CHAPTER

7

Development of Non-cognitive/ Socio-behavioral Skills through *Kaizen* in the Era of Digital Transformation

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1. Introduction

In previous articles regarding *Kaizen* promotion in Africa, the author explored the relationships between technical capacities and core capacities in the context of capacity development theory and emphasized the positive effects gained from developing core capacities through practice (Jin 2018, 2020). Core capacities are the central force in determining an organization's 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, according to the capacity development theory promoted by the Japan International Cooperation Agency (JICA) (JICA 2008). This theory was developed in line with the capacity assessment theory of the United Nations Development Programme (UNDP) (UNDP 2008).

The discussions on core capacity development cover issues found at both individual and organizational levels. In addition to the organizational core capacities, at the individual level arguments on 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 and are similar in concept to the core capacities of an individual. The author also argues that *Kaizen* activities have an impact on the mindset of the people who practice them (Jin 2018, 2020).

These non-cognitive skills and mindsets may play important roles in skill development and task management. In this chapter, the relationships between core capacities and non-cognitive skills, how these capacities/ skills can be developed by *Kaizen* practice, and how they affect the use of new technologies and the creation of new ideas in digital transformation are discussed.

2. Review of the Arguments on Non-cognitive Skill Development

2.1. Non-cognitive skills

Before going into details, 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 part of capability and capability constitutes capacity in a simplified sense, although there are some exceptions. Therefore, discussions on skills can illustrate details of 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. (2014), 'the personal at-tributes not thought to be measured by IQ tests or achievement tests. (13)' They include the attributes named as soft skills, personal traits, non-cognitive abilities, character skills, and socio-emotional skills in non-cognitive skills.

Among the arguments on skill development, importance of non-cognitive skills has been increasing although there are several definitions of non-cognitive skills. Zhou (2016) reviews these definitions and classified them in three skills that are: (i) perseverance/GRIT; (ii) self-control; and (iii) social skills. In his reviews, by quoting some references, 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 are 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 (Zhou 2016, 10).

Mindset is a mental inclination, tendency, or habit of a person. Carol Dweck (2006) 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 and knowledge of the 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.

Daniel Pink published a book about motivation (Pink 2009) and 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' (7th para. of Chapter 3). He also categorizes Motivation 2.0 that is fueled by extrinsic desires (external rewards) more than intrinsic ones and that Motivation 3.0 is fueled by intrinsic ones. His conclusion is that autonomy leads to engagement that strengthens Motivation 3.0 for higher commitment, growth, and creativity.

GRIT is known as a positive, non-cognitive trait on an individual's perseverance of effort in psychology. Duckworth (2016) points out that GRIT is combination of passion and perseverance that makes high achievers special. GRIT is mutable, not fixed and growable. And GRIT can be developed through two ways; one is by own efforts, and another is by putting oneself among 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. (Duckworth 2016, 4th para. of Chapter 7)

The World Development Report published in 2015 *Mind*, *Society*, and *Behavior* (World Bank 2015) 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' (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 'So is the realization 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 argued using psychology and mental models.

2.2. Digital technologies and human skill

The impact of digital technologies such as information technology (IT) and artificial intelligence (AI) on job opportunities are analyzed and discussed in many papers in recent years. Frey and Osborne (2013) conclude that 47 per cent of workers in the United States (US) are in an occupation at the risk of substitution by digital technology in the next 10 to 20 years. However, Arntz et al. (2016) re-simulate the impact based on the tasks of occupation instead of the occupations and conclude that only 9 per cent of jobs in the 21 member countries of Organization 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 (JICA and JIN Co. 2021).

Meantime, several writers have pointed out the importance of non-cognitive skills in the coming digital transformation age. 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. (ADBI 2019, 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 competitiveness of 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.' (Banga and te Velde 2018, 29)

The World Development Report 2019 *The Changing Nature of Work* argues similar issues. The report states 'three types of skills are increasingly important in labor market: advanced cognitive skills such as complex problem-solving, socio-behavioral skills such as teamwork, and skill combinations that are predictive of adaptability such as reasoning and self-efficacy' (World Bank 2019, 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 (Banga and te Velde 2018).

JICA and JIN Corporation[1] (2021) 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) IT 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, as consistent with the theory of capital-and-labor-productivity-optimization-behavior and local business norms, almost all managements of the 37 firms surveyed do not layoff labor when they introduce digital technologies. Instead, the management reallocate 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 the next section.

Table 7.1 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.

