

Chapter 9

Kaizen and Non-cognitive Skills Development in Africa in the Age of Digitalization



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9.1 Introduction

We are now in the age of changes spurred by globalization and digital transformation. Uncertainty has also been accelerated by pandemics and other geopolitical events. Under such circumstances, how to deal with these changes attracts people's interest.

Kaizen can be one of the entry points to improve adaptability amidst these types of changes. In many cases of *Kaizen* application at the company level, there are rich *Gemba* observations of concrete improvements such as the reduction of the defect rate of products and the increase of labor productivity in associated production lines [14, 35]. In addition to these firm-level impacts, macro-level impacts are also observed in some countries such as Japan, Singapore, and Ethiopia [24, 28, 34]. At the same time, there is limited research on the micro-level impacts of *Kaizen*, such as on teams and individuals. This chapter attempts to investigate micro-level impacts of *Kaizen*, particularly on individuals, in order to deepen our understanding of its effects.

More specifically, this chapter focuses on individual capacity and skill development promoted by *Kaizen* activities, with special attention to non-cognitive skills. Non-cognitive skills are the personal attributes not thought to be measured by IQ tests or achievement tests but include attributes identified as soft skills, personal traits, non-cognitive abilities, character skills, and socio-emotional skills [26]. These non-cognitive skills are increasingly important for accessing job opportunities in the digital era. They are also effective to deal with changes caused by COVID-19. In fact, a recent study shows that *Kaizen* activities have improved teamwork, communication skills, and learning attitude of workers, which can be a part of non-cognitive skills [24]. The author argues, based on case studies in Africa, that group and team

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275

activities promoted by *Kaizen* methodologies develop non-cognitive skills and can make people more proactive to deal with change.

The chapter is structured in six sections. Following the introduction, Sect. 9.2 reviews the definition and evolution of *Kaizen* and discusses how *Kaizen* is related to theories of leaderships and motivation in business management and capacity development. Section 9.3 reviews key arguments on non-cognitive skills to clarify a framework of the following arguments. Section 9.4 analyzes the impact of *Kaizen* on non-cognitive skills development by referring to *JICA Kaizen Handbook* and three case studies on Africa—a survey in Ethiopia, COVID-19 responses, and the impact of digital transformation. Section 9.5 discusses the implications extracted from the analysis and Sect. 9.6 concludes.

9.2 Evolution of *Kaizen* and Its Relation with Business Management and Capacity Development

Kaizen in Japanese is a general term that means improvement. However, *Kaizen* as a technical term in management is a comprehensive knowledge structure of quality and productivity improvement (QPI) and has become an English term.¹ It has had a significant impact on global manufacturing technologies as well as business management. This section touches on these impacts and evolution observed in Western business fora based on broad context related to *Kaizen*.

9.2.1 Definition and Evolution of *Kaizen*

The quality of products and services is an essential factor for determining the strength of business and industry, and for creating customer satisfaction and trust. Higher productivity in business brings advantages for firms in terms of improved efficiency and competitiveness in their target markets. Therefore, QPI is crucial to support the development of industries and services and to ensure their success in the modern economy. This is in particular an indispensable step in transforming the African economy and realizing its potential so that African industries can compete in international markets and participate in global value chains.

Sonobe [40] defines *Kaizen* in the context of its promotion in Africa. Based on discussions with *Kaizen* experts working for the project supported by the Japan International Cooperation Agency (JICA), he regards it as the management philosophy and knowledge that brings about continuous, participatory, incremental, and low-budget improvements in quality, productivity, cost, delivery, safety, morale, and environment (or QPCDSME). It is also a collection of ideas and insights that many

¹ The Oxford Dictionary of English (2003) indicates that *Kaizen* is 'a Japanese business philosophy of continuous improvement of working practices, personal efficiency, etc.'

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 [40, p. 4].

There are many concrete *Kaizen* tools and methodologies to improve quality and productivity in workplace. The 5S (sort, set in order, shine, standardize, and sustain) method is the most fundamental for the purpose of improving the work environment to make it more efficient. *Muda* (waste) elimination is an activity to identify and eliminate actions and processes that do not produce any additional value. Standardization of the production process can lead to an optimum operation plan that consists of the required manpower, the skill levels of workers, and the cycle time of each step, which works as a benchmark to identify problems and points to be improved. Seven quality control (QC) tools² are used to sort out data, analyze current problems, and identify countermeasures. A QC story is a standardized procedure for problem-solving or task-achieving, while a QC circle is a unit of small group activities organized at the workplace to improve work on the production floor. Total Quality Management (TQM) is a comprehensive system that includes ideas, tools, and mechanisms to maintain and improve quality in general at companies, whereas Total Productive Maintenance (TPM) is a system to maintain the health and efficiency of machines used in operations.

Kaizen is an evolving term, and this is consistent with the characteristics of its continuous and cyclical process. In fact, there are many concrete cases that explain the evolution of the concept of *Kaizen*. *Kaizen* was started in the Japanese private sector to learn foreign management technologies (mainly from the United States (US)). It is well known that the American method of statistical quality control was the base of a Japanese-style QC circle. However, QC methodologies have been modified and adjusted to the conditions of the Japanese workplace and skill levels of workers. Toyota Motor Co. developed its own production systems, collectively known as the Toyota Production System (TPS), that are well known as *muda* elimination, Just-in-Time (JIT) systems, and *jidoka*. TPS includes many tools and methodologies such as the Material and Information Flow Diagram for rectification of flow, *Kanban* for pull production and pull inventory, and *Andon* for visual management.

Six Sigma is a problem-solving method developed by Motorola, Inc. of the US in the early 1980s. It is said that this method was invented with reference to Japan's QC circle activities, factory floor *Kaizen* activities, TQC, TQM, and TPS [27]. General Electric (GE) introduced Six Sigma to successfully carry out its wide-ranging quality upgrade program. Six Sigma was introduced not only in the manufacturing departments but also in the non-production business departments throughout the company. What was emphasized during its application process was the clear definition of who their customers were and what the focused problems and issues for improvement were [13].

The Lean Production System (or 'Lean') was developed in the US as a method for thorough elimination of *muda* with reference to TPS in the middle of the 1990s.

² The seven QC tools are the control chart, Pareto chart, cause and effect diagram, check sheet, histogram, stratification, and scatter diagram.

It has since become widely known and used by not only the manufacturing sector but also the service sector such as health and public service delivery. Although Lean is said to hardly differ from TPS, some researchers claim that these systems differ in several respects. For example, in the Western society business environment, Lean focuses on technical issues rather than human aspects that are the focus of TPS [10]. Kikuchi and Suzuki [27] argue that there is a 'Japanese style' *Kaizen* and a 'Western style' *Kaizen* that includes Six Sigma and Lean Production.

