time, 'Made-in-Japan' was perceived to mean 'low-price and low-quality,' and quality and productivity improvement was high on the national agenda. Japanese business and government leaders were eager to learn the QC methods developed in the US, as well as the harmonious labor-management relations promoted by the British Productivity Council at

that time.[3]

According to Sasaki (2004), there were three paths that postwar Japan introduced and diffused foreign management technologies to Japanese companies. The first path was through the General Headquarters (GHQ) of the Supreme Commander of Allied Powers (SCAP), which assumed responsibility for implementing policy in occupied Japan including economic democratization.[4] The US government and GHQ introduced American management methods, primarily through Japanese consulting organizations such as the Japan Management Association (JMA) and the Union of Japanese Scientists and Engineers (JUSE) (Sasaki 2004). The second path was the Japan Productivity Center (JPC), which was established in the 1950s, inspired by the productivity movement that had been promoted in Europe by the US as part of the Marshall Plan. The third path was direct technology transfer by individual Japanese companies since the 1950s. The following section will explain the first and second paths, focusing on the role of private organizations.

2.1. Leadership and the role of core organizations

In Japan, the private sector took the initiative to create the core organizations responsible for introducing, adapting, and disseminating methods for improving quality and productivity. According to Kikuchi (2011), three non-profit, private organizations spearheaded this initiative—JMA, JUSE, and JPC.

These three organizations have respectively different histories. JMA is the oldest among the three organizations (established in 1942), dating back to the wartime period (see Box 2.1). JMA used to be a quasi-governmental organization under the control of the Ministry of Commerce and Industry, but after the end of WW2, it became an independent private organization performing consulting activities. JMA contributed to driving the movement of '*noritsu*' in Japanese industry. A Japanese word, '*noritsu*' means to optimize efficiently the ability of people, the full capacity of equipment and technology, as well as the functionality of industrial

[3] Also, throughout the second half of the 1940s and 50s, the Japanese labor movement was ideologically leftist and radical, and there was an acute need to introduce cooperative labor-management relations in the economy (Prokopenko 1999; Shimada 2018).

[4] GHQ continued its mandate until the Treaty of San Francisco came into effect on April 28, 1952.

materials.[5] JUSE was created immediately after WW2 (in 1946), succeeding several technology associations which were established in the prewar and wartime periods.[6] JUSE contributed to quality improvement in Japan, with greater emphasis on the transfer and diffusion of production management technology from an industry-wide perspective. JPC was established in 1955, with the influence of the productivity movement in the US and Europe (see below). In this sense, the history of JPC is distinctive from JMA and JUSE, both of which had roots in the wartime period. JPC contributed to the development of productivity improvement movement from a macro-socioeconomic perspective. Table 2.1 summarizes the background for these private organizations.

Table 2.1. Core Organizations for Quality and Productivity Improvement

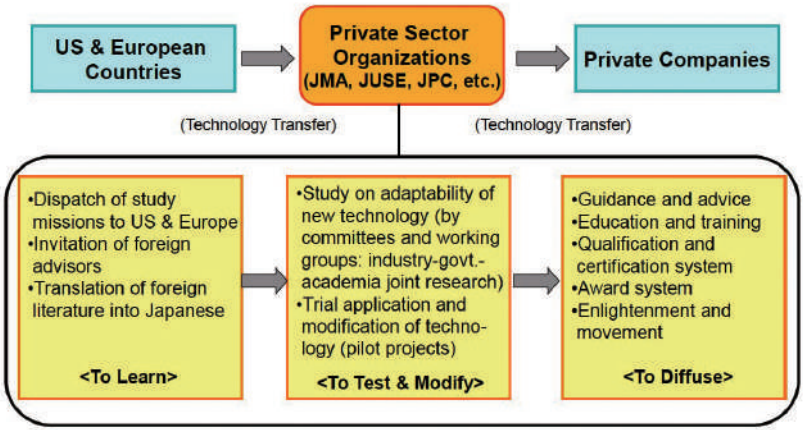
Japan Management Association (JMA)	• Established in 1942, as an incorporated association. • Emphasis on *noritsu* (efficiency) improvement, management innovation.
Union of Japanese Scientists and Engineers (JUSE)	• Established in 1946, as an incorporated foundation. • Emphasis on quality improvement ('Deming Prize,' QC Circle).
Japan Productivity Center (JPC)	• Established in 1955 as a public-interest foundation. • Emphasis on productivity improvement (leading Productivity Movement). Tripartite collaboration among govt., business, and labor unions.

Source: Elaborated by the author, based on Kikuchi (2011) and websites of JMA, JUSE, and JPC.

As shown in Figure 2.1, private organizations played active roles in three critical stages of technology transfer through learning, adaptation, and diffusion (Kikuchi 2011). Top management of all three organizations had a strong sense of mission and commitment to developing companies and industries to realize Japan's postwar economic recovery. Their strong leadership was critical to introducing knowledge and technology from the US and Europe, adapting them, and diffusing quality and productivity improvement movements nationwide (Kikuchi 2011; Ohno 2011; Yanagihara et al. 2018).

[5] See JMA homepage: https://www.jma.or.jp/en/about/group.html (accessed: August 10, 2020).

[6] JUSE succeeded the wartime Greater Japan Technology Association (Dai Nippon Gizyutukai). This association was established in 1944 through the merger of the Industrial Policy Society (founded in 1918), the Japanese Association of Technology (founded in 1935), and the All Japan United Society for Science and Technology (founded in 1940).



Source: Adapted from Kikuchi (2011).

Figure 2.1 The Role of Private Sector Organizations in the Introduction, Development, and Diffusion of Foreign Technologies

The history of the establishment of the JPC exemplifies the strong commitment of visionary leaders of such private organizations. By the early 1950s, Europe was rapidly recovering from the devastation of WW2 with US assistance (Marshall Plan) and embarking on a productivity movement based on collaboration between employers and workers. In 1951, Kohei Goshi (who later became the first chairman of the JPC), visited Europe as a member of a Keizai Dōyūkai (Japan Association of Corporate Executives)[7] mission. He was convinced of the need for a productivity movement in Japan and thought that this issue must be broadly shared with the entire business sector. Upon his return, Mr. Goshi invited major business organizations (e.g., the Japan Federation of Economic Organization (Keidanren), the Japan Federation of Employers' Association (Nikkeiren), and the Japanese Chamber of Commerce) to collaborate for the establishment of the JPC.

The Japanese government had also recognized the need for productivity improvement. In 1954, the Cabinet adopted a policy for productivity improvement. The Enterprise Bureau of the Ministry of International

[7] Keizai Dōyūkai is a private, non-profit, non-partisan organization that was formed in 1946 by 83 far-sighted business leaders united by a common desire to contribute to the reconstruction of the Japanese economy. Now, its membership comprises approximately 1,400 top executives of some 900 large corporations.

Trade and Industry (MITI) planned to set up a productivity organization. However, business leaders insisted that the JPC be created as a private organization. Finally, the JPC was established in 1955, funded by both public and private sectors, on the premise that the government would not intervene into the JPC spending policies and personnel affairs. A government-business coordination committee was established in 1955, attended by vice ministers of various ministries and the JPC-selected private sector members. The coordination committee was chaired by a private sector representative.

Box 2.1. Prewar History of *Noritsu* Movement and Establishment of JMA

Even before JMA's creation in 1942, various activities on "*noritsu* (efficiency)" improvement had already taken place, promoted by nearly a dozen Japanese experts who were inspired by American Scientific Management methods such as Taylor's time study (1911) and Gilbreth's motion study (1911). Among the various experts, Mr. Yoichi Ueno, a scholar in management science and industrial psychology and founder of SANNO Institute of Management (established in 1925), and Mr. Toichiro Araki, a pioneer of professional business consultants in Japan, made invaluable contributions to diffusing theory and practices of American management technologies. Their dissemination of Scientific Management was not limited to the translation of American texts or the parroting of American mentors. For example, after returning from his US visit, Ueno keenly felt deficiencies of American practices which narrowly focused on the material side of the principles of Taylor's Scientific Management. He advocated a comprehensive set of principles for ordering human life as well as economic organizations as the Way of Efficiency (*Noritsu Do*).