Considering these arguments, how to strengthen the non-cognitive skills that include mental and psychological factors of people is an interesting and practical issue to be discussed, although 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

[1] 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 7.1. Comparison of Core Capacities, Non-cognitive Skills, and Socio-behavioral Skills

Core capacities argued by Jin (2020)	Non-cognitive skills by Kautz et al (2014)	Non-cognitive skills by Zhou (2016)	Soft and its ancillary skills by Banga & te Velde (2018)	Sociobehavioral skills by World Bank (2019)
		• **Perseverance/ GRIT** (passion, motivation)		• Resilience • Self-confidence
• Will • Mindset • Attitude • Learning attitude	• Soft skills • Non-cognitive attributes	• **Self control** (ideas, values, morals, social expectations)	• Analytical and critical thinking	• Creativity • Curiosity
• Management capabilities	• Personal traits • Character skills		• Management • Creativity	• Emotion
• Leadership • Teamwork • Communication	• Socio-emotional skills	• **Social skills** (ability of establishing relations with others, ability to use appropriate social behaviors in interpersonal situations)	• Communication • Socio-emotional and interpersonal skills	• Teamwork • Communication • Self-expression • Negotiation • Empathy • Relationship management, • Conflict resolution

Source: Created by the author.

have similarities and are overlapping. The interpretation is that former is a trait used to go through challenging conditions and the latter is one that includes broader values. Development of non-cognitive skills is mainly argued in the context of education. And many literatures say that early child education is an important process for developing non-cognitive skills (World Bank 2019). However, the importance of how to develop the non-cognitive skills of adults who have already started their career should be stressed. The adults also have to adopt new skills and perform new tasks in the coming digitalized era.

3. Analysis of Impact of *Kaizen* on Skill Development

3.1. Kaizen mindset

Kaizen is a well-known concept of quality and productivity improvement (QPI) with a set of systems, methodologies, and tools. Development of this concept started with learning Statistical Quality Control methods and applying data based on a scientific approach. Collection of data and

analysis of cause and effect are basics of the approach. Identification of a vital cause that can bring total optimization, applying countermeasures, and monitoring key performance indicators (KPIs) are some of standard approaches of *Kaizen*. 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 technical skill development. But, how about soft skills?

Masaaki Imai (2012) shows 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.

According to the *Kaizen Handbook* published by JICA (2018), the approach is a set of tools and methodologies for QPI that have the characteristics of: (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 (JICA 2018, 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 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) 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 interview questionnaires or discussion. However, the creation of a 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, but may only be examined if we can monitor the differences in the survival rate of with or without *Kaizen* organizations under changing business environments caused for example by the COVID-19 pandemic or digital transformation.

The remaining three outputs/outcomes, namely: (ii) the changing mindset of managers and workers, (iii) fostering personnel who can think and act by themselves, and (iv) building teamwork and enhancing communication, are related to effects on individuals. These effects are considered as changes in non-cognitive skills, as mindset and 'think and act by themselves' relate to perseverance and self-control, and 'teamwork and communication' relate to social skills. Although these traits are not easily monitored and evaluated as Kautz et al. (2014) write - 'not thought to be measured by IQ tests and achievement tests, (13)' 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 in 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' (1-1). This is the shared attitude to consistently pursue an advanced level *Kaizen* mindset.

3.2. Cases in Ethiopia

In Ethiopia, the author conducted a questionnaire survey in 2018 to analyze the impact of *Kaizen* and collected 38 replies[2] from 33 *Kaizen* promoting companies/organizations. Respondents to the survey are *Kaizen* leaders or the management of companies/organizations. In response to the question on what kind of positive changes, if any, have been created by *Kaizen* activities, 33 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 (Jin 2020). 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 change.

In the same survey, 22 respondents answered that they observed spillover effects outside of their company such as at the residences of their workers

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

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 approach, particularly 5S and the activities of the Kaizen Promotion Team (KPT- the customized version of Quality Control (QC) Circle[3] in Ethiopia) at their own workplace started organizing communal cleaning activities at their residential area and tackling local crime through community policing (Jin 2020, 102-03).

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, measurement of the spillover effect of *Kaizen* in the activities that are not directly-linked with technical/cognitive skills can show effects on non-cognitive skills of workers, such as will and motivations, since the technical and cognitive skills are not triggering factors of the activity.

3.3. Kaizen and the COVID-19 pandemic

Regarding responses on the impact of the COVID-19 pandemic, there are many countermeasures applied in infection control by the government, public and private organizations as well as by individuals. The government introduced lockdown and restrictions on the movement of people. Many organizations have introduced work shifts, remote work, and extra hygienic practices of handwashing, wearing masks, 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 keep rules. For the introduction of new workstyles such as remote work and new production systems, how people are willing to

[3] QC circle is a small group activity formed at the workplace to improve work at the production floor.

