1

How *Kaizen* Brightens Africa's Future

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Sub-Saharan Africa, the large part of the African continent lying to the south of the Saharan desert, has long been a synonym for economic stagnancy. As shown in the first line of Table 1.1, however, the real gross domestic product (GDP) of this region has grown by more than 4 percent per year for the last two decades, a much higher growth rate than it had three to five decades ago. These data may however appear to suggest that the relatively high growth in the 2000s was driven mainly by internationally high prices of oil and other natural resources, because Nigeria, a large resource-dependent economy, grew rapidly, while South Africa, which is as large but less resource-dependent, had lower growth rates (see lines 2 and 4 of Table 1.1). Moreover, another ten highly resource-dependent countries recorded high growth (see line 3). But as line 5 shows, aside from South Africa the less resource-dependent economies have also managed to grow steadily over recent decades. Ethiopia, Tanzania, Ghana, Kenya, and Rwanda are included in this group.

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Table 1.1 Real GDP growth rates by resource dependence type (% per year)

Period	1986–1995	1996–2005	2006–2010	2011–2015
(1) 48 sub-Saharan countries	1.3	4.6	5.6	4.1
(2) Nigeria	1.0	7.2	7.2	4.7
(3) 10 other highly resource-dependent countries	−0.8	4.9	7.8	4.5
(4) South Africa	1.3	3.3	3.1	2.1
(5) 36 other less resource-dependent countries	2.8	4.2	5.7	4.9

Source: Created by the author using data from the World Bank

Notes: Those countries that earned on average more than 20 percent of their GDP from oil, natural gas, coal, and other mineral resources during the period 2001–2015 are called “highly resource-dependent countries” in this table; the remaining countries are referred to as “less resource-dependent countries.” The average growth rates of each group of countries as well as that of the 48 sub-Saharan countries are the weighted averages of the GDP growth rates of individual countries with weights being their respective GDP levels

Africa has witnessed several favorable changes. First, the cost of transportation has been drastically reduced thanks to significant investment in infrastructure supported by several developed countries and China. Second, mobile phones have spread across the continent, reducing communication costs substantially. As a result, farmers and traders now know the latest prices for agricultural produce and other goods in remote markets. Moreover, mobile phones can be used to send and receive small amounts of money to cover transactions of goods and services, including those that could not previously be affected. Third, in many African states, the so-called structural adjustment programs (SAPs) have eliminated harmful government controls and regulations and privatized state-owned enterprises and parastatals. Although the SAPs created confusion initially, it seems that the favorable effects of the reforms are now being felt. Fourth, the regionally isolated markets have been integrated into the initiatives of the East African Community (consisting of 6 countries), the Southern African Development Community (15 countries), and the Economic Community of West African States (15 countries).

Lower costs of transportation and communication, freer economic activities in the private sector, and regional economic integration appear to have improved the functioning of markets, boosted market transactions,

and contributed to the development of the division of labor and specialization between enterprises. Some economic historians refer to economic growth driven by increasing market transactions as *Smithian* growth (Mokyr 1990, 2017). There is a consensus among economists, however, that for economic growth to be sustainable in the long-run, it must be driven also by productivity gains. In a very narrow sense, productivity means output per unit of input. The term, however, can include the improvement of product quality and the introduction of new products, as well as an increase in the narrowly defined productivity relationship. The long-term economic growth driven by productivity gains in this broader sense is called *Schumpeterian* growth.¹ Smithian growth has always been important. Schumpeterian growth has assumed importance as the main engine of long-run economic growth since the Industrial Revolution in today's developed and emerging economies. In Africa, however, it has not yet reached this point.

To enhance productivity growth in Africa, there is a prerequisite. To see what the prerequisite is, it seems useful to review what productivity is. In general, productivity gain is likely to be missing where people equate it with the use of new machinery that embodies the latest technology and lament their unfavorable access to finance for such machinery. While it is true that productivity can be improved using new machinery, there are many cases in which new machinery and the embodied technology do not improve productivity at all. For example, the materials needed to be used by the machines may be delivered in too small a quantity or be too late, the machine operators may not be properly trained, and/or the machines may not have been well maintained. Conversely, if the initial situation is plagued by these problems, eliminating each of them will improve productivity even without having to introduce a new machine.

Clearly good management is a prerequisite for substantial improvements in productivity, even though the former may not necessarily deliver the latter. Without good management, productivity can only improve serendipitously.² That is, the prerequisite for making productivity gains

¹ Smithian growth was named for Adam Smith, who emphasized the importance of the division of labor; Schumpeterian growth was named for Joseph Schumpeter, who highlighted the role of innovation.

² Bruhn, Karlan, and Schoar (2010), among others, argue that managerial capital is missing in developing countries.

the major engine of economic growth is to cultivate management capabilities. The good news for Africa is that there is a human-friendly, inexpensive, common-sense approach to productivity gain that has proved effective in other regions of the world. Its name is *Kaizen*.

The rest of this chapter gives our definition of *Kaizen* (Section 1.1) and explains in Section 1.2 how this approach improves productivity, while it looks at the history of the concept in Section 1.3, and discusses the challenges and opportunities for adopting it in Section 1.4. Finally, Section 1.5 gives a brief introduction to the other chapters of this book.

