



Interim Report

Bridging the Supply-Demand Gaps of the Industrial Workforce:
Findings from a Skills Assessment of Garment Workers in Ethiopia

Skills and Knowledge for Youth Research Project

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Executive Summary

Recently the Ethiopian economy has grown significantly. Accordingly, the government has prioritized industrial skills development and expanded technical and vocational education and training (TVET). Nevertheless, the unemployment rate for TVET graduates is high, and little scholarly effort has been expended to empirically identify the exact types and domains of skills in which supply-demand mismatches happen. To measure the perception gaps between the supply and demand sides of worker skills and explain why mismatches occur, we conducted an assessment in which assessors from the employer side and the TVET trainer side concurrently graded the garment manufacturing vocational skills of the same workers. For this purpose, we developed a unique instrument that captures the knowledge and skills of workers in real work environments.

The labor market for the Ethiopian garment sector is characterized by the parallel existence of firms under foreign direct investment (FDI), domestic firms, and self-employment. Our study revealed that the skills demanded for employment in domestic firms and for becoming self-employed are very different in nature, yet the Ethiopian Occupational Standard (EOS) tries to overarch the needs of both. Our initial survey with FDI factory managers suggests that the workers in those factories are younger than those in domestic firms and a smaller percentage of them hold TVET certificates. Meanwhile, domestic firms, lacking the capacity to train their workers internally, often look for workers from TVET in order to benefit from external training services both before and during employment. Still, even among domestic firms, partnerships with TVET are limited due to lack of trust in the capacity of TVET institutions and trainers to prepare the workforce properly.

In terms of perceptions of workers' skills, there are several layers of mismatch not only between TVET and employers but also between TVET trainers and students. These should be considered comprehensively, not as separate issues, because the root causes are linked.

Our survey found that TVET trainers appreciate workers with skills covering all processes of garment production, including pattern making and analysis of garment structure in addition to cutting, sewing, and finishing. Meanwhile, factory managers, whose interests are focused on sewing and finishing skills, are very severe in grading workers' performance in those two domains. We also found that workers' overall performance depends greatly on their competence in sewing and finishing, and their level of competence is influenced by the availability of training and quality control in the workplace.

Another layer of mismatch is between TVET trainers and students. In TVET, we found

that many students aspire to be self-employed or in a supervisory position, rather than to be employed as floor workers in factories. At the same time, trainers are not confident about teaching the skills necessary for the types of work to which students aspire. Moreover, trainers are not very familiar with the latest machines used in factories. Therefore, there are gaps at both ends: On the one hand, trainers' perceptions about important skills do not match students' aspirations. On the other hand, the practical skills TVET trainers teach do not correspond to the expectations of industry. Meanwhile, workforce demand in the garment industry is mostly for machine operators on the production line—job opportunities that TVET graduates are not excited about—rather than for designers or pattern makers, let alone supervisors. Therefore, in spite of labor demand, TVET-trained people do not often apply for these jobs. Further, since TVET trainers' skills are not frequently updated, even though they themselves are confident about the skills they teach, factory managers do not consider them appropriate. A final layer of issues surrounds the mismatch between the EOS, which broadly covers skills from body measurement and sewing to pattern making and design, and the specific demands of the garment industry.

Last, the report points out that noncognitive or “soft” skills are as important as production skills. Our questionnaire found that factory managers highly value noncognitive skills such as punctuality, discipline, and tidiness. Also, workers' self-estimation of their own noncognitive capacities is an important determinant of their performance. One positive finding for TVET is that TVET graduates demonstrate higher levels of noncognitive skills than do workers trained only in the factories. For the formation of noncognitive skills, people need to be exposed to an environment in which their attitude and behavior are evaluated according to an ethical framework, a clear contrast to production skills, which can be formed rather quickly, without much school-based training or long work experience.