By the 1920s, there were eight privately-run Efficiency Societies (*Noritsu Kyokai*) at the regional level (including Manchuria). In 1927, these regional bodies formed the National Association of Efficiency Societies, with Ueno and Araki serving as the first managing directors. Fifteen years later, the National Association of Efficiency developed into JMA through the merger with the Japan Industrial Association, a quasi-governmental organization. This merger, leading to the creation of JMA, was facilitated by the Ministry of Commerce and Industry.

Source: Tsutsui (2001) and Harada (2010).

2.1.1. Analysis of three-staged process of technology transfer and local learning

2.1.1.1. Learning stage. At the first stage of learning, many study missions were dispatched to the US and Europe. Also, foreign experts were invited for lectures. Mission reports and lecture notes were widely disseminated among the organization members. Foreign text books and materials were translated and distributed to companies and researchers, as well.

It is well known that JUSE actively learned the American method of statistical QC and developed it into a Japanese-style Quality Control Circle (QCC). In July 1950, Kenichi Koyanagi, Managing Director of JUSE, took the initiative to invite W. E. Deming, a renowned American expert on statistical process control, to deliver lectures on quality control.[8] Deming held a series of lectures and seminars, teaching basic principles of statistical QC to executives, managers, and engineers of Japanese industries. His transcript of the eight-day course on QC was compiled from stenographic records and distributed for a fee. The lectures inspired many participants, and JUSE immediately established 'the Deming Prize' in 1951, with the aim of rewarding Japanese companies for major advances in quality improvement. The awards ceremony is broadcast every year in Japan on national television. In 1954, J. M. Juran, another American expert was invited to give lectures on managing for quality. He also met with executives from ten manufacturing companies. Juran emphasized the importance of quality control in the context of overall management and taught at training courses for Japanese top and middle management. This provided the basis of Company-wide Quality Control (CWQC), which JUSE started to introduce from the latter part of the 1950s.

During 1955–61, JPC received support from the US government on various activities, such as sending study missions, inviting experts, collecting materials and information, and making movies about technologies.[9] Figure

[8] Deming was invited to Japan by the Economic and Science Section of the GHQ to advise the study on Japanese population census. Immediately after learning about Deming's visit to Japan, JUSE took initiative to ask him to deliver lectures on quality control. As a result, the eight-day course materialized (Sasaki 2004).

[9] The US support to Japan's postwar economic recovery was driven by a strategic objective of keeping Japan within the Western camp against Communism at the time of Cold War. Therefore, for the US, it was important to prevent the radicalization of the Japanese labor movement (Shimada 2018).

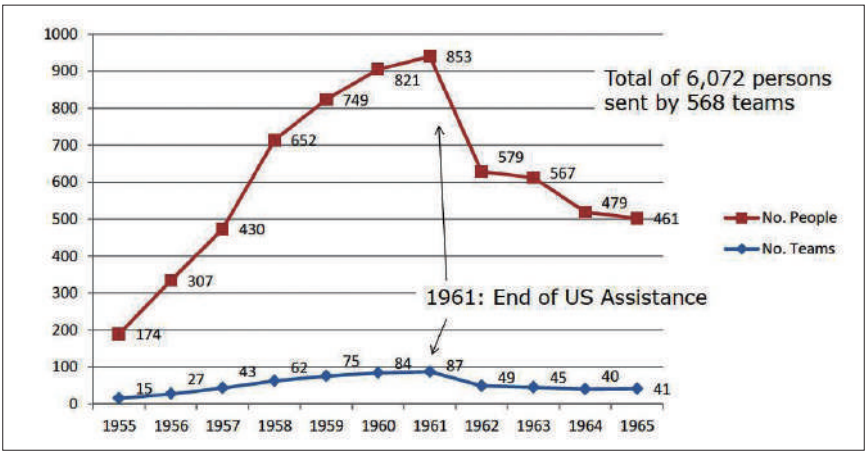
2.2 shows the trend of overseas missions organized by JPC. The number of missions and participants increased steadily. Normally, industry, the government, academia, and labor unions formed a team and visited overseas together. Also, missions by specialized group (such as top-management, industry-specific groups, small-and medium-enterprises (SMEs), and labor unions) were dispatched. It is important to note that SMEs participated actively in this endeavor.[10] Upon return, mission briefings were intensively organized to share the findings with those who did not go overseas. One-hundred seventy volumes of Productivity Reports (1956-66) were published, based on such mission findings. It should be noted that even after US support ended in 1961, study missions continued, with more than 40 missions dispatched annually until 1965 (funded by JPC and participating companies). The total number of study missions and the participants amounted to 568 and 6,072 respectively (JPC-SED 2005). Participants came from key industries, which became drivers of Japanese high-economic growth in the subsequent years (Yanagihara et al. 2018).

According to the questionnaire surveys conducted by the JPC,[11] the business sector participants found it useful to learn about two issues in particular: (i) ways of thinking of advanced market economies (such as rational thinking, democracy, and pioneer spirits); and (ii) concrete methods of management (such as marketing, industrial engineering (IE), executive committees, performance-based salaries and wages, methodology for standardization, simplification, and specialization). For policymakers (in particular, MITI officials), the missions gave opportunities to keenly recognize productivity gaps (i.e., how far Japanese productivity was behind the levels of the US and Europe), specific goals that Japan should establish to catch up, and concrete measures to realize them (Yanagihara et al. 2018).

These examples show eagerness and strong ownership of the Japanese private sector, policy makers, and academia to acquire foreign knowledge and technologies during the pre-war and post-war periods for industrial catch-up. During wartime, Japan had limited access to external resources

[10] SME Agency was established under MITI in 1948. A visiting consulting system was also established in 1952.

[11] The questionnaire survey targeted at the members of 510 missions dispatched by JPC during 1955-62 (excluding those related to the agriculture and fishery sector). For each mission, two participants were randomly selected (Yanagihara et al. 2018).



Source: Japan Productivity Center (2005).

Figure 2.2. Trend of Study Missions Abroad by JPC (1955-65)

including foreign technologies (Rice 1979), and the government and the military promoted economic mobilization and rationalization, especially in iron and steel, and munitions (e.g. aircraft and shipbuilding) industries. Efficiency improvement in these industries became a high priority, and it was within this context that JMA and the predecessor of JUSE were asked to support these industries (Harada 2010; Cole 1989).

2.1.1.2. Adaptation stage. At the second stage (adaptation/ internalization), various committees and working groups were established, comprised of experts and researchers from industry, government, and academia, to study the adaptability of foreign technologies and make necessary adjustments. They participated in these committees and study groups and conducted industry-government-academia joint discussions and research. In some cases, pilot projects were implemented at manufacturing sites to verify their adaptability and validity (Kikuchi 2011, 27). So, the private organizations did not simply diffuse Western technologies in their original forms; foreign technologies were adapted to the Japanese context through self-study.

The QC movement initiated by JUSE is a good example of how the US-originated concept and techniques of statistical QC mentioned above have been adapted and disseminated nationwide. A QC Circle is a small group consisting of several members (normally more than 3 and up to

10) working in the same place.[12] In Japan, supervisors act as team leaders. They identify causes of defective products and possibilities for improving products or production methods. The initial goals of QC Circle activities were to enhance management skills and leadership of supervisors and frontline workers, encourage all employers to participate in improvement activities, and implement company-wide QC Circle activities to achieve corporate goals and policies.

JUSE brought together leaders and experts from all of Japan's major industries and academia so that they could share their best practices. As a member of JUSE, Kaoru Ishikawa (Emeritus Professor of the University of Tokyo and Dean of the Musashi Institute of Technology) took initiative to introduce QC Circle activities in 1962 and actively promoted quality management technology in companies. He organized committees for research, development, and planning and served as the editorial committee chair of various magazines such as the 'Statistical Quality Control' and 'Gemba and QC Circle' (which was later renamed as FQC Magazine). From the early stages, Ishikawa recognized the need to disseminate Quality Control to front-line workers in the workplace. This was based on his belief that '[J]apanese workers are the best in the world with a superior level of educational standard and that [j]ust following the guidelines and manuals would make such people sick.' So, he suggested that we rather take advantage of their knowledge (JUSE 2015, 257). He listened to the voices of foremen and understood their keen interest in learning quality management. After conducting deliberate discussions with the sub-committee and reviewing questionnaire surveys, he proposed Company-wide Quality Control (CWQC) involving front-line workers. This was quite different from the top-down approach that uses the ladder of office organization, often seen in the United States and in other countries.