1.1 What Is *Kaizen*?

Kaizen is now an international word appearing in the *Oxford English Dictionary*, which defines it as “a Japanese business philosophy of continuous improvement of working practices, personal efficiency, etc.” Our definition is a little more detailed: *Kaizen* is the management philosophy and know-how that brings about continuous, participatory, incremental, and low-budget improvements in quality, productivity, cost, delivery, safety, morale, and environment (or QPCDSME).³ Indeed, just like other philosophies, the concept includes both the humanities and the sciences. It is human-friendly and participatory. It is a collection of ideas and insights that many managers and workers from firms in the manufacturing and service sectors have created and refined through observations and experiments carried out over several decades in Japan and other parts of the world.

Kaizen improves productivity in a step-by-step, incremental, progressive manner. It has been used primarily in the manufacturing sector but has also been applied to health, education, public administration, and other services and can be applied to micro and small enterprises as well as medium and large firms. It can be applied to offices, retail shops, and service counters as well as machine shops, workshops, and garages, to

³A very similar definition appears on a webpage of the Japan International Cooperation Agency (JICA) and some other JICA documents. The only difference is that ours puts quality before productivity, because emphasis on productivity improvement in a narrow sense may lead to overproduction.

physical desktops as well as computer and smartphone desktops, and even to everyday life. Such versatility gives it a philosophical image.

Kaizen has spread throughout East Asia, Europe, and North America, boosting productivity in those regions. Industrial development has been successfully achieved in every developing country where the use of this approach has become widespread. *Kaizen* has improved productivity and product quality, hence the competitiveness of manufactured products in international markets. The growth of the manufacturing sector has transformed an agriculturally based economy into an industry-based one. In labor-abundant countries, *Kaizen* has helped the development of labor-intensive industries, thereby helping such countries achieve inclusive economic growth, and has reduced not only production costs but also the incidence of injury, machine breakdowns, and delayed delivery. It has improved morale and accountability. Thus, it may well be that the spread of *Kaizen* makes a society more proactive, transparent, and fair.

In Africa, Botswana began introducing *Kaizen* as early as in the 1990s and has been followed recently by Egypt, Tunisia, Ethiopia, Zambia, Tanzania, Ghana, Kenya, Cameroon, Senegal, Sudan, and the Republic of the Congo. However, the majority of business owners, managers, and workers in Africa remain unfamiliar with *Kaizen*. As the past experiences of *Kaizen* dissemination efforts suggest, an important task for the governments of African countries is to increase awareness through the provision of free training programs for business communities and the creation of model factories. It is also important to train the trainers who assist the managers and engineers of those firms that are willing to learn about *Kaizen*. Initially, the concept begins to spread from a single production line and a product to other lines and products within a firm. Those pioneering firms that earnestly put *Kaizen* into practice will see an increasingly substantial improvement in quality and productivity, and this will prompt their suppliers and customers to follow suit. *Kaizen* will thus spread from a few firms to many within an industry and from one industry to another.

During the early stage of dissemination, there will be an inequality of knowledge between the metropolitan area and less developed areas, and between large and small firms. For *Kaizen* to be disseminated more widely, governments and business associations can contribute by boosting awareness through contests, awards, and media campaigns. Such

public support during the dissemination process is critically important, as is a commitment from political leaders. In the early stage of dissemination, however, neither political leaders nor government officials are familiar enough with the philosophy they should promote throughout the country. The best way to give politicians and bureaucrats an understanding and appreciation of the nature and values of *Kaizen* may be for them to start by introducing it to their own offices. However, once the public understands the value of this approach, the role of the government turns into one of institution building for quality control, to prevent substandard consulting or training services related to *Kaizen*.

Thus, with appropriate government policies, it is likely that Africa will succeed to disseminate *Kaizen* and to improve quality and productivity continuously. Moreover, Japan is willing to assist with its dissemination in Africa as it has successfully done in other developing countries. Before discussing this issue further, however, it seems useful to sketch the way in which *Kaizen* can improve quality and productivity.

1.2 How Does *Kaizen* Improve Quality and Productivity?

Consider a firm that has never tried to improve quality or productivity, and suppose that the firm's top-level management decided to try *Kaizen*. As its first *Kaizen* activity, it will encourage workers to classify operations and equipment in the firm into those that are really needed and those that are not. Having classified everything, the workers will then discuss the ways that they can dispose of those that they have identified as unnecessary. From this analysis, a broken machine that has occupied the center of a workshop for years will be removed for example. Since its removal will make workflows smoother, workers will feel better, and a small improvement is thus achieved.

The workers can also classify their own activities into those that add value to customers, those that do not add any value but are indispensable, and those that may be regarded as meaningless. By abandoning non-value-adding activities, productivity may improve. As workers will have achieved

this improvement without new methods or new machinery being imposed upon them by upper management, they can feel a sense of ownership over the process. Top management is also happy because productivity has been improved without any significant monetary investment.

Once productivity is improved, a firm may consider expanding its level of production. To expand production, the firm may try to recruit young workers. As hiring highly educated workers is expensive, the firm may try to employ less qualified workers, but they may not be “employable” in the sense that they might damage the quality of products and services and lower productivity, and not be worth even their low wages. In general, the trade-off between labor quality and labor costs in Africa is steep. This is particularly so in those countries where secondary education is far from universal and the quality of education remains a big problem. This constraint poses a challenge to many African entrepreneurs.