1. Introduction

Recently the Ethiopian economy has grown significantly. Accordingly, the government has prioritized industrial skills development and expanded technical and vocational education and training (TVET). Nevertheless, the unemployment rate for TVET graduates is high, and little scholarly effort has been expended to empirically identify the exact types and domains of skills in which supply-demand mismatches happen. Among the pillars of the country's latest national development plan, the Second Growth and Transformation Plan (GTP II) (2015/16–2019/20), are sustained economic growth and preparation of human capital for enhanced productive capacity. Accordingly, the Ministry of Education will continue to invest in TVET in the coming years in spite of ceaseless complaints from both the training institutions and employers about mismatches of expectations and limited collaboration. This mismatch seems to be a perennial problem inherent in the formal preservice training of workforces across the world, despite recent efforts of international development partners and developing-country governments to reform TVET according to the concept of competency-based training (CBT) and to promote the participation of industry stakeholders in designing the framework for training and skills assessment.

To break away from broad criticism of the mismatch between training and employment, the Skills and Knowledge for Youth (SKY) project of Nagoya University was launched to use our academic expertise to pin down exactly where the problem lies. To do so, we focused on the skills possessed by workers in contrast to the ones demanded by employers, instead of the structure of training or of job matching. The reason for this focus is that the contents and perceptions of skills are, after all, the foundation of any evaluation concerning the relevance of the structure.

This research focuses on the Ethiopian garment industry for several policy reasons. The most recent data rank Ethiopia as the second-largest foreign direct investment (FDI) destination among least-developed countries. The textile and garment industry is the fastest-growing and most highly prioritized sector in the country, and it has a great potential for employment growth. According to government statistics (Central Statistical Agency of Ethiopia 2013), this sector contributes nearly 1.5 percent of gross domestic product (GDP) and 9.01 percent of the country's industrial production. As for labor demand, the sector provides about one-fifth of total manufacturing employment, with approximately 45,000 workers. Accordingly, the TVET institutions in the country also assign the largest number of trainers and students to textile-related programs. In the city of Addis Ababa in 2013, out of 9,830 TVET trainees, 2,908, or 29.6 percent, were in textile-related programs, followed by construction and automotive programs (Addis Ababa City Administration TVET Agency 2015). In spite of this effort, a large number of TVET

graduates in these programs are left unabsorbed into the labor market. As of 2011, fields in which more than half of graduates were unemployed included weaving and textile engineering, together with woodworking and carpentry, and plumbing. At the same time, more than 50 percent of vacancies in large and medium-sized firms are expected to be filled by skilled production workers, compared with fewer than 10 percent by managers and professionals who hold educational certificates in the liberal arts (Geiger and Moller 2015). This fact points to a mismatch between labor demand and training, regardless of the expanded demand for and effort to train skilled workers, as well as an urgent need for adequate policy measures to mitigate it.

1.1 Design of the research

To measure the perception gaps between the supply and demand sides and explain why mismatches occur, we conducted a study in which assessors from the employer side and the TVET trainer side concurrently graded the garment manufacturing vocational skills of the same workers. For this purpose, we developed a unique instrument that captures the knowledge and skills of workers in real work environments.

As shown in Table 1, so far, the study has mostly focused on factories and TVET colleges in the vicinity of the capital city, Addis Ababa, and the sample size is relatively small. Still, with its unique research module, composed of several types of interrelated questionnaires and worker skills assessments, the project has made it possible to compare the opinions of different parties (employers, TVET trainers, and TVET experts), concurrently and objectively, in relation to the actual performance of workers in the workplace. In summary, this study can examine the following:

- What kinds of **mismatches** exist between the skill expectations of employers and those of training providers
- Whether the **actual skills** that workers have match the **expectations** of employers and trainers

The study is also designed to grasp the detailed contents of actual and expected skills comprehensively. Our module allows us to examine the interrelated effects of the following categories of skills on workers' productivity:

- **Cognitive skills:** Basic knowledge, literacy, and numeracy, which can be acquired in the classroom
- **Vocational skills:** Operational skills for production in specific sectors
- **Noncognitive (“soft”) skills:** Skills to apply knowledge, conduct appropriate interpersonal relations, follow rules, and make judgments in order to achieve a required result