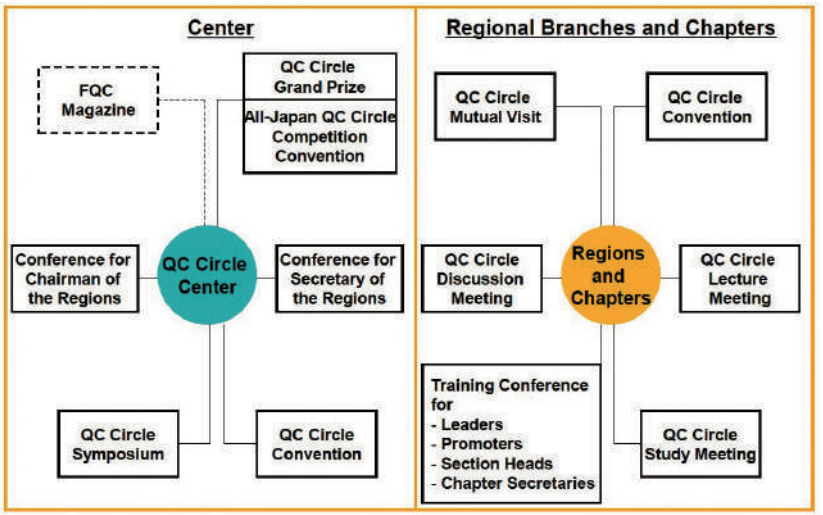
The following remarks by Ishikawa at his special lecture at the 7th Quality Control Convention in 1969 exemplify how JUSE's basic principles reflect the Japanese way to quality improvement based on human-centered approach.

[12] A QC Circle is defined by JUSE as '[a] small group of frontline operators who continually control and improve the quality of their work, products and services; they operate autonomously and utilize QC concepts, tools and techniques' (Hosono 2009).

> When we started Quality Control in Japan, 20 years ago, we intended to start it with the Japanese way, as the background was different from Japan to that of overseas. Quality Control in the U.S.A., is quality control for professionals with a strong aspect of that for, so-called, QC engineers. On the other hand, there was no such professionalism in Japan, which is considered as pros and cons. As we believed that Quality Control with total participation was suitable for Japan, we promoted Quality Control for Top Management and Quality Management at the workplace. Quality Control in the workplace is performed just as a part of Company-wide Quality Control. More specifically, there is Quality Control by Top Management, also by managers, and by staff members. As a part of the chain, the workplace must carry out QC Circle activities in a responsible way. (JUSE 2015, 257)

To promote the QC Circle (QCC) movement, JUSE created nationwide networks at the central and regional and prefectural levels (see Figure 2.3). At the central level, in 1962, the QCC Center was established as a national registration system. Educational materials were developed and distributed through journals and field quality centers (FQC), providing a common framework for workers from different companies. FQC Magazine was a popular journal which started in 1962 as a quarterly publication and became a monthly in 1965. It contained information on case studies of QC Circles and served as an important channel of information sharing on QC Circle activities. Its price was set low (almost the same as the price of a pack of cigarettes) so that ordinary workers could afford it. One can call it as 'democratization of statistical methods' (Cole 1989, 278). In 1963, QCC Conventions began, at which diverse companies and circle members presented their problem-solving successes. Local chapters and regional branches of the QCC Center were also created.

Grass-root, local networks were at the heart of JUSE's QC Circle activities. There are nine regional branches (*shibu*) of the QC Circle Center (including the last, Okinawa branch established in 1984). According to the existing literature, regional branches had representatives from 10 companies on their management boards, who provided free service to their regional branch in planning, organizing, and implementing various events (Cole 1989). As such, there existed the private sector's voluntary support to



Source: Cole (1989), Figure 6, p. 283.

Figure 2.3. Central and Local Level Networks of Japanese QC Circle Activities (JUSE)

the functioning of the institutional infrastructure of QC Circles at the local level. In addition, local chapters (*chiku*) were established, largely coinciding with the prefecture level. It was at this chapter level of the QCC Center that much of the normal learning about circles and quality control took place. Each chapter has a senior executive from one of the member companies as its chairman, a board of counselors, and a coordinator who is often a university professor (Cole 1989). Chapter activities included running QCC Conventions (held throughout the country) and arranging for factory tour exchanges and various study meetings. The membership unit of the QCC Center was the local factories of national corporations. Large numbers of workers, including shop and office floor workers, were involved in these local-level activities. Through chapter activities, a feeling of solidarity and mutual development has been forged among workers across their companies. QCC activity was promoted by broadcasting training programs on radio/TV and publishing journals. In this way, JUSE successfully created mass organizations and networks for QCC movement (Cole 1989).[13]

[13] Cole (1989) discusses the details of grass-root activities planned and implemented by regional branches and local chapters. These activities involved not only experts, but also shop and office floor workers, and provided opportunities for sharing experiences and information across companies at particular localities.

In this way, the QCC activities initially introduced at the workshop level were developed into the nationwide QCC movement by the 1960s. The basic principles of QC Circle activities are respect for humanity and contribution to the improvement of company.[14]

Similarly, JPC established seven Regional Productivity Centers during 1956-60. While these Regional Productivity Centers were financially independent of JPC, seven chairpersons sit on the JPC Board and frequent liaison meetings were held to ensure coordination and cooperation. In parallel, Productivity Councils were set up at major cities.

To adapt and promote foreign technologies in the Japanese context, JPC created the Productivity Research Institute in 1956. The research institute published productivity statistics and conducted productivity-related research and surveys. Such research included studies on how to support productivity improvement of SMEs, which led to the formulation and dissemination of a 'cost-accounting' system for the use of SMEs. Training programs for SME management consultants were initiated. JPC also established four specialized organizations—Japan Marketing Association, Japan Institute of Industrial Engineering (IE) Association, Japan Consumers' Association, and Japan Packaging Institute—to study the validity and adaptability of new technologies and methods learned through overseas missions and explore possible ways of diffusion in Japan (Yanagihara et al. 2018). The membership of these organizations includes both the private sector and academia.

Through the above-mentioned processes, JPC has developed the following three guiding principles as the basic productivity philosophy: (i) In the long-run, improvement in productivity should increase employment; (ii) Labor and management must cooperate on an equal footing; and (iii) The benefits of improved productivity should be distributed fairly among management, labor, and consumers. In sum, JPC customized American technologies, management systems, and labor-management relations for the Japanese by blending them with a 'human-oriented management concept.' There was no reference to 'rationalization' of the workforce in its guiding principles. Such philosophy has also been reflected in the tripartite governing structure of the JPC Board, which includes representatives of industry, unions, and academia.

[14] JUSE homepage: https://www.juse.or.jp/english/qc/ (accessed on March 10, 2021).

JMA also attaches paramount importance to the ability of people with virtual unlimited potential.[15] Such value has been inherited by the Way of Efficiency (*Noritsu Do*) advocated by Ueno and others, as explained previously. In this sense, Noritsu is the Japanese adaptation of the scientific management method developed in the US. During the wartime, JMA was a quasi-governmental body under the control of the Ministry of Commerce and Industry. But, after the end of the WW2, GHQ advised the Japanese government to withdraw all government funding. So, JMA decided to move toward an independent private organization performing consulting activities. JMA began to provide guidance to key industries designated by GHQ/SCP on a fee-basis—such as railways, communications equipment, mining—to increase production and process management. Such consulting activities were conducted with the knowledge and human resources accumulated prior to WW2 (Sasaki 2004). JMA is also known for adapting Western maintenance management into Japanese-style Total Productive Maintenance (TPM). In 1961, a Plant Maintenance Committee was established within JMA, which subsequently developed into the Japan Institute for Plant Maintenance (JIPM) in 1981.[16] After in-depth research, JIPM proposed the concept of TPM, which is about plant maintenance with total participation. It focuses on equipment and people, and a maintenance technique that improves productivity to achieve zero losses and reinforces production foundations.[17]

2.1.1.3. Diffusion stage. At the third stage (scaling-up), various measures were mobilized for diffusing quality and productivity improvement technologies in companies and developing the private sector capability for providing consultancy on practical productivity improvement methods and techniques. All three private organizations were actively engaged in implementing the following activities (Kikuchi 2011; Yanagihara et al. 2018):

- Consulting services for guidance and advice
- Education and training programs for companies to teach technical skills and methods
- Qualification and certification system

[15] See JMA homepage: https://www.jma.or.jp/en/about/pdf/pdf-pamph-en.pdf (accessed on August 10, 2020).