The exceptions are rich entrepreneurs, who may not be bothered by this constraint. This is largely because rich entrepreneurs can hire college graduates fluent in English or French to provide business process outsourcing services, such as call center and data entry services for foreign customers. Additionally, they may hire more skilled professionals or “smart boys” to provide computer programming services. Such services may have large demands and high prices, but they allow rich entrepreneurs to earn positive profits despite the high labor cost.

In this regard, *Kaizen* offers a solution for many entrepreneurs who may be financially constrained and not able to afford to employ such a highly educated and skilled workforce. The problem associated with the employment of uneducated and unskilled workers is not just their lack of knowledge and skills, but also includes their lack of etiquette when working together with other people, and a lack of confidence in their own ability to acquire knowledge and skills. For example, after using a hammer and a screwdriver, workers may not return them to where they should be. As a result, other workers in the same workshop must waste a considerable amount of time looking for those tools. Without *Kaizen*, managers would simply attribute these actions to the workers' lack of discipline and education and would fail to take any countermeasures. A basic function of the methodology is therefore to serve as an effective job training tool for such workers and instill in them a positive mindset. Thus, *Kaizen*

makes it possible to employ ordinary people, and even those who would be otherwise unemployable.

The more advanced part of *Kaizen* offers a variety of tools for spotting problems, for finding solutions, for motivating workers and managers to participate in its activities, or for managing cycles of planning, implementing, reviewing, and setting targets for further improvement. By adopting and assimilating a variety of tools to improve QPCDSME continuously, even initially small firms can reach or go beyond international standards, so that they can make inroads into export markets in developed countries or receive orders from world-class leading brands, or if they are tourism firms, attract the most quality-conscious tourists.

To summarize, *Kaizen* makes it possible to give initially unskilled, undisciplined workers the discipline to work efficiently and to continuously improve QPCDSME. With support from top-level management, it is possible for such workers to make the quality of their products reach international standards. Since *Kaizen* is also an inexpensive approach, it can help both small firms and large firms in any sector. That is to say, *Kaizen* can make ordinary people, who do not have particularly high levels of education or talent, productive.

These attributes of *Kaizen* help in those industries that intensively use the labor of ordinary people. The development of such industries will provide abundant job opportunities for ordinary people. Thus, if *Kaizen* is disseminated throughout a country, it will deliver not only rapid but also inclusive and sustainable economic growth, which is beneficial for a broad range of the population.

1.3 How Was *Kaizen* Born and How Has It Grown? Roots, Trunk, and Branches

Some *Kaizen* tools are used as a set or in a sequenced manner for the same purpose. Such a set of tools is called a method. A set of some methods that share similar purposes or some common threads is called a system. Thus, systems, methods, and tools have a containment relationship as illustrated in the upper part of Fig. 1.1. For example, the Toyota

Fig. 1.1 *Kaizen* tools, systems, methods, and principles. (Source: Created by the author)

Production System (TPS) is a *Kaizen* system and contains several methods, each of which in turn contains some tools. Despite this illustration, it is not the case that every tool belongs to a specific method and that every method belongs to a specific system. Some tools and methods are included in more than one system or in all systems. Also, it is not the case that different systems are unrelated. On the contrary, they share the same principles that make people regard them as parts of *Kaizen* (see the lower part of Fig. 1.1). The next section gives a brief account of the historical processes in which *Kaizen* tools, methods, and systems have emerged and the continuity, participatory, incremental, and low-budget principles, which constitute the methodology, have been formed.

The history of modern management has been dated to at least 1801, when Ely Whitney, an American inventor, demonstrated the idea of interchangeable parts with ten guns whose parts could be exchanged without affecting the way that the guns worked. Interchangeability required workshops to be organized with a variety of machinery, jigs and other equipment, and the concept of tolerance. In turn, “Taylorism” and “Fordism” enhanced the development of Scientific Management substantially. Taylorism introduced the concepts of standardized work, time study, work standards, management dichotomy demarcating the roles of managers and workers, and process charts and motion study. Fordism introduced assembly lines, flow lines, and mass production. In general, Scientific Management exerted considerable influences on socio-economic development in the United States and Western Europe and to a lesser degree in other parts of the world in the late nineteenth and early twentieth century. Its power was manifested during World War II by the phenomenal increase in US military productivity, which gave the United States the upper hand over the Axis powers (Hamilton 2014).

Soon after World War II, a wave of learning from the West swept through Japan. In the manufacturing sector, the demand for learning, especially from the United States, surged because the quality of Japanese products was too low to compete on the world market. Moreover, Japanese business people understood with increasing clarity how large the productivity gap between the United States and Japan had become. Naturally Japanese business people were eager to know what had boosted the quality and productivity of their US counterparts and how they could

catch up. To meet this demand for knowledge, the Japan Management Association (JMA), the Union of Japanese Scientists and Engineers (JUSE), and the Japan Productivity Center (JPC), among other institutions, were busy inviting experts from the United States and sending missions over there to draw lessons from the US experiences.

These Japanese pioneers and their firms faced two major difficulties in transferring the American “way” to Japan. First, the scale of production was much smaller in Japan than in the United States, even though many of the pioneering firms were leading firms and relatively large by Japanese standards of the time. Scientific Management, especially the set of methods and tools for Ford-style mass production, was thus not very useful for them. Second, many of their employees were reluctant to accept Taylorism or Fordism, or their offshoots. In those days, labor unions were much more influential than today, and their leaders thought that unemployment would increase if productivity improved. In addition to the fear of unemployment, workers were possibly influenced by Charlie Chaplin’s movie, *Modern Times* to think that Taylorism and Fordism would ignore human dignity and treat them like machine parts.