Table 1: Summary of collected data

Row #	Survey type	Participating entity	Type of participants	Period conducted	Contents	No. in sample	Notes
1	Questionnaire	13 domestic Ethiopian factories	Production managers	Jan. 2016	<ul style="list-style-type: none"> • Factory characteristics • Demography of employees • Training of workers • Expectations for workers' skills • General evaluation of workers' skills 	13	Seven of these 13 factories sent workers to the skills assessment (Row 3 in this table).
2	Questionnaire	Five TVET colleges in Addis Ababa vicinity	Trainers in garment programs	Jan. 2016	<ul style="list-style-type: none"> • Demography of trainers and trainees • Curriculum • Cooperative training • Expectations for trainees' skills • General evaluation of trainees' skills 	30	
3	Practical skills assessment	Seven domestic Ethiopian factories	Machine operators with less than three years' experience	Jan. 2016	20 grading points on 4 activities related to (1) sewing, (2) pattern making, (3) understanding of garment structure, and (4) finishing	19 workers x 9 assessors = 171 observations	Assessors represented both the supply and demand sides of the skilled workforce (three factory managers, three TVET trainers, and three TIDI trainers).
4	Questionnaire	Seven domestic Ethiopian factories	Machine operators who took part in the skills assessment (Row 3)	Jan. 2016	<ul style="list-style-type: none"> • Socioeconomic background • Self-evaluation of skills • Self-reported personality • Self-reported attitude at work • Job aspiration 	19	

5	Questionnaire	Seven TVET colleges in Addis Ababa vicinity	Trainers in garment programs	Sept. 2016	<ul style="list-style-type: none"> • Demography of trainers and trainees • Curriculum • Teaching methods • Cooperative training • Expectations for trainees' skills • General evaluation of trainees' skills 	53	Follow-up survey of five TVET colleges studied earlier plus two additional colleges
6	Questionnaire	Seven TVET colleges in Addis Ababa vicinity	Trainees in garment programs	Sept. 2016	<ul style="list-style-type: none"> • Job aspiration • Perceptions of curriculum and teaching methods • Perceptions of cooperative training • Opinions about important skills • Perceptions of their own performance 	162	All available trainees at the seven TVET colleges in Row 5 (excluding those away from school for cooperative training)
7	Questionnaire	19 FDI factories in Bole Lemi I and Hawassa industrial parks	Human resource managers	Oct.–Nov. 2017	<ul style="list-style-type: none"> • Factory characteristics • Demography of employees • Training of workers 	19	

During the first fieldwork, in December 2015, the team contacted 35 garment factories listed as members of the Ethiopian Textile and Garment Manufacturers Association and based in Addis Ababa or its vicinity. Out of 35 factories contacted, 13 agreed to take part in the research. We visited these factories to administer the survey for factory managers (Row 1 of Table 1). We also asked managers to nominate a few workers who were relatively new to the factory (with one to three years of experience) to take part in the skills assessment in January 2016 (Row 3 of Table 1). We also asked them, if possible, to choose a mix of workers who had graduated from TVET and those who had not.