TPS (and Lean) also influenced the development of industrial technologies and labor management as a concrete case of psychological safety. Psychological safety describes a condition in which workers feel comfortable asking for help, sharing suggestions informally, or challenging the status quo without fear of negative social consequences in the organization they work for [9]. *Andon* is a tool of TPS that workers can use to notify co-workers of process problems and request their support as a part of visual management. *Andon* can be effective in a company to promote mutual support among workers as a common norm and allow workers to stop the production line based on their own decision without hesitation; but cannot be effective under a culture of vertically divided task-systems in which individual workers cannot express own idea freely [38]. Hence, the company that introduces *Andon* in an effective manner coupled with other mutual support activities within *Kaizen* demonstrates a concrete commitment to psychological safety in the workplace.

A QC circle is a small group activity developed in Japan as an after work voluntary activity, which is sustained by strong feelings of belonging and loyalty to the company. In Africa, small group activities such as the *Kaizen* Promotion Team (KPT) in Ethiopia are not voluntary but are half-time assignments.

Knowledge is always linked with the culture and environment from which it originates. *Kaizen* methodologies and tools are also influenced by the work ethics and labor-management relations where they are born. Therefore, *Kaizen* technologies need to be customized for sustainable utilization wherever they are applied. We call this process translative adaptation because international knowledge transfer under the framework of overseas development cooperation is often influenced by cultural differences. The asymmetric power balance between the provider and the recipient of knowledge is a point of contention. In the context of development cooperation, the outsiders are the ones who need to understand the values and implications of translative adaptation and proactively accept the views and propositions presented by the insiders [25].

9.2.2 Review of Business Management Theories from a Perspective of Kaizen

To discuss *Kaizen* in the context of business performance, it is important to touch upon global standard business management theories. One entry point is the difference between top-down and bottom-up approaches to management. The top-down

approach is effective when solutions for problems to be solved are already available whereas the bottom-up approach is effective when a solution is not yet clear. The bottom-up approach is also important when a given solution needs substantive involvement of people in the workplace or in the field. Apart from this, in order to focus on skill development of individuals in relation to team/circle activities, the author includes the knowledge creation theory, leadership theory, and motivation theory.

The knowledge creation theory presented by Ikujiro Nonaka and his co-researchers is a valuable theory of business management and innovation and has strong link with *Kaizen* practices. Nonaka observed small group activities in Japanese manufacturing companies and found practices through which people utilize their own tacit knowledge and convert it into explicit knowledge. His SECI model³ emerged from small group activities such as the QC circle of *Kaizen*, although he emphasizes the importance of an abductive leap⁴ of ideas in addition to the incremental process of *Kaizen* [30, 31, 33]. The theory is also applicable in the service sector to convert people's knowledge to wisdom and promote innovations that meet mental and emotional values of customers [32].

Leadership is one of key topics that influences organizational management and group dynamics, so that attracts many researches and arguments. According to Bernard Bass, leadership is an interaction between two or more members of a group that often involves structuring or restructuring a situation, and that occurs when one group member modifies the motivation or competences of others in the group [18].

Although there is rich accumulation of knowledge and theories around leadership, one of recent arguments focuses on comparisons between transactional leadership styles and transformational leadership styles. Transactional leadership styles focus on the use of rewards and punishments in order to achieve compliance from followers while transformational leadership styles serve to enhance the motivation, morale, and job performance of followers by stimulating their identity, interest, and ownership.

Another interesting comparison is between vertical and shared leadership. Shared leadership is characterized by the broad distribution of leadership and responsibility to people within a team and organization. Pearce and Sims [36] argue, based on their research over performance of change management teams in a large automotive manufacturing firm in the US, that a conscious strategy of distributing leadership to team members is likely to enhance team effectiveness.

Motivation influences people starting, continuing, or terminating a certain behavior or action. Intrinsic motivation that is stimulated by inherent interest can be contrasted with extrinsic motivation that is driven by an external reward. It has been argued that intrinsic motivation has more beneficial and creative outcomes. Motivation may define the reason why people work in modern society. A major reason shared among many people may be to earn wages or other resources to support the survival of themselves or dependents. Some people may find their own place or sense

³ Knowledge creation model consists of four dimensions, namely Socialization, Externalization, Combination, and Internalization (SECI).

⁴ An abductive leap is a combination of abductive inference and a leap in logic.

of belonging through working, whereas others may find that working serves a self-actualization purpose by providing a value for existence. Each individual may have several reasons to work at the same time.

In his book about motivation, Daniel Pink argues that self-direction is at the heart of our intrinsic motivation towards creativity. He refers to the self-determination theory of Deci and Ryan and considers that ‘human beings have an innate inner drive to be autonomous, self-determined, and connected to one another’ [37, p. 73]. He also categorizes Motivation 2.0 as fueled by extrinsic desires (external rewards) and Motivation 3.0 as fueled by intrinsic ones. His conclusion is that autonomy leads to engagement that strengthens Motivation 3.0 for higher commitment, growth, and creativity.

Self-efficacy is an individual’s belief in own capacity to achieve something related to specific goals. A strong sense of self-efficacy promotes human accomplishments and motivation to set higher goals. Self-efficacy is developed from external experiences and self-perception and is influential in determining the outcomes of many events. Similar words to self-efficacy include self-esteem and self-confidence. Self-esteem is more of a present-focused belief while self-efficacy is more of a forward-looking belief. Self-confidence is an individual’s trust in their own abilities, capabilities and judgements, or belief that they can successfully face day to day challenges and demands. Self-confidence is similar to self-efficacy but it seems to be based on prior performance [1]. However, in this chapter, the author uses self-efficacy and self-confidence interchangeably.

Leadership at the organizational or team/circle levels and the motivations of team members are some key elements for the successful application of *Kaizen* activities. *Kaizen* is based on bottom-up and participatory activities so that transformation and shared leaderships are something we can often observe as opposed to a top-down control approach to management. *Kaizen* also relies on the motivation of workers to contribute to the improvement of the workplace. Such motivation can be sustained and strengthened by self-confidence (or self-efficacy) backed up by successful experience. For leaders, how to stimulate motivation and self-confidence among team members is always an important question. There are many practices that stimulate extrinsic motivation such as giving bonuses that offer monetary incentives, awards that provide recognition, and promotions that entrust additional power and responsibility. However, recent arguments emphasize the importance of intrinsic motivation of people to be creative and innovative. The relationship between the participatory human-centered nature of the *Kaizen* approach and intrinsic motivation is one of the points the author is going to discuss in the context of non-cognitive skills.

9.2.3 *Kaizen from a Perspective of Capacity and Skill Development Theories*

In previous articles regarding *Kaizen* promotion in Africa, the author argued for the effectiveness of *Kaizen* on the capacity development of individuals [23, 24]. Capacities are categorized into technical capacities and core capacities. They can also be stratified into individual capacity, organizational capacity, and enabling environments according to the concept of capacity development promoted by JICA [19]. This concept was developed in line with the capacity assessment framework of the United Nation Development Programme (UNDP) [45].

Hosono et al. [16] define core capacity as generic and cross-cutting competencies and the ability to commit and engage, identify needs and key issues; plan, budget, execute, and monitor actions; and acquire knowledge and skills. They point out that the challenge is how to effectively enhance such cross-cutting core capacity.