[16] JIPM was established in 1981 through the reorganization of the Japan Institute of Plant Engineers (JIPE), which was created in 1969 as spin off from JMA 1961.

[17] JIPM homepage: https://jipmglobal.com/about (accessed on August 10, 2020).

- Award system
- Nationwide campaign through award ceremonies, conventions, and seminars
- Newsletters and publications

Consulting services are a practical and effective form of technology transfer and diffusion. These services enable companies to acquire new technology by solving specific problems and provide on-the-job training (OJT) opportunities. Especially, JMA has been known for its emphasis on consulting services since its creation in 1942. JMA established a policy of fiscal independence from the Japanese government and began to charge fees for membership and research consulting to fund its activities (Sasaki 2004). JMA conducted its first fee-based factory analysis in January 1946. Factory analyses increased from 35 in 1946 to 44 in 1947 and 73 in 1948. Within JMA, a program to educate and certify consultants was also implemented. The number of consultants increased from 12 in 1946 to 55 in 1950 (Sasaki 2004). Subsequently, JMA established JMA Consultants Inc. (JMAC) in 1980 by converting its consulting division into an independent company. Dating back to the 1940s, JMAC is the oldest consulting firm in Japan. JMA's consulting approach includes tailor-made services and team work with clients and focuses on three changes: process change, mind change, and culture change. JMA has other independent affiliated organizations and works in collaboration with all JMA group organizations to provide companies and organizations with various support services for management innovation.

JPC provides individual companies with consulting services on productivity improvement. JPC follows its own methods of *Kaizen* consultation, consisting of three components: human, material, and equipment and information. Each component cross cuts sales, design, production, and procurement processes as deemed relevant. The main activities of JPC are training on managerial skills, management consultation, productivity research, issuing the Japan Quality Award, and engaging in international cooperation. JUSE has been involved in soft technology through which mathematical and statistical methods can be applied to corporate management.

Various training programs were provided on technical skills and methods. Training courses have been tailored to the level of each target group such as top executives, middle-ranking managers, and workers, with different

training programs for different industries. JMA's training program incorporates human resource management by hierarchy (supervisors, middle, and top management), production process (lean production, TPM, TQM), management skills (plant management, balanced score card, ISO), and management skills by functions (R&D, production, procurement, supply chain management, office process improvement). Usually, JPC runs three-month courses for its management consulting training program. It prepares customized training courses for different levels of productivity facilitators. JUSE give greater priorities to education and training than consulting services for companies. They have also undertaken other activities, such as the publication of technical literature, the provision of radio training courses and correspondence courses, and the development of audiovisual training materials.

Qualification and certification systems have played an important role in developing private sector capability—particularly professional experts who are engaged in technology transfer—and maintaining their abilities above a higher level. Such systems contribute to increasing customers' trust in those professional experts, as well. Quality Control Specialist (JUSE), Management Consultant (JPC), and Certified Production Engineer (CPE) Qualification (JMA) are some examples of their qualification and certification systems. JUSE has been involved in global quality affirmation, international conference for quality (ICQ), and international convention on QC Circles (ICQCC).

The award system aims to recognize companies with outstanding performance in improving quality and productivity, or '*noritsu*,' in industry. The Deming Prize (JUSE), the Japan Quality Award (JPC), and the JMA Human Resources Development Excellence Award (JMA) are typical examples of this. The awards enable award-winning companies to improve their corporate image and reputation, and in turn motivate other companies to work hard for excellence. As explained in Chapter 5, the awards contribute to encouraging the broader adoption of good practices. Starting with the Deming Prize (established in 1951), many awards have been established over the past decades including the Malcolm Baldrige National Quality Award in the US.

JUSE, JPC, and JMA all promote nationwide public relations/education activities. JUSE annually organizes the Deming Prize Award Ceremony during its Quality Improvement Month and creates slogans for nationwide

quality improvement campaigns. It has published a great number of books on QCCs, QC storylines, and TQC (Japanese *Kaizen*-based TQM). JPC has produced in-house publications that supported productivity facilitators and also issued 'declarations' whenever required. JMA has published various 'suggestions' in order to attract the interest of those working in industry and of the general public. All of them also publish various kinds of information, magazines, and newsletters. These include *Quality Management* (JUSE, monthly), *Productivity Newspaper* (JPC, quarterly) and *JMA Management Review* (JMA, monthly).

To raise the awareness of business managers, executives, production managers, and employees toward the improvement of quality, productivity, and efficiency, all three organizations hold conventions and symposiums to discuss specific themes. These events provide opportunities for successful companies to present their important achievements. Some of these conventions and symposiums are attended not only by company members but also by the general public.

2.2. The role of academia, industry, and government in local learning and translative adaptation process

Collaboration and close interactions among academia, industry, and government have been a key feature throughout the process of local learning and translative adaptation in the Japanese quality and productivity movement. First, Japanese scholars made very important theoretical and practical contributions. They were actively involved in transferring and customizing management principles, tools, and systems as well as developing new ones. As explained before, Kaoru Ishikawa, Emeritus Professor of Tokyo University is a most exemplary figure. He is highly regarded as the 'founder of quality control in Japan' and the 'father of QC Circle.' Ishikawa worked in industry for eight years and returned to the University of Tokyo in 1947 where he graduated. He started studying statistical methods such as statistical quality controls (SQC) and joined JUSE in 1949. Ishikawa played a key role in establishing an executive committee for QC conferences and sponsoring the conferences and initiating QC Circle activities in 1962. He was one of the founders of the International Conference on QC (ICQC), which was first held in 1969 in Tokyo and the International Academy for Quality in the same year. He was extensively engaged in QC consulting, including all types of manufacturing industries and services (Ishikawa 1985). Ishikawa is

also known as the inventor of the Ishikawa Diagram, a cause and effect analysis diagram (Hosono 2009).

Second, there are a large number of well-known engineers and managers who promoted quality and productivity activities in many Japanese companies. It is fair to say that Japanese companies had personnel with sufficient educational background, technical knowledge, and enthusiasm to absorb foreign technologies and make them Japanese. Subsequently, many companies developed their own systems of *Kaizen*, including the globally known Toyota Production System (TPS) and *jishukanri* (self-management) activity in the steel industry. For example, Taiichi Ohno, ex-Vice President of Toyota Motor Company, is one of the most prominent industrial practitioners, known for his contributions to consolidating TPS. Taiichi Ohno graduated from the mechanical engineering department of Nagoya Technical High School in 1943, was hired by Toyota Corporation in February 1943, appointed as machine shop manager in 1946, promoted to director (1954), managing director (1964), senior managing director (1970), and executive vice president (1970) positions, and retired from Toyota in 1978. Ohno was the architect of the *Kanban* or just-in-time system evolved out of the need to overcome certain restrictions in the marketplace that required the production of small quantities and many varieties under the condition of low demand, at a higher quality, low cost and customer preference (Ohno 1988). Ohno Taiichi's focus was mainly on *Gemba* improvement activities at the workshop floor level. He is also known for coining the concepts of *Muda*, *Mura*, and *Muri* and codifying the seven types of *Muda* commonly known as waste (Kato and Smalley 2011). These efforts laid a solid foundation for establishing the Japanese production management system. Overall, Japanese companies have endeavored to train their workers and developed in-house systems for quality and productivity improvement.