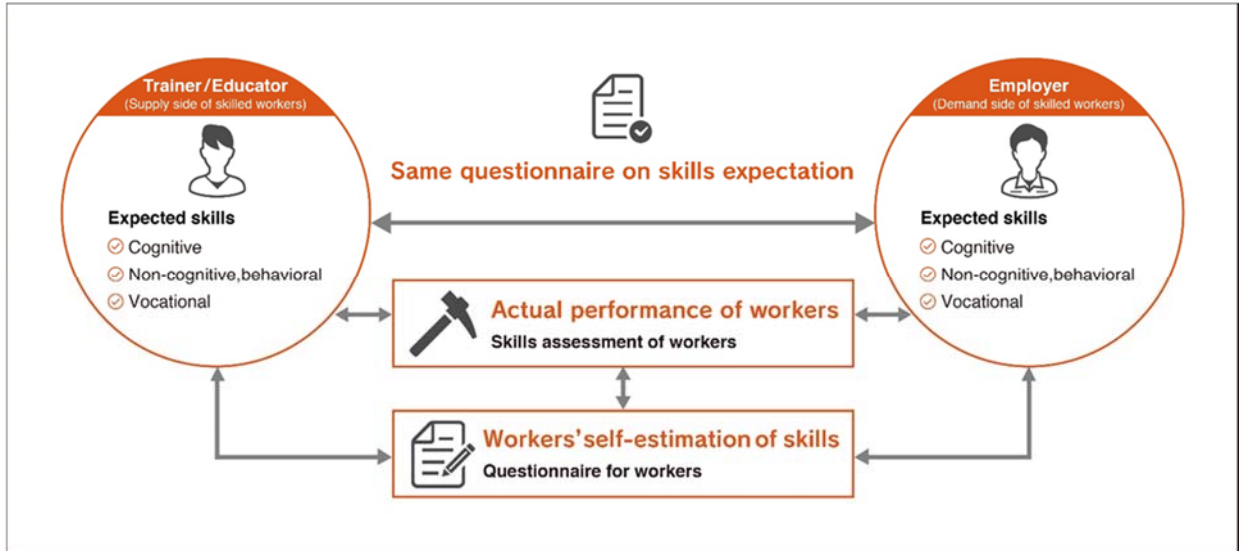
To obtain the views of TVET providers, after reviewing statistics from the federal TVET agency on the 27 public TVET institutes in Addis Ababa, we selected the top 5 in student enrollment in garment production programs, which prepare students for Levels 1–4 of the Ethiopian national garment occupational standards. According to statistics for 2014/15, the numbers of garment production students in these schools were as follows: Institute 1, 312 students; Institute 2, 368; Institute 3, 378; Institute 4, 368; Institute 5, 802 (Addis Ababa City Administration TVET Agency 2015). At these five institutes, we administered the survey for TVET trainers (Row 2 of Table 1) to a total of 30 garment production trainers.

In January 2016, 19 relatively new employees came to one site to take part in the skills assessment. They were also asked to fill out a questionnaire on their personal and family background, training and work experience, and attitude toward work (Row 4 of Table 1). To compare assessors' tendencies in grading the workers' performance, we invited equal numbers of assessors from three categories: three TVET institute trainers (supply side); three factory managers (demand side); and three experts from the Textile Industry Development Institute (TIDI), a training and research institute under the federal Ministry of Industry. In addition to information from the demand and supply sides, assessment by the TIDI experts was expected to add the perspective of industry specialists who are in a neutral position in the labor market.

The skills assessment examined whether the workers had the skills that both the supply and the demand sides expected. The purpose of having three categories of assessors at once was to let them assess the same group of workers concurrently. The questionnaires allowed us to compare differences in expectations by the assessors' institutional affiliation, experience, educational background, and so on. However, expressed expectation is not enough unless we examine how it is translated to the actual evaluation of workers in front of the assessor. One of the challenges common among scholarly efforts at comprehensive skills assessment is to control the bias that results from subjective evaluation. Thus, one of this study's methodological strengths is its design of having the same workers assessed by different groups of assessors at the same

time. This design also allowed us to contrast stated expectations with actual evaluations (see Figure 1).

Figure 1: Conceptual framework of the skills assessment module



After the skills assessment and the first questionnaire mentioned above, we did additional in-depth study, this time at TVET colleges that had taken part in the earlier questionnaire survey. Questionnaires were given to 53 trainers (Row 5 of Table 1) and 162 trainees (Row 6 of Table 1). The main purpose of this questionnaire in TVET colleges was to understand their teaching and learning practices, which in turn enables us to examine how much these practices reflect the specifications for competencies provided in the Ethiopian Occupational Standard (EOS) for garment production. The questionnaire also aimed to compare the perceptions of trainers and trainees concerning the level of difficulty and importance of different kinds of skills in relation to the perceived opportunities for employment after graduation.

Last, we collected baseline data from human resources managers of 19 factories in two industrial parks, namely, Bole Lemi I, on the outskirts of Addis Ababa, and Hawassa, in the capital of the Southern Nations, Nationalities and Peoples' Region, 285 km south of Addis Ababa (Row 7 of Table 1). So far, a large part of our study has involved a small number of medium-sized and small factories whose products are predominantly targeted to the domestic market. At the same time, however, we cannot overlook the fact that the Ethiopian garment industry is booming with the FDI of global companies that are attracted by its cheap labor. There is a sharply segregated dual labor market of domestic producers and FDI factories in industrial parks, making interventions for skills development challenging. Based on this observation and as the preparation for the next stage of study, we have begun collecting data on employee demography, on-the-job

training, and employment of the large-scale foreign-invested factories. The major survey in these industrial parks, including a skills assessment of workers, is scheduled for October 2018. Still, the present report will incorporate preliminary responses from these FDI factories for comparison with responses from the medium-sized and small domestic factories that took part in our earlier study.