The organizational core capacities may have close links with the concept of organizational culture. Individual core capacities are the central force in determining the ability to handle issues such as the discipline, will, attitude, leadership, and management capability needed to produce desirable results through the use of technical capacities. Individual core capacity in the context of skill development can provide more specific frameworks that refer to non-cognitive skills, socio-emotional skills, and socio-behavioral skills. These are also called soft skills.

The author argues that people who practice *Kaizen* activities experience an impact on these skills [23, 24]. Because *Kaizen* is a scientific, data-based approach, it can also contribute to the development of individuals' technical capacity. In parallel, *Kaizen* can also influence core capacities that share common elements with 'socio-behavioral skills' such as aptitude for teamwork and empathy pointed out by the World Bank [49] in the context of the changing nature of work described later.

9.3 Review of the Arguments on Non-cognitive Skills Development

9.3.1 *Importance of Non-cognitive Skills*

Before going into details, the definitions of capacity, capability, and skills are briefly discussed. According to the Merriam-Webster Dictionary, capacity is the potential or suitability for holding, storing, or accommodating, or an individual's mental or physical ability. Capability is the quality or status of having attributes (such as physical or mental power) required for performance or accomplishment. Skill is a learned power of doing something competently, which means it is something that can be developed. Skill is a part of capability, and capability constitutes capacity in a simplified sense,

although there are some exceptions. Therefore, discussions on skills can illustrate details related to the concepts of capacity and capability.

Skills are largely divided into cognitive skills and non-cognitive skills. Cognitive skills include literacy, numeracy, and problem-solving skills. Non-cognitive skills are, according to Kautz et al. [26, p. 13], ‘the personal attributes not thought to be measured by IQ tests or achievement tests.’ They include the attributes identified as soft skills, personal traits, non-cognitive abilities, character skills, and socio-emotional skills.

Among the arguments on skill development, the importance of non-cognitive skills has been increasing, although there are several definitions of non-cognitive skills. Zhou [51] reviews these definitions and classifies them in three groups that are: (i) perseverance/grit, (ii) self-control; and (iii) social skills. In his reviews, he explains that perseverance/grit is a trait that helps us to meet long-term or higher-order goals in the face of challenges and setbacks. Self-control is the capacity for altering one’s own responses, especially to bring them into line with standards such as ideas, values, morals, and social expectations, and to support the pursuit of long-term goals. Social skills constitute the ability to establish compatible and effective relations with others, or an ability to use appropriate social behaviors that are pleasing to others in interpersonal situations. However, his conclusion is that ‘there’s no standard established to track non-cognitive skills development in different stages. Non-cognitive skills assessment cannot be used as a tool to demonstrate accountability’ [51, p. 10].

Mindset is a mental inclination, tendency, or habit of a person. Carol Dweck [8] published a book titled *Mindset* in which she claims that there are two different types of mindsets of people. One is a fixed mindset, and another is a growth mindset. People with fixed mindsets believe that the abilities of people are fixed and fundamentally unchangeable. On the other hand, people with growth mindsets believe that abilities can be developed and improved through one’s own effort, learning, and interaction with one’s environment. She emphasizes that people’s attitudes toward learning, practicing, and even relationships with others are affected by these mindsets. That means people with growth mindsets can strengthen perseverance/grit and self-control and overcome their own failures better than those who have fixed mindsets.

Grit is known as a positive, non-cognitive trait on an individual’s perseverance of effort in psychology. Duckworth [6] points out that grit⁵ is combination of passion and perseverance that makes high achievers special. Grit is mutable and growable and can be developed in two ways: through individual effort and by surrounding oneself with people who have strong culture of grit. Interestingly, she supports the interaction between *Kaizen* and strong grit in her book. She writes:

Kaizen is Japanese for resisting the plateau of arrested development. Its literal translation is: “continuous improvement.” A while back, the idea got some traction in American business culture when it was touted as the core principle behind Japan’s spectacularly efficient manufacturing economy. After interviewing dozens and dozens of grit paragons, I can tell you that they all exude *kaizen*. There are no exceptions. [6, p. 142]

⁵ Thaler and Koval [42] write that GRIT stands for guts (G), resilience (R), initiative (I), and tenacity (T) in their book titled *GRIT to Great*.

The World Development Report published in 2015 *Mind, Society, and Behavior* focuses on behavioral economics. The report shows that, ‘Policies that expose individuals to new ways of thinking and alternative understandings of the world can expand the available set of mental models and thus play an important role in development’ [48, p. 13]. It further says that, ‘Automatic thinking, social thinking, and thinking with mental models also play a large role in worker motivation and the investment decisions of farmers and entrepreneurs’ (16). A part of the conclusions is that, ‘a more complete consideration of the psychological and social factors involved in decision making may offer “low-hanging fruit”—that is, policies with relatively large gains at relatively low cost’ (20).

These arguments illustrate that academics in education, behavioral science, business management, and behavioral economics are showing increasing interest in non-cognitive skills that are understood using psychology and mental models.

9.3.2 *Digital Technologies and Non-cognitive Skills*

Digital technologies have been generally improving the efficiency of work and reducing the workload of people. The impact of digital technologies such as information and communications technology (ICT) and artificial intelligence (AI) on job opportunities are analyzed and discussed in many papers in recent years. Frey and Osborne [11] conclude that 47% of workers in the US work in occupations at risk of being substituted by digital technology in the next 10–20 years. However, Arntz et al. [3] re-simulate the impact based on the tasks of occupation instead of the occupations and conclude that only 9% of jobs in the 21 member countries of the Organisation for Economic Cooperation and Development (OECD) can be automated.

Regarding the relation between tasks and occupations, an occupation consists of jobs, a job consists of tasks, and a task matches with the specific skills of people. In this sequence, skill development can contribute to the performance of tasks and task performance secures jobs even in the environment of digital transformation [22].

Meanwhile, several writers have pointed out the importance of non-cognitive skills in the coming age of digital transformation. For example, the Asia Development Bank Institute has published a report that comments as follows:

The learning outcomes in the present and future context require not only visible cognitive knowledge and skills to be acquired by learners but also non-cognitive ones, such as interpersonal, problem-solving, critical thinking, conflict-managing, and emotion-managing skills; these are often referred to as soft skills or 21st century skills. [2, p. viii]

Banga and te Velde published a series of papers regarding the impact of digital technologies in developing economies and write as follows:

In the context of the digital economy, the study identifies core skills that can directly increase [the] competitiveness of [a] workforce, and ancillary skills that either remain relevant or support the digital economy, but do not directly contribute to it. Core skills that need to be developed include: a) job-neutral digital skills; b) job-specific digital skills; and c) job-neutral soft skills such as communication, management, analytical and critical thinking and

creativity. Ancillary skills that can support the digital economy include: a) physical skills that require dexterity; and b) socio-emotional and interpersonal skills for service and sales occupations. [4, p. 29]

The World Development Report 2019 *The Changing Nature of Work* argues similarly, stating, ‘three types of skills are increasingly important in labor markets: advanced cognitive skills such as complex problem-solving, sociobehavioral skills such as teamwork, and skill combinations that are predictive of adaptability such as reasoning and self-efficacy’ [49, p. 3]. Socio-behavioral skills mentioned in the report are: ‘teamwork’ (3), ‘managing and recognizing emotions that enhance teamwork’ (23), ‘positive attitude and good communication skills, ability to work independently and as part of a team’ (23), ‘an aptitude for teamwork, empathy, conflict resolution, and relationship management’ (50), ‘creativity and curiosity’ (70), ‘commitment to work’ (72), and ‘teamwork, resilience, self-confidence, negotiation, and self-expression’ (80). The report says that socio-behavioral skills are acquired in one’s early childhood and shaped throughout one’s lifetime (10).