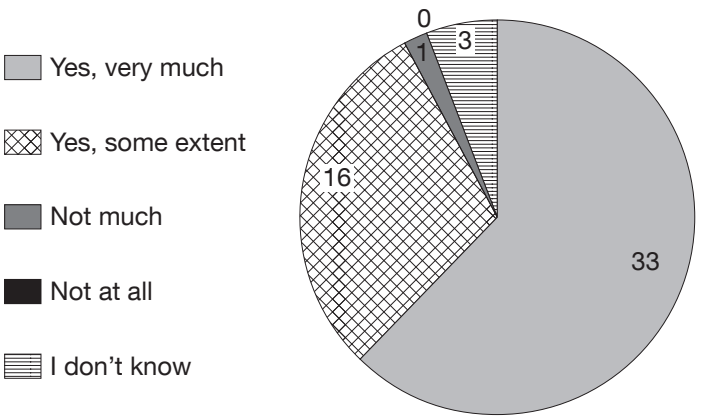
accept new systems is a key variable.

At the occasion of the online Africa Kaizen Annual Conference held in September 2020, the author collected replies to a questionnaire regarding the effectiveness of *Kaizen* activities for COVID-19 responses from 53 participants at the conference. In response to the question asking if *the approach* 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 choices[4] (see Figure 7.1 (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. 6 respondents refer to a mindset to keep rules/discipline, another 6 picked teamwork, and 4 mentioned that leadership is influential (see Figure 7.1 (2)).

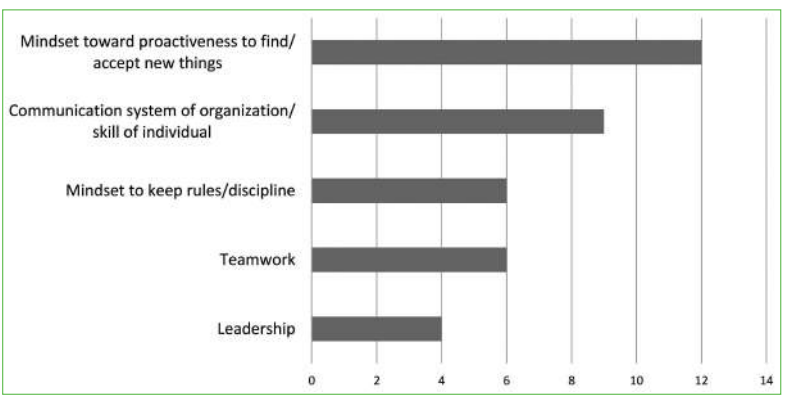
One of the key arguments presented by a Japanese *Kaizen* consultant in the form of video lecture series entitled: 'How to cope with COVID-19 by utilizing *Kaizen*' is that there is a chance to turn adversity into opportunity (JICA and AUDA-NEPAD 2020). On one hand, it encourages managements and workers 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 own 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 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 of non-cognitive skills such as communication, self-control to proactively, and perseverance to move to new frontiers in adverse circumstances.

[4] 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?'



Source: Author.

Figure 7.1. Effectiveness of *Kaizen* Activities for COVID-19 Response

3.4. Kaizen and digital transformation

Digital technologies are easily to copy and quick to expand 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 IT-related skills as well as non-cognitive/socio-behavioral skills. The combination of

digital technologies by machine and analogue skills of humans 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 and analogue skills of people 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 IT and AI in *Kaizen* processes, such as electric *Kanban*, digital inventory and online QCCs. The non-cognitive skills are those that cannot be replaced by IT 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 value addition in combination with digital technologies, such as the improvement of products/services based on feedback from customers to improve customer satisfaction and promote custom-made production.

For example, a possible story is furniture production. Banga and te Velde (2018) suggest that the cost of robots in furniture manufacturing will be cheaper than that of 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. One possibility to respond may be made-to-order furniture based on customer request and feedback. Currently most furniture available in the market is ready made. However, if communication networks are well developed, most furniture may be custom-made in order to add value to their business. 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. And the actual creation of new products and services requires tireless efforts of trial and error based on strong perseverance/GRIT. That is a reason why non-cognitive skills are more and more important in the digital era.