Various attempts were made to overcome these difficulties. After a process of trial and error, the pioneers began making Scientific Management in Japanese firms flexible and human-friendly. This was the beginning of their creation of *Kaizen*, that is, their great efforts to modify, adopt, and customize the American way to conform to small production sizes and to worker sentiment. One firm’s small success in this line of effort was imitated by other firms, which then added new ideas. Even during this process, new ideas and practices were incessantly created by practitioners and academicians in the United States, Japan, and elsewhere. Japanese firms would aggressively and independently adopt and then customize those new ideas and practices to conform to their respective needs. From the results of these customization attempts, cream would be skimmed by other firms. As Imai (1986, 1997) points out, *Kaizen* is a compilation of those ideas and practices which have an established reputation of being effective, and it has continuously been growing. Our image of *Kaizen* is of a big tree that is already 70 years old but is still growing with newly emerging branches. The remainder of Section 1.3 is an attempt to characterize *Kaizen* using this metaphor and to trace the growth of the tree over time as far as we can.

1.3.1 Roots

Quality control was brought to Japan by two prominent quality gurus: Dr. E. Edwards Deming and Dr. Joseph M. Juran (Umeda 2001). In the summer of 1950, JUSE invited Dr. Deming to give seminars and to present a training program on Statistical Quality Control (SQC) for Japanese entrepreneurs, engineers, and scholars. The main emphasis was placed on improving the quality of products by applying statistical tools to production processes. In the same year, JUSE also extended an invitation to Dr. Juran; however, it was not until 1954 that he finally came to Japan to introduce the concept of quality control as a vital management tool for improving management performance. These two training programs were fascinating eye-openers. Many training participants immediately acted to introduce quality control in their firms, which tended to be the largest manufacturing firms in Japan.

However, while studying and applying SQC, many engineers and managers across the world found it unsatisfactory. While SQC helped them reduce defects in products, the extent of the reduction was not enough. In their view, a major reason for this was that quality control activities were conducted and coordinated only by quality control sections or departments. Against this background, a new framework of concepts and methods called Total Quality Control (TQC) was popularized in the United States by Dr. Armand Feigenbaum (1956, 1961). TQC emphasizes the importance of integrating the various quality improvement efforts made within different sections of a firm. SQC was soon replaced by TQC, which in turn was replaced by Total Quality Management (TQM).

The second and third roots transplanted from the United States to Japan were Training Within Industry (TWI) and Industrial Engineering (IE), both of which had boosted the productivity of the US military during the war. TWI refers to internal training programs provided by firms for their own workers. IE is a framework of concepts and methods for improving work efficiency and dates to the early 1900s when Frederick Taylor led the Efficiency Movement in the United States. It was during the 1920s that IE was first introduced to Japan and adopted by several Japanese

firms. In the 1950s, the Toyota Motor Corporation began providing internal training programs known as “productivity courses” or “P-Courses” to its workers as a way of teaching them IE methods, such as process analysis, operation analysis, time study, and motion study. The architect of the P-Course, Dr. Shigeo Shingo, taught around 3000 workers over 25 years and his students went on to teach many others (Kato and Smalley 2011). The P-Course was copied by other firms and then customized to their needs. In this way, internal training programs proliferated in Japan.

The fourth root of *Kaizen* is preventive maintenance, a collection of methods for the detection and prevention of machinery malfunction and breakdown. This aspect of the approach was transferred from the United States to Japan in the 1950s (Suzuki 1994). It later grew into a larger framework of concepts and methods called Total Productive Maintenance (TPM).

1.3.2 Trunk and Branches

Figure 1.2 lists the systems, methods, and tools that are considered to be part of *Kaizen* and superimposes the list onto a picture of a large tree. The metaphor of a tree is useful for gaining an overview of how *Kaizen* has been developed and how it is used today. At the bottom of the list are Statistical Quality Control (SQC), Training Within Industry (TWI), and preventive maintenance. As mentioned earlier, SQC was replaced by Total Quality Control (TQC) and then Total Quality Management (TQM). Further, job training became so common that it was no longer called TWI, and preventive maintenance was replaced by Total Productive Maintenance (TPM). Thus, SQC, TWI, and preventive maintenance are roots of *Kaizen* not only because they are its origins, but also because they are no longer visible within firms and other organizations.

By contrast, Industrial Engineering (IE) remains visible, even though it has a long history and is a part of the origin of *Kaizen*. For this reason, it is included in the trunk part of Fig. 1.2. IE offers various methods and tools such as time analysis, work sampling, process analysis, and layout change. Roughly speaking, it emphasizes close observation, measurement, and analysis of processes, work, and so on. IE is useful for spotting work inefficiencies and finding their causes. Thus, it is often used to eliminate *MUDA* (a Japanese word meaning the wasteful use of time and materials).

Fig. 1.2 Roots, trunk, and branches of Kaizen. (Source: Created by the author)

Taiichi Ohno, the architect of the Toyota Production System (TPS), classified the typical waste found on workshops floors into seven different types: overproduction, waiting (due to miscoordination, delayed supply of parts, and machinery breakdowns), transport (that could be reduced by designing efficient production processes or layouts), processing (that is unnecessary or excessive), inventory (that is unnecessary or excessive), motion (that does not create any value for customers), and correction (inspection and rework). Note that while the correction of defects would add some value, the time needed to carry out corrections could be saved if the production process were better designed. Two concepts related to *MUDA* that also lead to inefficiency are *MURI* (overburden) and *MURA* (unevenness).