These arguments are created because routine tasks using middle-level skills such as machine operation, clerical work, and tasks in assembly-lines can be easily codified and can be performed by digital technologies, but tasks related to non-cognitive skills and socioemotional skills are, in addition to high-level cognitive skills, less likely to be performed by digital technologies [4].

JICA and JIN Corporation⁶ [22] conducted a study of the firm-level impact of digital technologies in Ghana and South Africa. The study finds that, in the current situation, firms introduce digital tools and systems for (i) accounting and administration, (ii) marketing and sales; and (iii) ICT tools as major technologies. They expect to introduce tools/systems for (iv) manufacturing technologies and (v) products management within three years. And the study observes that, consistent with the theory of capital-and-labor-productivity-optimization-behavior and local business norms, management in almost all of the 37 firms surveyed do not layoff labor when they introduce digital technologies. Instead, management reallocates staff to other tasks in the intrafirm value-chain. In this sense, the skills of labor matter in the adjustment. The outline of the survey and its findings are explained in Sect. 9.4.4.

On the other hand, Yamada and Ohno explore another important aspect. During the COVID-19 pandemic, many schools introduced remote lessons and online materials for instruction, which were highly dependent on the motivation of students rather than teachers to meet learning goals. Within a digitalized work environment, a similar situation can be observed in the relationship between management and workers, in that workers need to assess their own performance and address problems using their own communication skills [50, p. 318].

Table 9.1 shows the comparison between core capacities, non-cognitive skills, and socio-behavioral skills. There are several subskills that are common in these skill definitions although no standard definitions of them exist.

⁶ The name of the consulting firm who conducted the study is the JIN Corporation coincidentally. The author of this chapter does not have any personal relationships with this Corporation.

Table 9.1 Comparison of core capacities, non-cognitive skills, and socio-behavioral skills

Core capacities argued by Jin [24]	Non-cognitive skills by Kautz et al. [26]	Non-cognitive skills by Zhou [51]	Soft and its ancillary skills by Banga and te Velde [4]	Socio-behavioral skills by World Bank [49]
<ul style="list-style-type: none"> • Will • Mindset • Attitude • Learning attitude • Management capabilities • Leadership • Teamwork • Communication 	<ul style="list-style-type: none"> • Soft skills • Non-cognitive attributes • Personal traits • Character skills • Socio-emotional skills 	<ul style="list-style-type: none"> • Perseverance/Grit (passion, motivation) • Self-control (ideas, values, morals, social expectations) • Social skills (ability of establishing relations with others, ability to use appropriate social behaviors in interpersonal situations) 	<ul style="list-style-type: none"> • Analytical and critical thinking • Management • Creativity • Communication • Socio-emotional and interpersonal skills 	<ul style="list-style-type: none"> • Resilience • Self-confidence • Creativity • Curiosity • Emotion • Teamwork • Communication • Self-expression • Negotiation • Empathy • Relationship management • Conflict resolution

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Considering these arguments, the issue of how to strengthen the non-cognitive skills that include the mental and psychological factors of people is an interesting and practical one to discuss, although the definition of non-cognitive skill is still not truly clear. This study focuses on Zhou's classification and the components of each class, namely (i) perseverance/grit: passion and motivation; (ii) self-control: ideas, values, learning attitude, creativity, and curiosity; and (iii) social skills: teamwork, communication, leadership, and other interpersonal skills. Perseverance/grit and self-control seem to have similarities and are overlapping. The interpretation is that the former is a trait used to go through challenging conditions, while the latter is one that includes broader values. Development of non-cognitive skills is mainly argued to occur in the context of education. And much literature argues that early child education is an important process for developing non-cognitive skills [49]. However, the importance of the development of the non-cognitive skills of adults who have already started their career should be stressed. Adults also have to adopt new skills and perform new tasks in the coming digitalized era.

9.4 Analysis of Impact of *Kaizen*

9.4.1 *Outcomes of Kaizen Activities that Relate to Mindset*

Kaizen is a well-known concept of QPI with a set of systems, methodologies, and tools. The development of this concept started with learning statistical quality control methods and applying data based on a scientific approach. The collection of data and the analysis of cause and effect are basics of the approach. Some of standard approaches of *Kaizen* include the identification of a vital cause that can bring total optimization, the application of countermeasures, and the monitoring of key performance indicators (KPIs). Through these practices, workers and management can learn technical skills, such as accurate data collection and logical ways of thinking, that we call learning by doing. Therefore, there is no doubt that practicing *Kaizen* contributes to the development of technical skills that are characterized as cognitive skills. It also develops skills related to the collection of statistical data that is compatible to digital technologies. In this sense, the role of engineer is important although not many engineers are employed by the manufacturing SMEs in Africa. Apart from these common facts, the chapter argues about soft skills.

Masaaki Imai writes that, in contrast to innovation, *Kaizen* emphasizes human efforts, morale, communication, training, teamwork, involvement, and self-discipline, and is a commonsense, low-cost approach to improvement [17, p. 4].

According to the *Kaizen Handbook* published by JICA [20], the *Kaizen* approach is a set of tools and methodologies for QPI that are: (i) participatory, (ii) continuous, (iii) data-based and scientific, (iv) economical or efficient, and (v) universally applicable practices in their implementation process. *Kaizen* can also produce many outputs/outcomes in the workplace according to the Handbook, such as: (i)

improving quality, productivity, and service level and reducing cost and delivery time, (ii) changing the mindset of managers and workers, (iii) fostering personnel who can think and act by themselves, (iv) building teamwork and enhancing communication, (v) creating strong organizations that keep evolving and developing, and (vi) creating safe and comfortable work environment [20, p. 1–1]. Although the outputs/outcomes need to be examined, measured, and analyzed because some of the descriptions are not based on academic research findings, they are aspects drawn from a shared understanding among practitioners through their long working experiences. We may say they are based on the tacit knowledge of practitioners.

Of the above six outputs/outcomes, (i) the improvement of quality and productivity has been verified by various research activities that have used a series of KPIs such as cost of production, defect rate, and/or the lead time of products. The safe and comfortable work environment listed as (vi) is also monitored by the rate of accidents and the voices of workers through interviews, questionnaire surveys, or discussion. However, the creation of strong organizations that keep evolving and developing as listed in (v) is an ambiguous explanation that is difficult to measure and verify. This may relate to the continuation of *Kaizen* practices, and may be examined if we can monitor the differences in the survival rates of organizations with or without *Kaizen* under changing business environments caused for example by the COVID-19 pandemic or digital transformation.