It is also important to note the role of industrial engineers, who have actively conducted training and consulting services to companies. These included Shigeo Shingo, a consultant for Toyota and Panasonic, among others. Shingo joined the JMA in 1945. He provided 79 rounds of consulting to Toyota from 1955 to 1980 focused on designing and training productivity courses for 3,000 technical personnel and contributed much to the development of TPS (Kato and Smalley 2011). Another prominent engineer is Kunio Shirose, who joined JMA in 1960 after graduating from Hokkaido University with a degree in applied chemistry. Later in

1984, he moved to JIPM where he served as a director and advisor to many companies on plant maintenance. He was the author of 'TPM for Workshop Leaders' in 1984, editor of 'TPM Team Guide' in 1988, and a contributing author of 'TPM Development Program' published in 1989.

Third, public policy played a supportive role. The Japanese government took a comprehensive approach to quality and productivity improvement. Various national systems were established to support quality and productivity improvement efforts by the private sector. These include:

- Standards system (JIS: Japan Industrial Standards, from 1949)
- Public research organizations (*kosetsushi*, or testing and research centers that meet the industrial needs of local communities)
- Export inspection system (1957)
- *Shindan* system (SME management consultants system),[18] and so on.

For example, when certifying products for the JIS label, not only the products themselves but also the factory's quality management systems and facilities were examined in light of whether they had enough capacity to meet the standards. Also, public research organizations (*kosetsushi*) conducted tests and inspections and provided technological information to local SMEs (prefectures and municipalities). An export inspection system was introduced to improve the quality of export products. On-site inspections were conducted annually by government organizations. As a result, the percentage of rejected products decreased, and product quality improved. Under the *shindan* system, advice was provided to SMEs on the adoption of scientific management methods and new technologies. A visiting consulting system was established in 1952. These systems were mutually reinforcing (Ohno 2011; Kikuchi 2011).

3. Singapore: The Experience of the Government-Led National Movement

In contrast to Japan, Singapore's national productivity movement in the 1980s was led by the government. It was executed as top-down policy with the late Prime Minister Lee Kuan Yew as the principal promoter.

[18] In Japanese, *shindan* means enterprise diagnostic and advice. It is a state-authorized and supported system or enterprise and advisory services targeted mainly at SMEs in both manufacturing and services. *Shindanshi* is a specialist who diagnoses and gives advice to SMEs, concerning various management issues.

Initial results were rolled out to a wide range of workplaces—in both the public and private sectors—through official agencies.

Singapore is the first country where JICA provided comprehensive technical cooperation—in a venture called the 'Productivity Development Project (PDP)'—to transfer Japan's know-how in quality and productivity improvement. This project was requested by the then-Prime Minister Lee Kuan Yew to the Japanese government. With the Prime Minister's strong commitment and leadership, the Productivity Movement was launched in 1981. The JICA project supported a substantial part of this initiative by mobilizing Japanese experts during 1983–90. Singapore successfully internalized, scaled up, and institutionalized the Productivity Movement. Based on this experience, by the 1990s Singapore came to offer technical cooperation for productivity improvement in developing countries.

3.1. Leadership and the role of core organizations

From the early days of independence, productivity was high on the agenda of the Singaporean government. The national productivity organization was first created as a Productivity Unit within the Economic Development Board (EDB) in 1964. Later, both employer groups and labor unions in Singapore jointly developed productivity improvement guidelines (The Charter for Industrial Progress), and the unit was formalized as the National Productivity Center (NPC) in 1967. Since then, national productivity organizations have evolved, according to the stages of development and the needs of the Singaporean economy (Table 2.2).

The NPC was upgraded to a separate agency, the National Productivity Board (NPB) in 1972 and then engaged in activities with support from the United Nations Development Programme (UNDP), for which the International Labour Organization (ILO) served as the implementing agency. In 1981, the government launched the Productivity Movement, and the NPB was designated as the principal agency to implement this national productivity drive. Also, the NPB was appointed as the counterpart agency of the JICA-supported PDP with the aim of promoting the Productivity Movement and studying Japan's experience. Separately, the Singapore Productivity Association (SPA) was established in 1973 as an affiliated body of NPB to promote active involvement of organizations and individuals in the Productivity Movement and spread the idea of productivity and its techniques. In 1996, the NPB was merged with

the Singapore Institute of Standards and Industrial Research (SISIR), a standards board that handles quality standards, to become the Productivity and Standards Board (PSB). In 2002, the PSB spun off its service-providing division, changed its name to the Standards, Productivity and Innovation Board (SPRING) and shifted its focus to SME development. In April 2018, SPRING was merged with the International Enterprise (IE) to form the Enterprise Singapore (ESG).

Table 2.2. History of Productivity-Related Organizations

Period	Organization	Remarks
1964	Productivity Unit, Economic Development Board (EDB)	1965: Charter for Industrial Progress, Productivity Code of Practice
1967-72	National Productivity Center (NPC) • Autonomously-run division under EDB	1971: Tripartite Interim Management Committee (to prepare NPB)
1972-95	National Productivity Board (NPB) • Statutory body, initially affiliated with Ministry of Labor and later with Ministry of Trade and Industry (MTI)	1973-present: Singapore Productivity Association (SPA) 1981-85: Awareness stage 1986-88: Action stage 1989-90s: Ownership stage
1996-2001	Productivity Standard Board (PSB) • Statutory body, affiliated with MTI	
2002-18	Standards, Productivity and Innovation Board (SPRING) • Statutory body, affiliated with MTI	
2018-present	Enterprise Singapore (ESG) • Statutory body, affiliated with MTI (merged with Int'l Enterprise Singapore)	New one stop agency to promote SME development, new technologies, overseas market dvt. & training of mgt. leadership.

Source: Elaborated by the author based on the published information on EDB, NPB, PSB, SPRING, and ESG.

Despite more than fifteen years of efforts to enhance productivity, the leaders of Singapore felt that the country remained far behind productivity development. In 1979, Prime Minister Lee Kuan Yew was concerned: 'Workers here were not as proud of or as skilled in their jobs compared to the Japanese or the Germans.'[19] In early 1981, Lee Kuan Yew met key Japanese employers in Singapore to discuss practices, work attitudes, and productivity in Japan. Immediately, the Committee of Productivity was

[19] According to Low Choo Tuck, former Director of Planning Division, SPRING Singapore,

formed to study Japan's productivity movement and examine the issues of productivity improvement, work attitudes, and labor management relations. In June 1981, he met with Kohei Goshi, then JPC Chairman, and was strongly convinced of the need for a Productivity Movement. The Committee of Productivity compiled a report that emphasized the importance of 'human aspects' or mindset change, and proposed the establishment of a high-level council to review productivity efforts and outline future strategy.

Based on this proposal, in September 1981, the National Productivity Council (NPC) was established as an oversight and policy coordination body for the Productivity Movement. NPC was chaired by the State Minister of Labor (from 1986, by the State Minister of Trade and Industry) with about 20 high-level representatives from government, employer groups, unions, and academia. The first action of NPC was to launch the Productivity Movement with NPB as the primary implementing agency. NPB was re-structured and expanded to carry out its mission of inculcating the concept of productivity in every man, woman, and child in Singapore (NPB 1987).