It is often said that the Toyota Production System (TPS) is one of the origins of today's *Kaizen*. TPS is still visible and its copies and variants are used extensively across the world. The underlying aim of TPS is to improve QPCDSME by reducing negative elements like *MUDA*, *MURI*, and *MURA*. Just-in-Time and Jidoka are the two integrated organs or major methods of TPS. Kanban is a tool for Just-in-Time. The idea of reducing negative elements is referred to as "lean."

To achieve higher quality, TQC emphasizes the concerted efforts of various groups within a firm. Seeing the way forward, Prof. Ishikawa of the University of Tokyo proposed two important additions to TQC.⁴ The first was continuous improvement. It should be noted that "continuous improvement" is an expression included in the definition of *Kaizen* contained in the *Oxford English Dictionary*. For Japanese people, "*Kaizen*" as an everyday word means improvement in general and does not specifically mean continuous improvement.

The second addition to TQC made by Prof. Ishikawa is the involvement of everyone in the continuous improvement of quality, rather than just the involvement of the various groups directly related to quality control. Everyone means every manager and every worker; yet for workers to be involved meaningfully, they must have the skills and knowledge to operationalize the concepts and methods for quality improvement. One

⁴Prof. Kaoru Ishikawa is the father of the Japanese style of TQC, which differs from the TQC concepts of Dr. Armand Feigenbaum (1956, 1961). Prof. Ishikawa was an advocate of Company-Wide Quality Control (CWQC). In Japan, the quality management framework evolved from SQC to CWQC, TQC, and then to TQM.

way to make workers knowledgeable and skillful is to provide them with internal training programs. Toyota's P-Course is an example of such a program. Prof. Ishikawa proposed another way of achieving this, where workers voluntarily form small groups and share their knowledge and skills with other members of the group. Such small groups are called Quality Control Circles (QCCs). The purpose of QCCs is twofold: the first is the sharing and acquiring of knowledge and skills, and the second is the application of that knowledge and skill to finding and solving problems faced by workers within their workplace (Ishikawa 1985).

A focus on workers and their learning is also an important feature of Total Productive Maintenance (TPM). This concept views equipment breakdowns as the tip of the iceberg leading to a large set of potential troubles and offers methods and tools for eliminating the sources of trouble. TPM is a comprehensive approach to maximizing equipment efficiency and effectiveness by involving all managers and workers in the upkeep and maintenance of the equipment they are working with. This reduces the problem of relying on machine operators and maintenance staff as the sole groups responsible for maintenance. It also makes the factory environment safer and helps to avoid rust, and oil and gas leakages. In fact, TPM goes beyond maintenance in the sense that it enhances workers' skill levels by providing them with training, allows them use statistical tools to work on focused problems, and encourages them to interact with other circle members. The application of TPM is not limited to plant equipment but also includes office furniture, fixtures, and equipment.

The question arises as to what knowledge and skills the workers and managers should acquire through training courses, QCC, or any other devices. In the P-Course, IE was an important part of the curriculum. The set of knowledge and skills to be acquired should also include the 7QC tools, the new 7QC tools, the concepts of *Muda*, *Muri*, and *Mura*, and their various symptoms. The 7QC and new 7QC tools are used in quantitative and qualitative analyses, respectively, to identify a problem and its solution, or for checking that the problem has been solved. Since *Muda* elimination and QC tools can be used for other purposes than quality control, they are included in the category of general-purpose tools in Fig. 1.2.

A question may arise as to why workers agree to get involved in improvement efforts and to learn about various concepts and methods. How are they motivated? There are three kinds of incentives for workers to get involved. First, monetary incentives, such as bonuses and salary or wage increases, may be given to outstanding teams of workers or individual workers. Second, recognition and commendation may motivate workers. Third, people tend to be motivated by the feeling of being successful; therefore, a sense of success acts as another incentive. Because *Kaizen* is an inexpensive approach, the second and third incentives are important.

To make workers to feel successful quickly, it is often useful to begin with 5S, a set of five activities whose Japanese names start with the S sound (and their translations into other languages also start with the S sound if possible): *seiri* (sort), *seiton* (set in order), *seiso* (shine), *seiketsu* (standardize), and *shitsuke* (sustain). The first two S's, sorting and setting in order, are particularly important for this purpose because they can quickly produce a small level of success. Sorting refers to the classification of everything on the shop floor into two categories: necessary items and unnecessary items, or value-adding items and non-value-adding items. After this classification is made, those items that were identified as unnecessary or non-value-adding are eliminated from the shop floor, thus creating space and reducing the amount of time wasted looking for necessary or value-adding items. "Setting in order" is the act of assigning a storage space to each tool or instrument, such as a hammer and a wrench in the workshop or a document file in the office, and making sure that every tool or instrument is returned immediately after use, as illustrated by the photo in Fig. 1.3. This practice delivers high efficiency because the time wasted on searching is drastically reduced. There are easy steps to get started on the 2S and to break the ice among workers and managers so that they choose to take up new challenges toward productivity and quality improvement.