The remaining three outputs/outcomes: (ii) the changing mindset of managers and workers, (iii) personnel who can think and act by themselves, and (iv) strengthened teamwork and enhanced communication, are related to effects on individuals. These effects are considered as changes in non-cognitive skills, as mindsets and independent thought and action relate to perseverance and self-control, while teamwork and communication relate to social skills. Although these traits are not easily monitored and evaluated as Kautz et al. [26] write—‘not thought to be measured by IQ tests and achievement tests,’—improvement of these skills are often pointed out by *Kaizen* practitioners. In addition, JICA’s *Kaizen Handbook* declares ‘the core value of “*Kaizen*” is placed on creating the attitude shared among all members of an organization who consistently pursue advanced levels of quality and productivity, and not just applying its management method’ [20, p. 1–1]. This is the shared attitude to consistently pursue an advanced-level *Kaizen* mindset.

9.4.2 *A Case of Mindset Change Prompted by Kaizen in Ethiopia*

In Ethiopia, the author conducted a questionnaire survey in 2018 to analyze the impact of *Kaizen* and collected 38 replies⁷ from 33 *Kaizen* promoting companies/organizations. Respondents to the survey are *Kaizen* leaders or the management

⁷ In a large company/organization, *Kaizen* officers in different departments who organize activities for different issues and timing replied.

of companies/organizations. In response to the question on what kind of positive changes, if any, have been created by *Kaizen* activities, 33 out of the 38 respondents selected the mindset of workers. This was followed by material flow (30 respondents) and efficiency of machinery (25 respondents), based on multiple choice answers [24]. Out of the 33 who chose the mindset change, 29 selected improvement of teamwork, 25 selected communication, and 23 selected learning attitudes as their breakdown of mindset changes.

In the same survey, 22 respondents answered that they observed spillover effects outside of their company such as at the residences of their workers and at the workplaces of business partners. One concrete case of spillover effect is observed in a sugar factory in a large-scale plantation in Ethiopia. The frontline workers who were impressed by the participatory nature of the *Kaizen* approach, particularly 5S and the activities of the Kaizen Promotion Team (KPT, the customized version of a QC circle in Ethiopia) at their own workplace started organizing communal cleaning activities at their residential area and tackling local crime through community policing [24, pp. 102–103, 21].

This case shows an interesting spillover of practices because the technical skills that workers obtain through 5S and *muda* elimination at the workplace are not directly related to the cleaning activities of the community, such as cutting grass and cleaning out mud from a drain, but are related to the value of the living environment and the initiative to promote collective actions. These communal activities in the residential areas require a mindset oriented towards creating positive change, promoting collective work, and communication and teamwork. We may assume that KPT activities can influence the organization of collective work because both require communication and consensus building among members in addition to the move towards improvement. Therefore, the measurement of the spillover effect of *Kaizen* in the activities that are not directly-linked with technical/cognitive skills can show effects on the non-cognitive skills of workers, such as will and motivations, since the technical and cognitive skills are not triggering factors of the activity.

9.4.3 Impact of Kaizen Activities on COVID-19 Responses

Regarding responses on the impact of the COVID-19 pandemic, there are many countermeasures applied toward infection control by the government, public and private organizations, and individuals. The government introduced lockdowns and restrictions on the movement of people. Many organizations have introduced work shifts, remote work, and extra hygienic practices of handwashing, mask wearing, and keeping social distance from their own workers and customers in the workplace. The effectiveness of these measures depends on whether people are disciplined and follow rules consistently. For the introduction of new workstyles such as remote work and new production systems, individual willingness to accept new systems is a key variable.

At the occasion of the online Africa Kaizen Annual Conference (AKAC)⁸ held in September 2020, the author collected replies to a questionnaire regarding the effectiveness of *Kaizen* activities to improve responses to COVID-19 from 53 participants in the conference. In response to the question asking if the *Kaizen* is effective in overcoming challenges caused by the pandemic, 33 selected ‘yes-very much,’ 16 selected ‘yes-some extent,’ 1 selected ‘not much,’ and 3 selected ‘I don’t know,’ out of the five choices⁹ (see Fig. 9.1(1)). In response to a question asking how a *Kaizen*-type mindset influences coping with COVID-19, 26 respondents made descriptive comments that included multiple factors. Among these 26 respondents, 12 mentioned a mindset toward proactiveness to find/accept new things is useful, followed by 9 who mention the communication system of organization and skills of individuals are positively influenced. Six respondents refer to a mindset to keep rules/discipline, another 6 picked teamwork, and 4 mentioned that leadership is influential (see Fig. 9.1(2)).

One of the key arguments presented by a Japanese *Kaizen* consultant in the form of video lecture series entitled: ‘How to cope with COVID-19 by utilizing *Kaizen*’ is that there is a chance to turn adversity into opportunity [21]. On one hand, *Kaizen* encourages managements and workers to review their own costs of operation and reduce waste to make the company more resilient in crisis situations. On the other hand, it is important to advise audiences to analyze changing demand in the market that a company wants to target, examine own business capacity and potential, then try to identify potential products/services that the company can produce.

By connecting the strength of value creation with the identification of potential demand in a market, the marketing story can be visualized. In actual practice, it is also important to proceed properly with verification by applying the Plan-Do-Check-Act (PDCA) cycle. Problem analysis, visualization, and verification require high-level cognitive skills consisting of data collection and analysis. This may be called a problem-solving skill that is a complex of literacy, numeracy, and data analysis. However, there are also non-cognitive skills such as communication, self-control to work proactively, and perseverance to move to new frontiers in adverse circumstances.

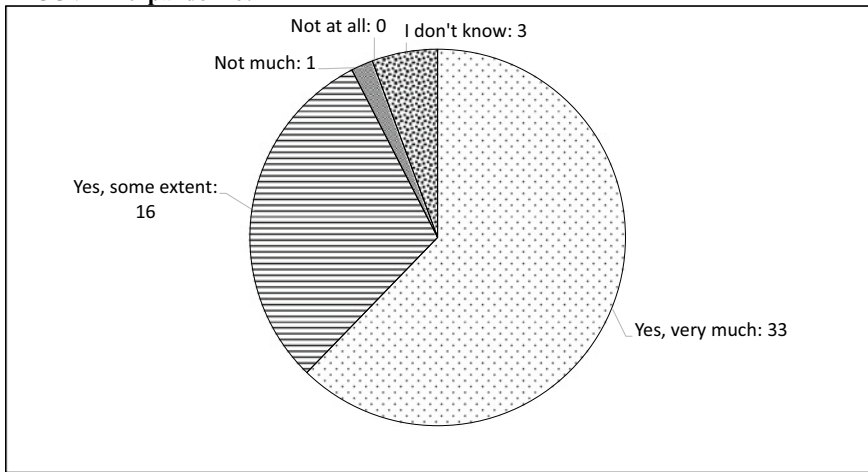
9.4.4 Impact of Kaizen Activities on Digital Transformation

Digital technologies are easily copied and expand quickly without degradation, while analogue technologies are time consuming to replicate and are degraded through copying. The changing nature of work under technological innovation demands that people develop ICT-related skills as well as non-cognitive/socio-behavioral skills. The combination of digital technologies by machine and analogue skills of humans

⁸ African Union Development Agency (AUDA-NEPAD) and JICA have been organizing the Africa Kaizen Annual Conference under the framework of Africa Kaizen Initiative since 2017. Practitioners and policy makers in 8 to 12 countries participated in the conference in each year.