In this process, the Singaporean government requested the Japanese government for bilateral cooperation for productivity improvement, and the JICA-supported PDP was implemented for seven years. A number of the JPC experts were dispatched by JICA and provided technical cooperation throughout the period.[20] Tripartite cooperation among the government, employers, and labor unions is a key institutional feature of Singapore's Productivity Movement. This was inspired by the Japanese productivity movement experience. As such, the Productivity Movement in Singapore was primarily a nationally driven initiative. The practices of foreign direct investment (FDI) companies operating in Singapore also

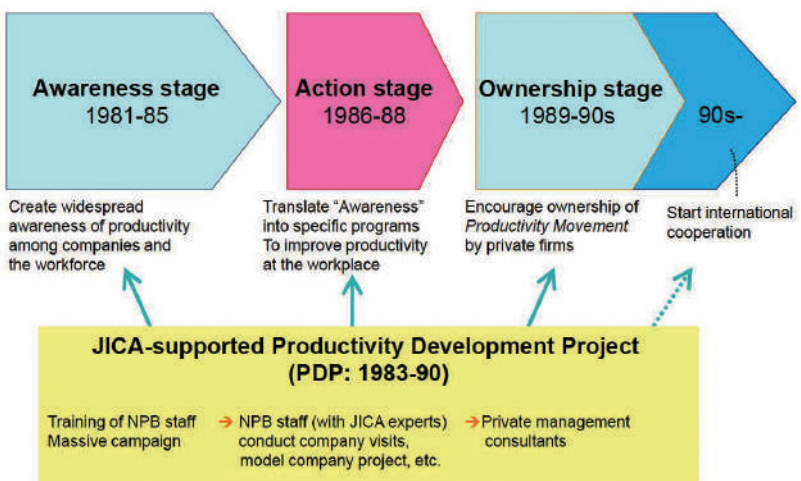
by the early 1980s, an increasingly tight labor market had driven up wages. Companies realized that to compete successfully, they must introduce better management systems and more importantly had good labor management relations and teamwork. Nevertheless, the state of labor-management relations then was fragile and there were many industrial disputes (VEPR and GRIPS Development Forum 2021).

20 The PDP's achievement included: (i) approximately 200 Singaporeans trained in Japan; (ii) about 4,000 Singaporeans receiving domestic training using materials developed in Singapore; (iii) a total of 200 Japanese experts serving as lecturers; (iv) Japanese experts and consultants who guided more than 200 companies in Singapore for productivity improvement; and (v) some 100 companies that adopted 5S with guidance from NPB (JICA 2016).

served as important benchmarks for assessing Singapore's productivity level.

3.1.1. Analysis of three-stage evolution of the Productivity Movement[21]

The Productivity Movement in Singapore evolved in three stages (see Figure 2.4): (i) awareness stage (1981-85); (ii) action stage (1986-88); and (iii) ownership stage (1989-90s). This categorization is based on perspectives of the Singaporean counterparts who were involved in the JICA-supported PDP, and consistent with the three stages of local learning and translative adaptation explained in the Japanese experience in the above.



Source: Elaborated by the author based on the information provided by Mr. Lo Hock Meng (SPA) in September 2010.

Figure 2.4. Evolution of Productivity Movement in Singapore

3.1.1.1. Awareness stage. This first stage aimed at creating widespread awareness of productivity among companies and the workforce. The main focus was to foster positive attitudes and promote teamwork and recognition for companies and individuals. Massive productivity

[21] This section is based on the author (Izumi Ohno)'s interview with Low Hock Meng, then Executive Director of the Singaporean Productivity Association (SPA) and the information provided by him on September 2, 2010. Low was one of the counterparts of JICA-supported PDP.

campaigns were launched at both the national and company levels. November was designated as 'Productivity Month,' in which Lee Kuan Yew delivered annual speeches on productivity beginning in 1981 for seven consecutive years. More specifically, NPB took the following actions:

- Education of the public and massive campaigns
- Information dissemination and training
- Strengthening company identification
- Promotion of labor-management joint consultation
- Promotion of productivity in the public sector

Public education was prompted by the launch of the Productivity Movement, accompanied by the publication of productivity data, media support, and changes in schools and tertiary institutions. To disseminate the spirit of productivity to the public, the NPB created a mascot, named Teamy The Bee (a tiny, cute cartoon bee), which symbolizes hard work, team work, and efficiency. Productivity campaign slogans and posters were created, around the key message 'Together We Work Better.'[22]

Information dissemination and training were conducted in the form of courses that emphasize human relations, a library of local case studies on good management practices, and a registry of courses on productivity and management. To strengthen workers' identification with companies, various schemes were introduced such as payments of variable bonuses and special awards for long service employees. Furthermore, labor-management joint consultation was promoted through Work Excellence Committees (WECs)[23] and QC Circles.

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[22] This message was 'political.' Productivity improvement often invites workers resistance because they fear that efficiency gains from improved productivity might lead to unemployment. Mindful of such resistance, this slogan deliberately aimed at creating a virtuous cycle such that: increased productivity will promote growth of the business and economy, which should generate more consumer demand for products; this should bring satisfaction for individuals and more work for workers; as a result, there will be welfare gains for individuals, including workers.

[23] WECs aimed to foster good labor-management relations within an organization, provide a platform to facilitate communication and consultation, study productivity challenges and discuss solutions, conduct annual surveys to access the morale and work attitudes of employees, drive the formation of QCCs to improve productivity, and organize social, cultural and recreational activities to promote interactions between workers and management (Woon and Loo 2017).

Singapore introduced the Productivity Movement to both the business and public sectors, aimed at broader impacts on popular mindset change. It is particularly notable that Work Improvement Teams (WITs) were implemented in the public sector as part of the civil service reform program. The public sector was the largest employer in Singapore at that time. A WIT is a group of civil servants from the same work unit, irrespective of divisional status, who meet regularly to solve problems, examine improvement opportunities, and develop problem solving skills. So, a WIT can be seen as a Singaporean adaptation of the Japanese-style QC Circle concept applied to its civil service needs. A productivity campaign was launched in the public sector as well, and the Productivity Working Committee was established in the form of joint committee with management and workers. The Civil Service Institute provided various training courses to promote the WITs movement. WITs emphasized worker involvement, participation, and bottom-up management; team members worked together and focused on tackling problems facing their common work areas. While these features are common to QC approach, WITs had wider scope than QCs with their tools and techniques being geared more to service needs and applied to a variety of themes and projects (Ministry of Finance and Civil Service Institute 1982). They were not restricted to any specific level in the organizational hierarchy.[24]

3.1.1.2. Action stage. At the action stage, the focus shifted from the national promotion of productivity to company-level promotion. This stage aimed at translating productivity 'awareness' into specific action at the workplace through participatory programs. It focused on upgrading the skills of management and workers, and the operational efficiency of companies. In 1986, NPB established a Management Guidance Center to administer various management consultancy programs for local companies (NPB and JICA 1990). Specific programs and activities implemented under the Center include:

- Model Company Project
- Management Consultancy Referral Scheme
- Associate Consultants Scheme
- Industry-based Consultancy Assistance Scheme
- Training of Workforce through the Skills Development Fund (SDF)

[24] According to the booklet from the Singaporean government, WIT meetings can be held during office hours or voluntary overtime.

The 'Model Company Project' was implemented jointly by the Japanese (JICA) experts and NPB counterparts and provided assistance to companies. This paved the way for on-the-job training (OJT) of NPB staff to equip them with relevant skills. The 'Management Consultancy Referral Scheme' and the 'Associate Consultants Scheme' are the systems to mobilize those trained under the JICA project as 'qualified' private management consultants. NPB allowed private sector participation in the PDP training fellowship in Japan. Those trained became NPB Associate or Referral Consultants. A pool of over 200 associate and referral consultants was created to supplement NPB's efforts in reaching out to industries (NPB and JICA 1990). Furthermore, NPB introduced the 'Industry-based Assistance Scheme' in 1986. The scheme was designed to raise the level of productivity in six priority industries and assist companies on an industry-wide basis to impact productivity levels. These industries included food manufacturing, restaurants, hotels, retail, textiles and garment, and finance.

Under the Management Guidance Center, NPB assisted companies, particularly SMEs, in improving their business efficiency and productivity management. Cases of successful companies were highlighted to serve as models for the others. NPB also promoted the growth of management consultancy services for SMEs.[25]

Besides consultancy, a high priority was placed on productivity-related training programs, and companies were encouraged to send their staff for training. For example, NPB teamed up with reputable companies such as Singapore Airlines (Service Quality Center), Philips Singapore (Industrial Engineering Training Center), and Seiko Instruments (OJT Project) to develop national training programs in specific areas for managers and workers.[26] Additionally, extensive trainings to enhance the skills of the

[25] Some 105 local companies have benefitted from assistance rendered by NPB consultants and Japanese experts, as well as the Associate and Referral Consultants (NPB and JICA 1990).