The above discussion makes plain why *Kaizen* has the following outcomes (see the lower part of Fig. 1.1):

1. Continuous improvement: *Kaizen* continuously improves productivity in a broad sense or QPCDSME specifically, through the making of incre-

Fig. 1.3 Tools and their designated storage spaces in an electric cable factory in Dar es Salaam, Tanzania, 2016. (Source: Created by the author)

mental changes. The continuity of improvement is maintained through the Plan-Do-Check-Act (PDCA) cycle. *Kaizen* offers different tools for performing each step of the cycle, as will be explained in Chap. 5.

2. Participatory improvement: *Kaizen* encourages everyone in a firm to participate in continuous improvement. It provides easy steps for getting started and participating. There are some ways, including QCC, to ensure full participation that are discussed below.
3. Incremental improvement: *Kaizen* achieves productivity gain through a series of small steps of improvement. This does not mean that *Kaizen* does not help innovation take place. On the contrary, it keeps firms agile in responding to and profiting from innovation.
4. Low-budget improvement: *Kaizen* does not require heavy expenditure. On the contrary, it begins by eliminating *MUDA* or waste. However, it is not about downsizing. As *Kaizen* taps into the insights and wisdom of workers, and the spirit of cooperation and self-esteem, and because it seeks full participation, the means of eliminating waste must be compatible with improving safety, the working environment,

and employee satisfaction. It should also be noted that if all inefficiencies are eliminated, further improvement may require large-scale investment; however, up until this point, the method is inexpensive.

It may be useful here to add some remarks on the full participation principle. In Japan, a common practice is to create small teams of workers because this is, or at least it was until recently, an effective way of ensuring the involvement of workers in activities aimed at bringing about improvement. Such teams would be called the 5S committee, the Standard Operation Committee, or the Total Productive Maintenance Committee, if they were not already classified as Quality Control Circles (QCCs). These small groups consisted of five to seven workers in the same place or process, who were well organized and guided by principles and procedures developed for them by JUSE (1985). From 1962, the popularity of QCC activities in Japan increased. In the mid-1980s, its popularity reached a peak with a majority of businesses in Japan, including 73 percent of all manufacturing businesses, having active QCCs (Ogawa 2011).

In the United States, however, TQC was not as popular at this time and QCCs were almost non-existent, most likely due to the US employment and pay systems, but also possibly because of cultural factors.⁵ In any case, US manufacturers were outperformed by their Japanese counterparts from the 1970s through to the 1980s, in terms of quality and productivity. Responding in the 1980s, US manufacturers conducted a serious study of the Japanese-style TQC, and as a result of this research, Total Quality Management (TQM) was created.

The concept of TQM adopts the idea of continuous improvement and emphasizes policy deployment and cross-functional teams, which were already being used in Japanese firms. Policy deployment refers to concrete goals and targets that are deployed in divisions, departments, and sections to implement a company-wide medium- or long-term plan. At different levels, including the company-wide level, PDCA cycles are repeated to check the status of implementation and to revise the plan based on feedback from frontline employees or shop floor workers. A cross-func-

⁵In the Japanese system, unlike the US system, “employees need not fear for their jobs, expect to share in the fortunes of the firm, do not anticipate leaving for another employer, and have a say in the directions the firm will take” (Milgrom and Roberts 1992, 350–351).

tional team (CFT) of people from different departments and with different expertise is formed to study and propose solutions to a given issue so that top management can make a good decision. CFTs revive inter-departmental communication, coordination, and cooperation. TQM became popular in the United States in the late 1980s and early 1990s, contributing to an improvement in quality and to the recovery of the US manufacturing sector.

In Japan, the diffusion of TQM was initially very slow. Japanese firms, however, began to move from TQC to TQM in the mid-1990s after having looked at the successful recovery of the US manufacturing sector and having plunged into a recession themselves. Their shift to TQM was accompanied by an emphasis on management or a rebalancing of the roles played by top-down and bottom-up decision making. Interestingly, while US firms seldom have QCCs, many Japanese firms have modified TQM and maintained QCCs.

In Fig. 1.2, Lean Manufacturing and Six Sigma are included in the *Kaizen* tree. They were developed outside Japan after US manufacturers began re-importing the concept. We admit that these methods are in a gray zone in the sense that they do not really meet all the *Kaizen* principles; however, they have emerged from its systems and methods as new branches. We may refer to those management systems, methods, and tools that share a few such principles but not all of them as “*Kaizen* derivatives,” or “Western-style *Kaizen*.” It is also noteworthy that the quality management system principles commonly known as the International Standards Organization (ISO) family was developed in Europe from the 1950s, and has been periodically updated to meet changing environments and new developments, thereby providing an alternative perspective of management (Hoyle 2000). We will discuss this issue further in Chap. 4.

1.3.3 Dissemination of *Kaizen* to the SME Sectors in Japan

The roots of *Kaizen* were transferred from the United States to Japan, especially to its large corporate sector. Aside from the activities of JPC, JUSE, and academics, the leading role in developing this concept was

played by the spontaneous and independent (or non-coordinated) efforts made by large firms. The dissemination of *Kaizen* to small and medium enterprises (SMEs) began later and was carried out at varying speeds. In some sectors, where SMEs supplied important parts and components to large companies, dissemination proceeded smoothly as SMEs could obtain information on *Kaizen* from their transacting partners. In other sectors, the access of SMEs to information on *Kaizen* remained unfavorable until the government reinforced its efforts to boost awareness by various measures, including the upgrading of the *Shindanshi* (Small and Medium Enterprise Management Consultant) system toward the end of the 1960s.