1.2 Structure of the paper

The remainder of the report is structured as follows. Chapter 2 overviews the global and national context of skills development and the current state of employment in the garment industry in Ethiopia, comparing and contrasting the characteristics of employment and training in domestic and FDI factories. Chapter 3 examines differences in perception between TVET trainers and employers in the domestic factories, using systematically collected data to statistically examine domains and types of skills in order to find out where significant mismatches in expectations occur. In Chapter 4, we examine the characteristics of skills among workers who took part in the skills assessment. Our particular interest is the composition of skills that results in better labor market outcomes. Referring mostly to the results of the skills assessment and the worker questionnaire, this chapter aims to untangle workers' practical production skills and their noncognitive (soft) skills in relation to their educational, occupational, and socioeconomic backgrounds. Next, Chapter 5 focuses on teaching/learning at the TVET colleges, based on the questionnaire for TVET trainers and trainees. In addition to differential perceptions of what skills are important and what skills are difficult to teach or learn, the chapter discusses how cooperative training is perceived by different stakeholders, including employers.

The SKY research team co-hosted an international symposium to share initial findings with the Ministry of Education in August 2017. On that occasion, after the presentation of findings and panel discussion with the representatives of the Ministry of Education and TIDI, which is under the jurisdiction of the Ministry of Industry, we organized a participatory brainstorming event among TVET trainers, employers, and ministry officials. The issues raised in this workshop are summarized in Chapter 6, together with overall conclusions and policy proposals. Added to the findings from the empirical survey, the outcomes of this workshop serve as the basis for the policy proposals at the end of this report.

Large-scale data collection is scheduled for October 2018. Before the findings of the main study become available, we hope this report of the pilot study will convey key ideas and significant findings for the improved implementation of skills development policies in Ethiopia.

2. Context of skills development in the garment sector of Ethiopia

2.1 Macroeconomic outlook and labor market in Ethiopia

Driven by an intensive public infrastructure program as well as strong service and agriculture sectors, Ethiopia has achieved one of the fastest economic expansions in sub-Saharan Africa, averaging 10.9 percent per year between 2004 and 2014 (Moller 2015). However, regardless of the general improvement in its economic state, Ethiopia faces challenges to its value-added manufacturing and job creation. Manufacturing still represents only 4 percent of GDP, whereas the agriculture and service sectors together account for 90 percent. Unemployment has remained high, especially among youth in urban areas (World Bank 2015). The urban youth unemployment rate was 27 percent in 2005 and 24 percent in 2011, for a meager annual reduction rate of 1.9 percent. With regard to duration of unemployment, it is worth noting that 30 percent of youth spend more than 12 months unemployed before finding a job (Central Statistical Agency of Ethiopia 2014).

Beginning a few years after the turn of the millennium, the Ethiopian government initiated a fundamental reform of the TVET system and increased enrollment in TVET institutions. Two interrelated aspects of this reform are worth noting. First, the reform set the pace for an outcome-based TVET system, whereby trainees are trained to attain occupational competencies rather than by following a traditional curriculum. This CBT follows occupational standards developed by both trainers in vocational training institutions and representatives of industry. Another interesting aspect of this reform is that it pledges to provide cooperative training between vocational training institutions and firms as a means of increasing the relevance of training and facilitating the transition from school to work. The cooperative training system aims at providing 70 percent of training content at the industry site and 30 percent in the vocational institution. Spurred by the goal of making Ethiopia a middle-income country by 2025, the government emphasizes the training of mid-level technicians (Government of Ethiopia 2005). Therefore, overall TVET enrollment has grown at an annual rate of around 30 percent since the middle of the last decade, having climbed from 106,336 in 2005/06 to 308,501 in 2009/10 (Krishnan and Shaorshadze 2013). In tandem with the industrial policy of prioritizing the textile and garment industry, TVET institutes have assigned the largest number of trainers and students to textile-related programs.