[26] Speech by Low Choo Tuck, former Director of Planning Division, SPRING, 'Productivity movement and competitiveness—the Singapore's experience,' delivered at the Vietnam Productivity Center.

workforce were conducted with support from SDF.[27]

3.1.1.3. Ownership stage. By 1989, companies and individuals had become actively involved in the Productivity Movement. So, the ownership stage aimed at self-sustaining the national movement[28] to ensure that productivity habits form part of the work ethic. Private and public organizations and individuals are encouraged to lead the Productivity Movement. The government launched various initiatives to promote company-level productivity improvement, which include:

- Annual productivity campaign led by the private sector
- Singapore Quality Award (1994-)
- Productivity Activist Scheme (1996-)

For example, NPB promoted the private sector to lead annual productivity campaigns, and employer groups were urged to chair the Campaign Steering Committee. The Singapore Quality Award was introduced in 1994 and given to both private and public sector companies. The Productivity Activist Scheme was launched in 1996. This scheme aims to develop a network to enable member companies to benchmark their productivity against partners and improve their skills and techniques. Key activists (productivity 'champions') from the public and private sectors were introduced to lead, organize, and influence other members of the workforce in various productivity activities.[29] Resources are pooled for an effective exchange of information in support of productivity improvement.

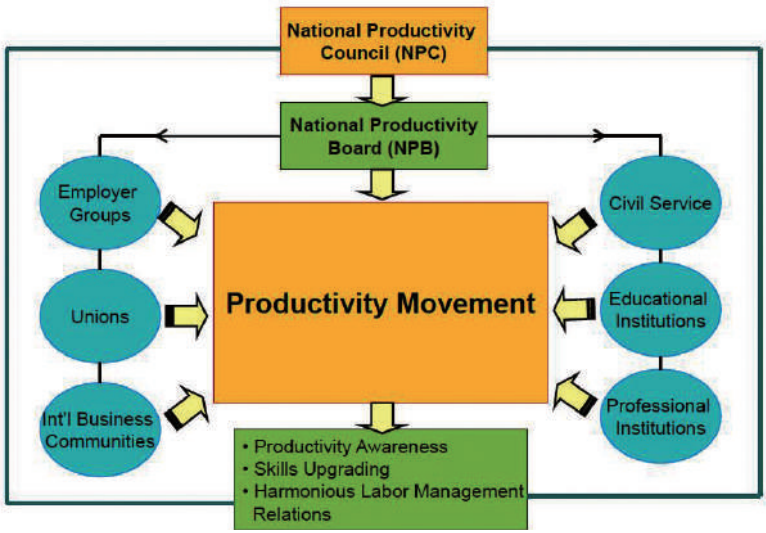
3.2. Mechanisms for stakeholder engagement in the Productivity Movement

To implement the Productivity Movement, the Singaporean government created a centralized oversight and coordination mechanism and reinforced the existing national productivity organization to perform

[27] SDF was established in 1978 as employer-based funding that provides financial incentives for staff training. All employers must pay a Skills Development Levy for all workers. The Central Provident Fund collects the levy on behalf of the Workforce Development Agency. While SDF was initially managed by the Ministry of Labor, from 1986 it came under NPB's responsibility. The levy collected is channeled into SDF, which provides grants to companies that send their workers for training.

[28] Speech by Low Choo Tuck (op cit).

[29] Speech by Low Choo Tuck (op cit).



Source: Information provided by Low Hock Meng on Sept. 2, 2010.

Figure 2.5. Framework for Productivity Movement (Around the 1980s)

such operational functions as public campaigns, training, consulting, research, measurement, and industrial relations. As Figure 2.5 shows, the mechanism was built on strong involvement and support of tripartite key stakeholders (public sector, unions, and employers) to ensure that productivity gains be shared among these stakeholders. These institutional factors greatly contributed to the successful awareness raising and scaling-up of the Productivity Movement. This framework has provided channels for involving various groups and institutions and thus facilitated the scaling-up of the movement. Because Singapore is a city state, there was no need for a local-level coordination mechanism.

At the policy level, in 1981, as a tripartite council, NPC actively involved key stakeholders, annually reviewed productivity programs and outlined its future strategy. As such, NPC ensured national consensus on key productivity strategies and programs. At the operational level, NPB played a key role as the secretariat of NPC, and also served as the operational arm spearheading the productivity campaign in both the public and private sectors throughout the three stages of the Productivity Movement. Under the oversight of NPC, NPB coordinated and promoted the diffusion of the Productivity Movement, such as productivity awareness, the improvement of skills connected to productivity management techniques

and harmonious labor management relations, and so on. It also provided training and management consultancy, spread QC circles, promoted the concept of productivity, and administered SDF, which provides financial incentives to the companies to send their staff to productivity-related training.

3.2.1. Channels of awareness raising and scaling-up

At the awareness stage, the productivity campaign was actively promoted in the public sector. The government, as the largest employer, endeavored to set an example of the private sector to improve productivity, work attitudes, and human resource management. The productivity campaign was linked with civil service reform and was spearheaded by the Central Productivity Steering Committee. The Central Steering Committee was formed immediately after the launch of the Productivity Movement, to oversee the movement within the civil service. Its members also included representatives of the civil service unions. An annual civil service campaign was launched in conjunction with the national productivity campaign. WITs were formed in all ministries to develop plans to promote teamwork spirit and productivity. These voluntary groups met regularly to identify improvements that could be achieved and formulate ways to attain the desired improvements (Sum 2000).

For example, the Ministry of Defense and the Armed Forces launched the productivity drive in 1981. Since all the young Singaporean males (age 18-21) were obliged to enroll in the national service (Singapore Armed Force, Singapore Policy Force, and Singapore Civil Defense Force) for 24 months, this has proved to be an effective way of disseminating the concept of productivity.[30]

Regarding labor unions, the National Trade Union Congress (NTUC) spearheaded the productivity campaign and created the Productivity Promotion Council. The campaign aimed to inculcate productivity and quality-consciousness at the workplace. Regarding employers groups, the Singapore National Employers' Federation and Singapore Manufacturers' Federation supported the Productivity Movement. Both unions and employer groups supported the workforce training,

[30] As of January 2008, the obligatory military service was replaced with voluntary military service.

with financial incentives coming from the NPB-administered SDF. Furthermore, productivity-related programs and human resource management contents were promoted at various tertiary educational institutions (including polytechnics) to train the future workforce on productivity awareness. In schools, formal curricula teaching teamwork, human relations, and productivity were introduced in various forms, such as group work, moral education, peer-learning, and school essays on productivity (Woon and Loo 2017). As explained earlier, the NPB partnered with various reputable organizations including multinational corporations, to set up training centers and develop training programs for the industry. Examples include partnerships with Singapore Airline, Philips Singapore, Seiko Instruments, and IBM. Such NPB-private sector training partnership programs further expanded in the 1990s.

3.2.2. Singapore Productivity Association (SPA) as a partner with the private sector

The Singapore Productivity Association (SPA), founded in 1973 as an affiliated body of the then NPB, also played an important role. While the NPB is a public organization charged with the Productivity Movement as a national project, the SPA is a private body comprised of representatives from companies that provide training and disseminate information on the Productivity Movement in the private sector (Yanagihara et al. 2018).[31] SPA charges fees to its members (institutional or individuals) and organizes courses and seminars, company visits, study tours, and so on, to promote their knowledge and skills acquisition. The members have access to information, training and seminars, and networking opportunities. SPA has promoted the active involvement of organizations and individuals in the movement and expedited its diffusion and techniques. At present, SPA is affiliated with the Enterprise Singapore (ESG), which was created in 2018 as a new one stop agency to promote SME development.

[31] While government organizations can develop 'policies,' they do not have sufficient marketing skills to disseminate them. This often requires separate sales promotion channels and hubs for their policies. In Singapore, SPA complemented the NPB's policy role by organizing productivity campaigns and forums. (Yanagihara et al. 2018).

4. Conclusion: Implications for Successful National Movements

Japan and Singapore took different approaches to designing and implementing national movements for quality and productivity improvement. In Japan, such a national movement was initiated with strong ownership of private organizations. The experiences of JMA, JUSE, and JPC provide concrete examples of the three-staged processes of technology transfer and local learning, adaptation/internalization, and diffusion. With their support, Japanese companies learned and established in-house production management systems. There was enthusiasm for learning across academia, industrial engineers, and companies, and they collaborated closely to improve the quality of Japanese products and the country's industrial competitiveness. Private organizations played a key role in this process.