Kaizen was welcomed by SMEs probably because it is effective whether production or operation is small or large. Unlike the Fordism approach, *Kaizen* offers to SMEs a variety of methods and tools that helped them reduce the costs of the small-quantity production of high-quality products that satisfy consumer preferences. Examples include Just-in-Time, Kanban, single-minute-die-exchange, waste elimination, and visual management.

In the 1960s, Japanese people, including leading economists, viewed SMEs as a kind of burden on economic growth (Shinohara 1961). Subsequently, however, SMEs became widely recognized as a major driver of the growing competitiveness of the Japanese manufacturing industries (Asanuma 1997). In terms of timing, such a drastic change in the view of SMEs coincided with the diffusion *Kaizen* across the SME sector.

1.4 Opportunities and Challenges for Africa as a Late Adopter

Japan caught up with higher income economies by taking advantage of technology transfer. *Kaizen* made the attempts of Japanese firms to transfer technology successful because it gave Japanese workers (including middle managers) discipline; as a result, they were able to acquire new knowledge and skills. As we observed in the previous section, *Kaizen* itself was a product of the copying and modifying of Western ideas; thus Japan is known for exploiting the second-mover advantage. Some East

Asian countries have taken the third-mover advantage by subsequently applying *Kaizen* as a way of substantially improving quality and productivity, in their march to join the ranks of the middle-income or even high-income countries.

Africa is becoming a continent of hope with a bright future. While it is true that Africa will have to rise to some challenges to assure bright future, there are some opportunities that it can enjoy. The next sections consider both the major challenges and the opportunities for Africa.

1.4.1 Challenges

Challenge 1: In other continents, *Kaizen* has proven to be one of the best approaches, if not the very best, for creating discipline in workers and making them capable of upgrading their knowledge and skill sets. Still, the question remains as to whether it will work effectively in Africa. In short, is the concept transferable to Africa? Can workers in Africa accept *Kaizen* and feel comfortable enough to implement it? American firms, Chinese firms, European firms, and East Asian firms have modified *Kaizen*; thus, a challenge for African workers and firms is to absorb, assimilate, and customize it for their own purposes.

Challenge 2: The commitment of the top-level management to support and encourage workers to undertake activities that include *Kaizen* is indispensable. When, through hard work and perseverance, workers succeed in bringing about some improvement, top management should appreciate the achievement. When workers request permission to try work-space layout changes for example, top management should positively consider it. Without knowing the value of *Kaizen*, however, it is difficult for top management to commit itself, and without having achieved success, it is difficult to convince top management of the value of *Kaizen*. Thus, securing a commitment from top-level management will be a challenge.

Challenge 3: Although *Kaizen* is human-friendly and approachable, it requires very basic skills such as literacy and numeracy. In those countries where universal lower-secondary education is far from the reality, it may take longer time to widely diffuse *Kaizen*.

Challenge 4: According to a certain survey, less than 30 percent of firms that received *Kaizen* training in the past continue to practice *Kaizen*. Is it possible to make *Kaizen* more sustainable?

1.4.2 Encouraging Findings and Opportunities

Entrepreneurs are those who see opportunities where others see challenges. Challenges 1 and 2 above have been overcome in several countries. Challenge 3 was not encountered in East Asia and Latin America, but it would be absurd to postpone efforts to disseminate *Kaizen* in Africa until education levels rise sufficiently. Challenge 4 is a common problem associated with management or business skill training programs. Consider record keeping, one of the most basic business practices. Those small business owners who participate in business skill training programs are reminded by trainers of the importance of keeping records of sales, purchases, inventories, and so on, but many fail to continue to keep records. Whether to keep records is not a matter of knowledge but eventually a matter of habit. Thus, it is not surprising that many of the recent attempts at impact evaluations found statistically insignificant impacts of business training programs for micro and small enterprises on profitability and growth (McKenzie and Woodruff 2014).

Those business persons who do not keep records would not continue to practice *Kaizen* if they participated in a *Kaizen* training program. If a training participant keeps records, he or she may not necessarily continue to practice *Kaizen*. Nonetheless there are some encouraging findings from recent studies. Figure 1.4 shows the results of a randomized controlled trial (RCT) conducted in the garment industry in Tanzania by Higuchi et al. (2017), where firms were randomly assigned to treatment and control groups.⁶ One of the three treatment groups was invited to a classroom lecture course, another was offered an on-site training course by instructors, and the third treatment group was offered both classroom lecture and on-site training courses. Both courses cover basic *Kaizen*

⁶Among related studies are Karlan and Valdivia (2011), Mano et al. (2012), and Higuchi et al. (2015).

Fig. 1.4 Results of an RCT of *Kaizen* management training in Tanzania in terms of the adoption of improved management practices and value-added approaches. (Source: Calculated by the author based on the author's survey data)

practices and basic business training.⁷ The control group received neither of these training courses.

The results show that improved management practices, measured by a management score,⁸ were adopted more or less equally, for a while, after training by the groups receiving classroom and on-site training, only classroom training, and only on-site training. The control group receiving no training also adopted some improved management practices due to imitation. The management score, however, began declining 1.5 years after this training, presumably because the trainees sorted out irrelevant practices. A major finding is that only the group receiving both classroom and on-site training continued to increase value added, which indicates that the combination of conceptual training in the classroom and practical training on site leads to the sustainable growth of enterprises.