⁹ Choices are ‘yes-very much,’ ‘yes-some extent,’ ‘no-not much,’ ‘no-not at all,’ and ‘I don’t know.’

(1) Answers to the Question ‘Is *Kaizen* effective in overcoming challenges caused by the COVID-19 pandemic?’



(2) Multiple Descriptive Answers to the Question ‘How does the *Kaizen*-type mindset influence coping with COVID-19?’

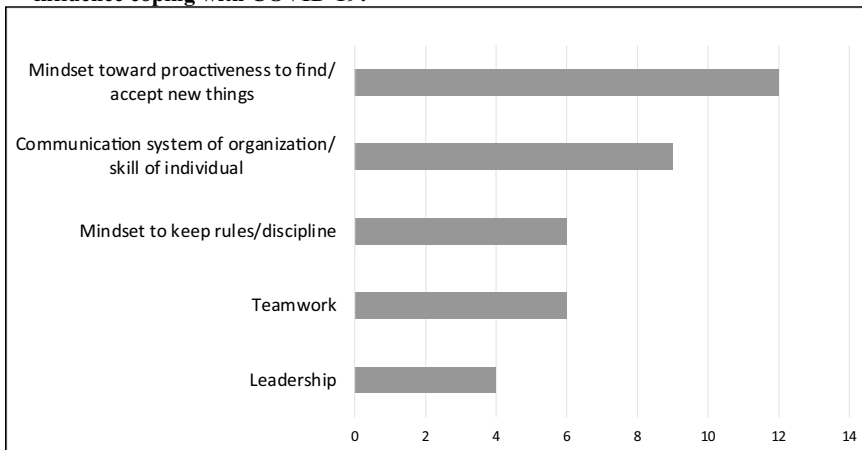


Fig. 9.1 Effectiveness of *Kaizen* Activities for COVID-19 Response (*Source* Elaborated by the author, based on the results of online survey at AKAC 2020)

will be the mainstream of job systems in the era of digital transformation. Digital technologies can accelerate the speed of change by using mass data and information while individuals' analogue skills can improve the quality of products and services through communication and customization.

If we interpret the above argument in the context of *Kaizen* promotion in developing countries, the cognitive skills relate to methods for utilizing ICT and AI in *Kaizen* processes, such as electric *Kanban*, digital inventory, remote monitoring

systems, wireless sensors to detect motion/mobility, and automatic inspection logs. The non-cognitive skills are those that cannot be replaced by ICT and AI because of the difficulty to measure, calculate, and simulate them by algorithms in digital technologies. These non-cognitive skills may create new jobs for people that can be a more human oriented in their value addition in combination with digital technologies, such as improving products/services based on feedback from customers to increase customer satisfaction and promote custom-made production.

For example, a possible story is furniture production. Banga and te Velde [4] suggest that the cost of manufacturing furniture with robots will become cheaper than that with labor in Kenya in 2033 and in Ethiopia in between 2038 and 2042. This means the craftsman in the furniture industry in these countries may lose their jobs if they cannot create further added value in furniture production. One possibility to respond may be made-to-order furniture based on customer requests and feedback. Currently most furniture available on the market is ready made. However, if communication networks are well developed, most furniture may be custom-made in order to add value to these businesses. The creation of these new ideas and values will rely on the social skills of workers that cannot be replaced by digital technologies but can be complementary to them. The actual creation of new products and services requires tireless trial and error efforts based on strong perseverance/grit. That is a reason why non-cognitive skills are more and more important in the digital era.

Other opportunities are created through the continued improvement of communication through mobile phone and internet. The development of ICT has been creating huge space for radical and disruptive innovations. It also promotes productivity in the service sector through improving connectivity. Service has a character of non-tradeable business because of simultaneity of the creation and consumption of service [29]. However, development of ICT drastically expanded its outreach to consumers, which improved the productivity of service. Communication technologies also increase opportunities to match consumers and service providers such as Uber. Therefore, the development of ICT is creating new job opportunities.

How *Kaizen* can be utilized in the context of such development of digital technologies? For ICT engineers, agile SCRUM is an interesting model for QPI by utilizing the concept and tools of TPS. Jeff Southerland promotes team activities through organizing short meetings called agile SCRUM and practices continuous improvement process in software development instead of using the waterfall model that is a linear sequential flow. This approach eliminates waste and impediments and strengthens customer orientation and feedback through continuous processes [41]. It also addresses the motivation issue through flat structure and autonomy. The case of SCRUM shows the effectiveness of *Kaizen* practices in development of digital technologies by modifying its tools along with the needs and circumstances of new business.

It is worth mentioning that Toyota Motor Co. strengthened its *Kaizen* suggestion system when it recognized a historic change in the automotive industry under a shift towards electric vehicles led by AI development and climate change. The board of Toyota in Japan requested all management staff in the head office to present at least one suggestion on *Kaizen* per month as a mandate in order to find appropriate ways to

adapt and overcome such changes.¹⁰ In addition, although it is not directly related to digital technology, when Nissan was in debt crisis in 1999, Carlos Ghosn formulated cross functional teams (CFT) in the company and solved problems that enabled the V-shaped recovery of the company [43, 46]. These cases show the applicability of *Kaizen* in crisis situations.

Regarding the impact of digital technologies, the JIN Corporation interviewed a total of 37 companies in Ghana (22 companies) and South Africa (15 companies) using a questionnaire about firm behavior in the past and future (in the coming three years) [22]. The survey was conducted from late 2020 to early 2021, in the midst of the COVID-19 pandemic through remote connection. Managers of the companies responded that workers in their companies have been replaced or will be replaced by the introduction of digital technologies but not dismissed. The workers are assigned to new posts in the companies and perform new tasks. Because the utilization of digital technologies requires investment, almost all firms perform at higher productivity levels and expand their business activities. In this context, the digital technologies have a substitution effect for workers as well as complementary effects to expand businesses and create new jobs. However, the actual profitability of each company depends on competitiveness in the market of the respective products/businesses. If the company is highly competitive in the market and the market itself has room for further expansion, the company grows its own business. If the company is competing fiercely with other suppliers in the market, the company cannot expand its own business easily even after the introduction of digital technologies.

Under such circumstances, the company makes efforts to improve the quality of products to improve competitiveness or develop new products and enter into new markets. Through these efforts, most of the interviewed companies identified complementary effects between the digital technologies and job opportunities. In addition, most of the managers of these companies emphasize the importance of human resources development. Because of rapid digitalization, the companies increasingly want to secure highly skilled and experienced workers. Because the supply of such workers in the local labor market is not always sufficient, the companies want to keep their labor and develop their sense of belonging to the companies. Therefore, even under the COVID-19 pandemic, the managers sent messages to the workers that the companies care about them and that they will not be laid off [22].