The Productivity Movement in Singapore was a government-led initiative, in which Japanese support was effectively used, especially in the 1980s. The Singaporean experience confirms the vital importance of visionary top leadership in initiating, spreading, and sustaining the Productivity Movement. The establishment of centralized oversight and coordination mechanisms charged with implementing and monitoring productivity promotion activities was also important. NPC, NPB, and SPA functioned effectively, with strong involvement and support of key stakeholders (public sector, unions, employers, and academia). They organized massive awareness campaigns, implemented training programs and consultancy to upgrade skills, and developed manuals and training materials. The Singaporean experience also suggests that the three stages of the Productivity Movement—awareness, action, and ownership—can be a useful reference for a country where the cultural awareness of productivity is low. Singapore dedicated five years to awareness raising, by conducting massive campaigns to disseminate productivity culture to the public.

These experiences suggest that the degree of private sector dynamism matters (Ohno 2011). Where a dynamic private sector exists, it can take a lead in initiating, scaling-up, and sustaining a productivity movement, and the government can play a supportive role. This was exactly the case in Japan. However, if the private sector is weak as in the case of many developing countries, the government's role becomes even more

important in the introduction, adaptation, and development of the productivity movement accompanied by grassroot participation. Private sector dynamism also includes the absorptive capacity to learn, adapt, and internalize foreign technology. So, the educational and training levels of the general workforce become important.

Despite such differences, there are certain general lessons to be gained as well as common methods and instruments for success. Both countries initially introduced foreign knowledge and management technologies, but developed their own models and systems for improving quality and productivity through testing, customization, and institutionalization. They eventually succeeded in nationwide diffusion. Local learning and translative adaptation were key. What were the concrete mechanisms and factors that enabled Japan and Singapore to launch, implement and sustain such national movements?

The experiences of Japan and Singapore suggest that the following six factors are critical for designing and implementing a national movement that can successfully transform the mindset of the people.

- National commitments for quality and productivity movement
- Institutional infrastructure for quality and productivity movement
- Grass-roots awareness raising and participation
- Standardized training and consulting programs
- Industry-academia-government partnership for quality and productivity movement
- Development of private sector capability to sustain quality and productivity improvement

First, a national commitment for quality and productivity movement is indispensable. A national movement is nationwide engagement to attain economic and social progress, involving active participation of business, industry, workers, government, academia, and the general public. To orchestrate and sustain national movement, strong commitment by higher officials, organizations, and individuals is required. In Singapore, there was strong commitment and engagement by the top national leader; the deep interest of Prime Minister Lee Kuan Yew was critical to make the Productivity Movement widespread and entrenched in the society. In Japan, a sense of urgency to attain post-war economic recovery and enhance the quality of Japanese industrial products was widely shared

among political and business leaders, and even the general public. It was the business leaders that took initiatives to create organizations charged with quality and productivity improvement, with public policy playing a supportive role.

Second, strong institutional infrastructure is needed for a national movement. This includes the establishment of core organizations (such as national productivity organizations, QCC centers) responsible for implementing and coordinating various activities related to quality and productivity improvement. Since quality and productivity improvement depend on both national (economic and structural policies and the quality of public administration) and micro (the quality of managerial, professional and labor resources) levels, the institutional mechanism to support the national movement should embrace both aspects (Prokopenko 1999). Moreover, supporting institutions and mechanisms must be created at the central and local levels. This could include the establishment of a high-level national council with a central ministry or agency assuming the role of the lead organization (or national productivity organization) and the secretariat to the national council, and regional, district, and community-level mechanisms for productivity promotion (Prokopenko 1999). These organizations must be linked with broader members of the society, namely, key stakeholders such as the government, business (including business associations and chambers), labor, and academia. Such mechanism should provide channels to disseminate productivity awareness and translate that awareness into actions in their workplace, training, and education.

Third, awareness raising campaigns and participation at the grass-roots level is vitally important. In both countries, an annual campaign was conducted to promote the theme of quality and productivity, launch of campaigns by Prime Minister or business leaders, develop the nationwide program, and form QC circles within workplaces. Especially in Singapore, the government put a high priority on the public awareness campaigns in the first five-years to foster positive attitudes, values, and a culture of productivity. Massive awareness campaigns were conducted targeting not only workers and managers, but also government officials and politicians, professionals, students, and the general public. The slogan 'Together We Work Better' and the mascot character of Teamy The Bee were adopted, November was designated as Productivity Month, and the Prime Minister delivered a productivity speech for seven consecutive years. Both in Japan

and Singapore, highly visible incentive and recognition mechanisms were implemented at the national and local levels. Various instruments were mobilized, such as TV, public speeches by senior government officials or business leaders, and national conventions. Also, award programs are effective for promoting campaigns to reward good performers and stimulate interest in best practices and corporate efforts to excel.

Fourth, standardized and well-designed teaching materials, training, and consulting programs must be created to educate government officials in charge as well as private leaders and participants of the movement on the frontline of implementation. These include curriculum, courses, textbooks, manuals, visual aids, e-contents, TV programs, movies, and stories describing successful nations, firms, and individuals. These can be translated from foreign sources or created by national experts, and made available to public through various media, publications, and a web portal site. It is also important to provide education and training systems at the central and local levels that teach both theory and practice to managers and workers, as well as a higher training system for their trainers.

Fifth, partnership among industry, academia (including universities), and the government is also important. The Japanese and Singaporean experiences confirm that such linkages worked effectively for: (i) studying various international best practices; (ii) producing a new model most suitable for the domestic context by selecting, adjusting, and combining foreign components; and (iii) conducting practice- and application-oriented training. Such linkages should be also useful for preparing suitably trained graduates to meet the manpower needs of industry and providing internship for students.

Lastly, there is a need to develop a cadre of private management consultants in order to self-sustain the national movement. The national movement must continue for a sufficiently long time, typically over a decade or more, with evolving emphasis. Japan did not face major problems with the sustainability or development of private sector capability—thanks to the existence of a dynamic private sector and core organizations (JPC, JUSE, and JMA). Furthermore, the companies' top management and engineers had adequate knowledge to understand the relevant skills and techniques and the desire to adopt them. Factories also had workers capable of absorbing the new management technologies. As the Singaporean experience shows, for many developing countries, the

national movement can be initiated and led by the government through public agencies. But, it must be gradually transferred to the private sector to maintain its sustainability. In the case of Singapore, the JICA-supported PDP undertook capacity development of NPB counterparts, as well as private sector consultants. Under the 'Management Consultancy Referral Scheme' and the 'Associate Consultants Scheme,' those trained under the JICA project became NPB Associate or Referral Consultants and were mobilized as 'qualified' private management consultants (NPB and JICA 1990). As such, a pool of associate and referral consultants was created to supplement NPB's efforts in reaching out to industries. Such efforts are critical for fostering a feeling of ownership of the productivity movement by individuals. To this end, it is important for core organizations to train private management consultants so that they support productivity improvement at industry and company levels.

Certainly, we should recognize that Japan and Singapore respectively possess certain peculiarities which may have facilitated broad stakeholder engagement in their national movements. Japan is a homogeneous society without serious cultural and language barriers for mass communication. Singapore is a small-sized city-state, and there was no need for a local-level coordination mechanism. Yet, these peculiarities should not undermine the importance of establishing an institutional framework for promoting a productivity movement, such as the core agency acting as a hub for stakeholder engagement and grass-root level awareness raising campaigns. In fact, as explained in Chapters 3 and 4, since around 2009 the Ethiopian government has introduced *Kaizen* with JICA support, with a strong commitment of national leaders. The government established the Ethiopian Kaizen Institute as the core agency, launched the national *Kaizen* movement learning from the Singaporean model, and has introduced *Kaizen* to industries, educational institutions, and local governments over the past decade. Although it may be too early to evaluate the outcome of Ethiopia's ongoing efforts, this is a promising endeavor with important implications for other developing countries that deserves close attention.

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