Regarding the impact of digital technologies, the JIN Corporation interviewed a total of 37 companies in Ghana (22 companies) and South Africa (15 companies) based on a questionnaire about firm behavior in the past and future (in the coming three years) (JICA and JIN Co. 2021). 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 company 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 show a substitution effect for workers but also complementary effects to expand businesses that creates new jobs. However, the actual profitability of each firm depends on competitiveness in the market of respective products/businesses. If the market is not competitive and has room for further expansion, the company grows its own business. If the market is highly competitive, it is not easy for the company to expand its own business.

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 high-skilled and experienced workers. Because the supply of such workers in the local labor market is not always sufficient, the company wants to keep labor and develop their sense of belonging to the company. Therefore, even under the COVID-19 pandemic, the managers sent messages to the workers that the company care about them and that they will not be laid off (JICA and JIN Co. 2021).

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 as one of the basic approaches where a skill matrix that indicates the skills each worker has in the workplace can be observed. Through multi-tasking based on multi-skills, workers can support the productivity performance of each task mutually and troubleshoot at workplace level. And such multi-tasking helps labor adjustment under the impact of digitalization. Another relates to the nature of the bottom-up and participatory approach of such activities. Practitioners know that management do not make surplus workers redundant when they are generated by its activities because it obviously kills motivation and the sustainability of the activities. The right way of labor saving is to pick out excellent workers from the production floor

and assign them to more creative tasks (Jin 2020, 107). Thus, the *Kaizen* approach seems effective in accommodating the introduction of digital technologies.

4. Discussion

4.1. Kaizen and non-cognitive skills development

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

First, social skills that are defined as the ability of establishing compatible and effective relations with others, 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 (Imai 2012; JICA 2018; Garcia-Alcaraz et al. 2018). 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. 5S 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. And it ends with developing consensus on how to keep the workplace in good condition among participants in the 5S process. Hence, through these practical experiences of group work and communication with coworkers, social skills can be developed.

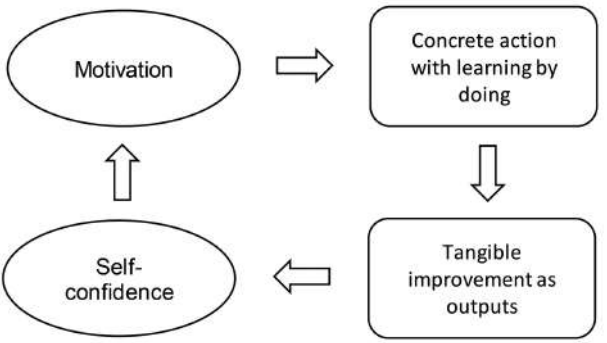
Second, self-control is defined as the capacity to alter one's own responses, especially to bring them into line with standards such as ideas, values, morals, and social expectations, and to support the pursuit of long-term goals. This self-control may relate to the mindset argued by Dweck (2006). If 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. (Imai 2012, 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. However, if we cannot create tangible improvements of quality and productivity through group work, 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 relation is one of important approaches to analyse the root cause of problems. In a simplified understanding, high motivation and morale creates better outputs. However, this way of thinking is sometime oversimplified, illustrates only one side of the coin, and is 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 like chicken and egg, and they are mutually enforceable (see Figure 7.2). There are many issues that we cannot know that define this relation of linear cause and effect. The relationship between poverty and environmental degradation is one of them 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' (UN 1987, para. 8). The relation between motivation strengthened by self-confidence and creation of tangible improvement of QPI is similar issue. And 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 (2009) argues, people can be proactive to make further actions. Therefore, a practical question is how we can strengthen both the motivation of people and creation of tangible improvement of QPI.



Source: Author.

Figure 7.2. Circular Relation of Motivation and Outputs

Third, perseverance/GRIT can be disaggregated[5] to passion and perseverance according to Duckworth (2016). She presents a GRIT Scale that consists of ten questions to measure one's GRIT and argues that 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 can support one's efforts like the *Kaizen* approach.

For developing non-cognitive skills in adults, there are not many arguments on how to this. Although GRIT and mindset can be changed through efforts, its methodology varies in each subject. And because it includes social skills, it is important to create 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.' 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' (Duckworth 2016, 2nd section of Chapter 12). This is similar to 'creating the attitude shared among all members of an organization who consistently pursue advanced levels of quality and productivity,' written in the *Kaizen Handbook* (JICA 2018). This implies that *Kaizen* type participatory practices or group work are effective in the development of perseverance/GRIT.

[5] Thaler and Koval (2016) write that GRIT stands for guts (G), resilience (R), initiative (I), and tenacity (T) in their book titled *GRIT to Great*.