These observations imply two issues in relation to *Kaizen*. One is the skill development of workers. Through *Kaizen* activities, workers are encouraged to acquire multiple skills, which are captured in a skill matrix that indicates the skills each worker has. Through multi-tasking based on multi-skills, workers can support the productivity performance of each task mutually and troubleshoot issues within the workplace. Such multi-tasking enables the adjustment of labor in response to the impacts of digitalization. Another issue arising from these observations relates to the nature of the bottom-up and participatory approach of such activities. Practitioners know that when *Kaizen* activities generate a surplus of workers through productivity improvements, management must not make these workers redundant, as this would

¹⁰ Based on author's interviews with a staff of Toyota Motor Co. in October 2019 in Nagoya.

kill the motivation of workers and the sustainability of *Kaizen* activities. The more effective approach to saving labor is to pick out excellent workers from the production floor and assign them to more creative tasks [24, p. 107]. Thus, the *Kaizen* approach seems effective in accommodating the introduction of digital technologies.

9.5 Discussion

This section discusses implications drawn from the analysis on the cases described in Sect. 9.4. Although these points are based on the analysis of African cases, they may be able to extend to other regions and be considered common phenomenon of *Kaizen* activities.

9.5.1 *Non-cognitive Skills Development Through Kaizen*

Based on Zhou's [51] classification of non-cognitive skills that consists of perseverance/grit, self-control, and social skills, this subsection now discusses how non-cognitive skills can be developed through *Kaizen* practices.

First, social skills defined as the ability to establish compatible and effective relations with others and the ability to use appropriate social behaviors that are pleasing to others in interpersonal situations are reviewed. Although *Kaizen* is defined as the tools and methodologies for QPI, one of the essences of the approach is human resource development, as many practitioners and researchers point out [12, 17, 20]. Participatory practices that are incorporated into the tools/methodologies such as 5S and QC circle activities influence the development of social skills. The QC circle is a typical small group activity based on collective actions. The 5S process is also based on group work that starts by asking individuals to identify items to be disposed of but proceeds to discussion among the group on what item should be finally discarded. The process ends with developing consensus among participants on how to keep the workplace in good condition. Hence, through these practical experiences of group work and communication with co-workers, social skills can be developed.

Second, self-control is defined as the capacity to alter one's own responses, especially to bring them into line with standards such as ideas, values, morals, and social expectations, and to support the pursuit of long-term goals. This self-control may relate to the mindset argued by Dweck [8]. If we can change our mindset from a fixed one to a growth one, we can be more skillful with self-control. Among others, the suggestions system is one of practices that can influence the development of mindsets. Imai writes in the revised edition of his book *Gemba Kaizen* as follows:

The suggestion system functions as an integral part of individual-oriented *kaizen* and emphasizes the morale-boosting benefits of positive employee participation. [...] They do not expect to reap great economic benefits from each suggestion. Developing *kaizen*-minded and self-disciplined employees is the primary goal. This outlook contrasts sharply with that of Western

management's emphasis on the economic benefits and financial incentives of suggestion systems. [17, p. 10]

Imai's argument focuses on self-discipline and intrinsic motivation. Successful group work can strengthen the value of activities that contribute to the development of social skills.

Third, perseverance/grit can be disaggregated to passion and perseverance according to Duckworth [6]. She presents a Grit Scale that consists of 10 questions to measure one's grit and argues that the continuation of deliberate practices can strengthen grit. She added that there are two ways to strengthen grit: the first is by one's own tireless efforts and the second is by putting oneself in a group of people who have strong grit. Group work like the *Kaizen* approach can support one's efforts.

For adult workers, there are not many arguments on how to develop non-cognitive skills in practical ways. Although grit and mindset can be changed through efforts, the methodology to make such changes varies according to subject. And because these non-cognitive skills include social skills, it is important to create an enabling environment or group of people to mutually strengthen the efforts, as Duckworth writes, by quoting the sociologist Chambliss, 'use conformity—the basic human drive to fit in—because if you're around a lot of people who are gritty, you're going to act grittier' [6, p. 298]. She also writes, 'If you want to be grittier, find a gritty culture and join it. If you're a leader, and you want the people in your organization to be grittier, create a gritty culture' [6, p. 296]. This is similar to 'creating the attitude shared among all members of an organization who consistently pursue advanced levels of quality and productivity,' [20, p. v]. This implies written in the *Kaizen Handbook* [that *Kaizen*-type participatory practices or group work are effective in the development of non-cognitive skills.

9.5.2 Importance of Cyclical and Continuous Process

Because the success of *Kaizen* activities depends on participation and contributions of members of workplace, the question of the sustainability of the activities is always related to the motivation of members. Apart from extrinsic motivation enhanced by external rewards, stimulation of intrinsic motivation is more challenging issue. A high sense of self-confidence coupled with successful experiences may stimulate intrinsic motivation.

For *Kaizen* practitioners, the creation of tangible improvements in quality and productivity through group work is a stimulating factor. However, if we cannot create tangible improvements, the motivation/morale of members and the momentum of activities may be negatively affected.

Regarding the relation between motivations/morale and tangible outputs, cause-and-effect may be an arguable point. Clarification of causal relationships is one important component to analyze the root cause of problems. In a simplified understanding, high motivation and morale creates better outputs. However, this way of

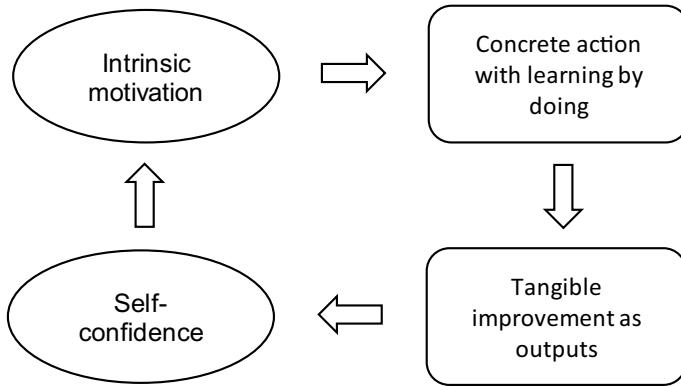


Fig. 9.2 Circular relation of motivation and outputs (Source Author)

thinking is sometimes oversimplified, illustrating only one side of the coin. It is also problematic for skill development because it does not address the issue of how to develop the intrinsic motivation of people. The reality is that successful experience also stimulates motivation through enhancing self-confidence. The author argues that motivation and results are in a circular relationship, much like the chicken and the egg, and they are mutually enforceable (see Fig. 9.2). There are many issues that we cannot understand through linear cause and effect relationships.

The relationship between poverty and environmental degradation is one such issue, as the *Report of the World Commission for Environment and Development: Our Common Future* states: ‘Poverty is a major cause and effect of global environmental problems’ [44, p. 19]. The relationship between motivation strengthened by self-confidence and the creation of tangible improvements through QPI is a similar issue. This circular relationship is one of the reasons why *Kaizen* is a continuous process. If we can strengthen our motivation by experiencing small successful results, this will be good start to the cyclical process of mutual reinforcement. And if we can have strong intrinsic motivation as Pink [37] argues, we can be proactive to make further actions. Therefore, a practical question is how we can strengthen both the motivation of people and the creation of tangible results of QPI.