Regardless of this emphasis on TVET, however, the unemployment rate remains high,

particularly among TVET graduates. Textile engineering is one of the areas in which more than half of graduates remain unemployed, together with woodworking and carpentry, weaving, and plumbing (Central Statistical Agency of Ethiopia 2014). Some analysts argue that one of the causes of the mismatch between training and employers' expectations is the inability of TVET institutes and their curricula to catch up with the fast pace of change in the economic environment and the consequent changes in demanded skills (Wolter and Ryan 2011). Others point to problems in the assignment system for students entering TVET programs. Krishnan and Shaorshadze (2013) argue, based on their interviews with TVET graduates, that the Ethiopian government is "command driven" and assigns students to TVET programs proportionally based on its labor development plan, without considering students' own preferences. Those students who are forced to learn skills for a sector not of their choice have little motivation to look for jobs in that sector. Matching TVET graduates with industry (the school-to-work transition) is another problem. Although there are public services that provide information for job seekers, many people find jobs through personal connections. Also, regardless of increased TVET student internships in the private sector (cooperative training), many employers are hesitant to employ interns because of the mismatch between their expectations and students' skills (Edukans Foundation 2009; Hailu 2012).

Given that improved relevance is the major objective of the current TVET reform, it is natural that there is a growing discussion about matching vocational training with industrial labor demands. At the same time, the research and policy debates to date have tended to focus on discovering the determinants and consequences of the skills mismatch rather than identifying the exact types and domains of skills in which the mismatches occur. Therefore, we do not really know whether the newly developed occupational standards have produced workers with skills more appreciated by employers than before. Further, we also do not know which domains of knowledge require more training and which ones are not in much demand.

2.2 Global discourse on industrial skills development and TVET reform in Ethiopia

Since the Education for All goals were adopted unanimously by UNESCO member states and multilateral organizations in 1990, the major focus of the global discussion on educational development has been expansion of access to basic (primary and lower secondary) education. Thanks to the concerted efforts of the international community, access to schooling, measured by increased enrollment, had seen a great deal of improvement by the middle of the

first decade of this millennium. This improvement opened the way for diversification of global concerns in this field: on the one hand, efforts still focus on improvement of quality and further quantitative expansion of basic education; on the other hand, a new focus emerged on the formation of employment and life skills (UNESCO 2012).

Despite its simple underlying assumption—that expanded school access would lead to poverty reduction—the universal basic education policy did not demonstrate a visible contribution to either better learning outcomes or increased employment, which would be the criteria for schooling to reduce poverty. To get a decent job and a stable life, knowledge and skills are preconditions. However, they cannot necessarily be gained by sitting in the classroom or swallowing the curricular contents that Ministry of Education experts consider important. In the last several years, there has been increasing awareness that to ensure a smooth transition from school to work, schools must enhance the relevance of knowledge and skills to actual work, reflecting the voices of the private sector in decisions on educational contents (King and Palmer 2013; Johanson and Adams 2004).

Based on reflections on these past practices, CBT has become a popular measure among developing-country governments and organizations that provide financial and technical support for TVET and skills development. CBT has been praised as a panacea for overcoming several challenges. First, it is said to improve the quality and quantity of education by incorporating various forms of training other than those in formal TVET institutions, while still allowing the trainees to acquire necessary job-related competencies. Along this line, recent discussions pay a great deal of attention to training that happens in the workplace, particularly in the informal sector, because in many developing countries, a large part of the workforce is employed in that sector. Second, industry-education coordination centered around “competencies” or “relevance” is considered to effectively bridge the economy and education in developing countries and is seen as the ideal way to develop the relevant vocational skills (Rauder and Maclean 2008). These ideas of competencies and relevance are not used uniquely in terms of vocational education; rather, they are embedded in a broader discussion aimed at refining the role of education in developing problem-solving skills among 21st-century learners facing the knowledge economy (Griffin, McGaw, and Care 2011; Rychen and Salganik 2003). In more recent discussions, the scope of training has broadened to include apprenticeship, nonformal education, and firm-based training (Chakroun and Daelman 2015).