4.2. Continuity as the essence of Kaizen

In Japanese, *Kaizen* is a general term that means change for better, or improvement. When Imai analyzed factors behind the success of Japanese manufacturing industry in the 1980s, he successfully picked up the word *Kaizen* and used it as an icon for a set of methodologies and tools. Although *Kaizen* is used as a technical term in industry and business in English, there are many activities called '*kaizen*' in Japan as it is a general term in every workplace and even in daily life. When people find something not going well or there is room for improvement, they may ask themselves what is necessary *kaizen*? When the word is used in the future tense, it means not only an action to be taken but people's will and motivation to make things better. Therefore, the way of thinking and mindset of people in promoting *Kaizen* always includes some sense of passion, motivation, and self-control to create change for the better. And if she or he is in a group or community, social skills are requirement to promote *Kaizen*.

Efforts to create change is always challenging compared with actions to maintain routine activities and is known as status quo bias. We need additional power to create changes. Continuity of small changes is a practical approach to encourage people to be positive to 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 particular demand or product, we may adapt ourselves to specific technologies and skills. Adaptation can be one of key strategies for success. However, we have to recall the words of an American organizational theorist that 'adaptation can preclude adaptability' (Weick 1979). When we make a 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* (1997), when we have successful experience in one field, we may deepen our efforts to be more successful in the same field and that gives us comparative advantage but deprives flexibility to change.

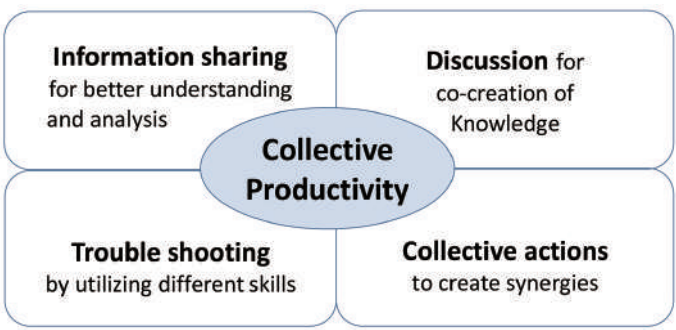
Under the current changing situation of technologies and global network, we need to keep our adaptability while adjusting to new situations. Although it seems to be a trade-off, continuity of *Kaizen* can be one of the answers to maintaining adaptability while adjusting actions. It can

give us opportunities to review another market if we maintain a broad-enough view to adjust the overall situation and compete in other market. Indication of the output '(v) creating strong organizations that keep evolving and developing' written in the *Kaizen Handbook* is an expression of the will and confidence of those practitioners who wrote the handbook.

With the concept of *Kaizen*, people can try many things to realize change for the better. 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. And continuity may ensure that the organizations keep adaptability while adjusting to the new situation in the changing business environment.

4.3. Pros and cons of group work

Aristotle stated that 'the whole is greater than the sum of its parts.' In this context, based on our empirical knowledge, we can assume that we create better collective productivity through group work than if we simply summed individual productivity. One of these situations is information sharing to reduce the cost of information. Knowledge co-creation through discussion and exchange of views from different perceptions is another. Synergies through collective action and troubleshooting through mutual support of workers are also expected (see Figure 7.3).



Source: Author.

Figure 7.3. Image of Collective Productivity

Because *Kaizen* practices include group activities, 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. And also there are some risk factors in the group approach that include (i) overpressure by the 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 and further improve working conditions.

Regarding team building in a company, Duhigg (2016) reports on an interesting analysis based on research of groups in Google. He points out that two behaviors are shared among good teams: (i) equality in distribution of 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.' Learning from research on team building in the USA, we need to analyze the impact of *Kaizen* promotion in each location where the social and cultural contexts are different.

5. Conclusion

The impact of this approach on the development of non-cognitive skills may not be so tangible at the beginning of *Kaizen* activities. However, as 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. 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 the perseverance to achieve something, which are the essence of the philosophy of *Kaizen*, if I may say.

There are many proverbs and wisdom to encourage our challenging spirit, and the perseverance and creativity to break through the status quo as necessary. These wisdoms include the mindset of 'Kites rise highest against the wind' by Winston Churchill, or 'in the middle of difficulty lies opportunity' by Albert Einstein, or 'Imagination means nothing without doing' by Charlie Chaplin. How we can make ourselves and others to

have such mindsets is an interesting agenda 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. And we can pick up specific skills and measure their development before and after *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 concept is a set of methodologies and tools to improve quality and productivity from the viewpoint of industry and the service sector. However, 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 you understand *Kaizen* depends on what you want to achieve through it. When you see the skill development of individuals achieved through its activities, you value not only profit and success of your business or organization but also the wellbeing of individuals in contact with it.

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