The finding of the RCT study that *Kaizen* management training improves enterprise performance by improving management practices, even without improving infrastructure and providing subsidized credits, strongly indicates that this form of management training is an effective first step for industrial development. Thus, it seems clear that it is desirable to train several specialists in the principles of *Kaizen* management and to offer several management training courses, thereby increasing the number of competent entrepreneurs. This is what has been happening in Ethiopia, where the government established the Ethiopian *Kaizen* Institute, and where Japanese *Kaizen* experts have been sent to train selected Ethiopians about this form of management, who will later be dispatched to factories and training centers (see Chap. 5).

If competent entrepreneurs are nurtured by management training, many enterprises will develop, and this will lead to congestion in the existing industrial clusters as well as in other original locations. Then the demand for industrial parks in the suburbs of cities will increase. Investment in industrial parks will have high pay-offs if the government allocates space to promising entrepreneurs. If the government also provides financial support only to those promising entrepreneurs, the risk of

⁷ The latter covered elements of business strategy, marketing, and book keeping and used the Start/Improve Your Business training materials developed by the International Labor Organization (ILO).

⁸ This is measured by the number of improved management practices out of 27 recommended ones.

failure in the allocation of investment funds will be reduced. In this way, the TIF approach is likely to enhance the likelihood of the success of industrial development significantly.⁹

Finally, it should be stressed that the policy of increasing the number of competent entrepreneurs by means of *Kaizen* management training will contribute to the establishment of competitive markets, which, in turn, is expected to reduce corruption and preferential treatment of specific industries and enterprises (Otsuka and Sonobe 2011).

Given these encouraging findings, it seems that African firms and workers will enjoy the following opportunities:

Opportunity 1: *Kaizen* has been adapted and customized in North America, East Asia, Europe, and Latin America and has become accepted by different cultures and employment systems. The availability of its latest version is advantageous to Africa.

Opportunity 2: The Japan International Cooperation Agency (JICA) and other organizations in Japan and elsewhere have made considerable efforts to disseminate *Kaizen* worldwide. They are now bringing all their know-how to Africa.

Opportunity 3: Botswana, Ethiopia, and some African countries have been promoting national *Kaizen* movements. Other countries can learn lessons from their efforts and experiences.

Opportunity 4: In many African countries, local consultants are being developed, and local institutions that have a commitment to promoting *Kaizen* movements are being established. It is hoped that other countries will soon follow suit.

Opportunity 5: The New Partnership for Africa's Development (NEPAD) and JICA have begun to coordinate the promotion of a Pan-African *Kaizen* movement aimed at the resilient and sustainable development of the continent. At the Tokyo International Conference for African Development (TICAD), due attention was also given to the promotion of *Kaizen* as a key support element. These initiatives will help

⁹ Although we did not discuss it explicitly, the general education of labor force particularly through schooling is extremely important. We did not take up this issue, as it is a part of overall economic and social policy, rather than of specifically industrial development policy.

political leaders commit themselves to supporting, motivating, and financing *Kaizen* movements.

Opportunity 6: *Kaizen* in the public sector will make public administration efficient and transparent. There are already projects promoting such activities in the public sector in other continents. The lessons learned from such projects will be available to African nations.

Opportunity 7: Development partners are providing different capacity enhancement programs. Among them is the African Business Education (ABE) initiative, proposed by the Japanese government in 2013. One thousand African youths are now receiving higher education in Japan. The trainees, as future leaders of private and public sectors, will take away some practical lessons from Japan and employ them in their home countries.

1.5 The Structure of the Book

Kaizen has grown into a spreading tree with new ideas budding out of its trunk and branches. Some of the new ideas may have stifled obsolete ideas with the shade they cast, but many old tools and methods remain useful for multiple purposes. This chapter has given a brief account of how this tree has grown. It has also discussed what challenges and opportunities the dissemination of *Kaizen* in Africa will face. It is hoped that Africa will in the not-too-distant future have a role model, a successful person whose business thrives because of its efficient work force practicing *Kaizen*, and who will inspire African youth beyond national borders. Clearly, it is desirable to integrate separate national *Kaizen* movements into a Pan-African *Kaizen* movement.

The rest of this book is organized as follows. Chapter 2 reviews the Asian experience of *Kaizen* dissemination. It shows that the transfer of knowledge of this model from Japan to other countries has not always been easy. But the chapter finds also that *Kaizen* knowledge can be customized to the economic, social, and cultural contexts of the host country so that the knowledge works out nicely there. It argues that the process of customization and localization is innovative and can create new knowl-

edge. Chapter 3 describes how *Kaizen* is practiced in small, medium, or large enterprises, and improves their operation in developing countries. Chapter 4 compares “Japanese-style *Kaizen*” or simply *Kaizen*, on the one hand, and “Western-style *Kaizen*,” including the Six Sigma and Lean Production models whose standards have recently been developed by the International Organization for Standardization (ISO), on the other. The chapter discusses the expected impacts of ISO’s involvement and the direction of *Kaizen* dissemination desirable for Africa’s future. Chapter 5 addresses the issue of the transferability of *Kaizen* to developing countries on the African continent by reporting in detail the Ethiopian experience of this process. Because Ethiopian society is much more diversified in terms of ethnicity, religion, and culture than Japanese society, these characteristics might have had some influence, but they did not hamper the transfer and dissemination of *Kaizen*. Chapter 6 concludes the book with discussion of implications for industrial development policy.

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