Efforts to create change are always challenging compared with actions to maintain routine activities, a phenomenon known as status quo bias. We need additional power to create changes. Continuous implementation of small changes is a practical approach to encourage people to be positive because radical and drastic changes are not accepted easily.

In relation to the development of digital technologies, market demand and their related technologies keep changing. When we focus on a particular demand or product, we may adapt ourselves to specific technologies and skills. Adaptation can be one key strategies for success. However, we have to recall the words of an American organizational theorist that ‘adaptation can preclude adaptability’ [47]. When we achieve success in a particular niche or environment, we adapt ourselves to

such niche/environments and lose our adaptability in other environments. As Christensen notes in his famous publication *The Innovator's Dilemma* [5], when we have successful experience in one field, we may deepen our efforts to be more successful in the same field, which gives us a comparative advantage but deprives flexibility to change.

Under the current changing situation of technologies and global networks, we need to keep our adaptability while adjusting to new situations. Although it seems to be a trade-off, the continuity of *Kaizen* can be one of the answers to maintaining adaptability while adjusting actions. It can give us opportunities to review another market if we maintain a broad-enough view to adjust the overall situation and compete in the other market. This is highlighted in the *Kaizen Handbook*, which identifies one output of activities to be '(v) creating strong organizations that keep evolving and developing' [20, p. 1–1].

Using the concept of *Kaizen*, people can try many things to realize change for the better, and teams of such people will create organizational culture and develop into a learning organization. Therefore, if a company or organization can create a *Kaizen* mindset-type culture with continuous effort, the organization can become more resilient and adaptable to change. Continuity may ensure that the organizations maintain adaptability while adjusting to the new situation in the changing business environment. If society can promote *Kaizen* and elevate it as a broader movement, society may be able to develop into learning society.

9.5.3 Needs of Research on Kaizen Activities

We are currently in an age of change spurred by globalization, accelerated technology development, risks of pandemics, and the potential of geopolitical dynamism. We may need to adapt ourselves to the changing situation. Even approaches and tools of *Kaizen* activities and their priority may be changing. In fact, agile SCRUM is an interesting development of TPS in the context of the software industry in digital technologies.

Regarding team building in a company, Duhigg [7] reports on an analysis based on research of groups in Google. He points out that two behaviors are shared among good teams: (i) equality in distribution on conversation turn-taking, and (ii) high average social sensitivity. These are aspects known as psychological safety—a group culture of 'shared belief held by members of a team that the team is safe for interpersonal risk taking' [9]. This is also an interesting discovery of the value of *Kaizen* practices through research on team building in digital industry in the US.

On the other hand, there is analysis on the failure of *Kaizen* practices reported in Japan. The PDCA cycle is a basic management method of the *Kaizen* process. It is the simplest and most reliable approach among various tools and methods of *Kaizen* [20]. However, there is a risk of becoming a PdCa cycle according to Ikuya Sato. PdCa means that people spend a large amount of effort in planning but little effort in implementation, and focus a large amount of effort on checking, which becomes

micromanagement, while procrastinating on taking action [39]. We have to keep in mind that planning is easy, but implementation requires more effort, and checking is easy, but action is a challenge. If company management pours their own energy into planning and checking but ignores challenges in implementation and action, *Kaizen* is not materialized. This point relates to the importance for managers to work together with people in *Gemba* (factory floor) orientation and commit to a hands-on approach to create actual change.

Kaizen practices include group activities, such as QC circles and CFT, develop learning capacity among individuals including passion, ideas, values, and abilities to establish relation with others. Productivity improvement as their output may result from the collectiveness of work. However, it is not easy to measure and compare collective productivity with the sum of individual productivity. There are also some risk factors in the group approach that include (i) overpressure by group members or management; and (ii) group thinking that makes irrational decisions if pressure for harmony is overwhelming.

In this context, research on *Kaizen* is not enough to understand psychological and behavioral aspects in group dynamics/team activities that influence the motivation and skill development of individuals, hence productivity. *Kaizen* will be more effective through closer linkage with leadership. Styles of leadership that can be measured by Multifactor Leadership Questionnaire (MLQ) may be changing due to the development of communication technologies. Hence, research on leadership can also contribute to better performance of *Kaizen* practices. Although there are strong implications that *Kaizen* can contribute to advancement of non-cognitive skills development for adults, this needs to be further studied and analyzed. Results may be encouraging for adult workers who face challenges in the digital era.

9.6 Conclusion

The impact of *Kaizen* on the development of non-cognitive skills may not be so tangible at the beginning of its activities. However, using a continuous and cyclical process, non-cognitive skills can be strengthened so that people can become grit paragons as Duckworth pointed out. It is important to practice successful *Kaizen* repeatedly, which can cyclically strengthen motivation and self-confidence.

Mindset change is a low-hanging fruit, as the World Bank report says, because less physical investment is required. However, it is not stable because it is always influenced by the environment. That is why the creation of attitudes that can be shared among all members of an organization is important. The development of non-cognitive skills is a process to strengthen our capability to enrich the value of human relations (social skills), creativity and morale (self-control), and perseverance to achieve something, which are the essence of the philosophy of *Kaizen*. These human-centered approaches are gaining momentum and can be a concrete case

of practices that are advocated for within the concept of stakeholder capitalism.¹¹ Hosono mentioned that ‘*Kaizen* could be revisited from the perspective from these new initiatives,’ referring to stakeholder capitalism in his closing remarks in the *Kaizen* seminar held in 2020 [15].

There are many proverbs and wisdom to encourage our challenging spirit, and enable us to maintain the perseverance and creativity necessary to break through the status quo. These include ‘Kites rise highest against the wind’ by Winston Churchill, ‘In the middle of difficulty lies opportunity’ by Albert Einstein, or ‘Imagination means nothing without doing’ by Charlie Chaplin. How we can enable ourselves and others to maintain such mindsets is an interesting dilemma for capacity building, social capability, and skills development.

How to measure non-cognitive skills development through *Kaizen* promotion is a point to be discussed further. Although we cannot measure the development of overall non-cognitive skills precisely, as Zhou pointed out, we can implicitly recognize the concrete improvement of individual skills when we experience *Kaizen* promotion in the workplace. We can also pick up specific skills and measure their development before and after implementing *Kaizen* while measuring the KPTs of business. The Grit Scale can be used to measure perseverance. And scales for teamwork and interpersonal communication in different academic disciplines are also available that can be modified to measure the impact of *Kaizen*.

Kaizen is a set of methodologies and tools to improve quality and productivity from the viewpoint of industry and the service sector. However, viewed from a different angle, *Kaizen* is a process of skill and capability development of people that is part of the process of career development and self-actualization. How we understand *Kaizen* depends on what we want to achieve through it. When we see the skill development of individuals achieved through its activities, we value not only the profit and success of our business or organization but also the wellbeing of individuals in contact with it.

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¹¹ The concept of stakeholder capitalism proposes that corporations should serve the interests of all their stakeholders including not just shareholders and investors but employees, customers, and the general public at large.

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