South Africa was the first African country to adopt CBT, in the mid-1990s. Allais (2007) reported on the confusion that accompanied South Africa’s massive TVET reform, caused in large part by the ambiguity and context-bound nature of competencies, which made it difficult to

develop a common standard for certification. Regardless of the painful process that the pioneer went through, many African governments—including Ethiopia—followed suit, with growing support from donor organizations.

Ethiopia's 2010 Education Sector Development Program IV emphasizes the importance of assessing TVET students' learning outcomes (Federal TVET Agency of Ethiopia 2010; Government of Ethiopia 2010). The outcomes of competency-based TVET, which Ethiopia has adopted, are to be assessed based on the occupational standards, which are composed of "units of competence" set for respective levels of qualification in a framework from the production to the management level. *Competence* in this context means "the ability to perform an operation or activity within an occupation to a specified standard" (Federal TVET Agency of Ethiopia 2010, 7). The national qualification framework is based on the assumptions that the occupational standards developed with input from industries are relevant to work contexts and that the assessment of students' skills and certification based on the results indicate graduates' preparedness for the world of work. In Ethiopia, the assessment is organized by centers of competence (COCs), and those who pass it receive COC certificates, which are classified by skill level and industrial sector. For each industry, there are five levels of COC certificate, ranging from Level 1, subordinate workers with basic production skills, to Level 5, production managers. In the case of garment production, Levels 1 and 2 highlight sewing skills more than design or management, and are considered to be the competency levels of production workers. Meanwhile, Level 3 involves more supervisory roles with a little advanced production skills such as computer-based design and embroideries. In TVET colleges, student enrollment is concentrated at Levels 2 and 3. For example, in Addis Ababa, as of 2015, 44 percent of the students in textile-related courses were studying for Level 2 certification, followed by Level 3 (27.44 percent) and Level 1 (27.37 percent) (Addis Ababa City Administration TVET Agency 2015). In the last couple of years, the Ministry of Education has been pushing forward the policy of extending TVET education to Levels 4 and 5 in some key colleges, although the transition is still at its early stage.

There are some flaws in the assumption that CBT will remove various kinds of impediments to the market-responsive supply of skilled workers. First, CBT brought about parallel certification systems of, on the one hand, completion of designated school programs and, on the other hand, the actual competency to perform tasks in respective industry contexts. Therefore, completion of TVET courses that are supposed to prepare students for COC assessment have not produced very positive results, with a passing rate for COC assessments of less than half (Krishnan and Shaorshadze 2013). If one accepts these results straightforwardly, TVET colleges are failing to produce very many competent graduates. Second, although the

training is said to be outcome based, the current assessment system looks at test takers not in the actual work setting but at the assessment center. Also, despite the fact that problem-solving skills in the actual work setting comprise not only vocational skills in the use of the hands but a complicated combination of cognitive, noncognitive, and behavioral skills, assessments still focus exclusively on the performance of assigned tasks. Because they are based on discrete units of vocational skills to be checked, the occupational standards also fail to address the nexus of contextualized skills.

2.3 Employment in the dual labor market of the garment sector in Ethiopia

As indicated above, there is still a significant mismatch between the supply of and the demand for skilled workers, with a high rate of unemployment and a low COC assessment pass rate among TVET graduates. To understand the nature of the mismatch, we need to know the labor market in which skilled workers are employed. This section reviews the personnel characteristics of factories that answered the SKY project questionnaire. More specifically, it analyzes the responses from 13 domestic Ethiopian factories and 19 foreign-invested factories surveyed in 2016 and 2017, respectively (Rows 1 and 7 in Table 1).

Two distinct types of firms employ workers in the garment sector of Ethiopia: foreign-invested, export-oriented firms and conventional Ethiopian firms that supply products predominantly to domestic consumers. Significant numbers of self-employed people and microenterprises tailor clothes for individual customers or small orders. One of the challenges of the EOS on garment production is that it tries to cover the potential skill demands in all these diverse forms of employment, which naturally demand very different skills. Although our study has not yet examined the skills of self-employed workers, we have data on the two distinct employment markets in the formal sector. We look at the demographic characteristics of employees in FDI versus domestic factories for hints at the different types of workforce these two employers prefer. We also examine differences in the types and domains of skills covered in training provided by the two types of employers.

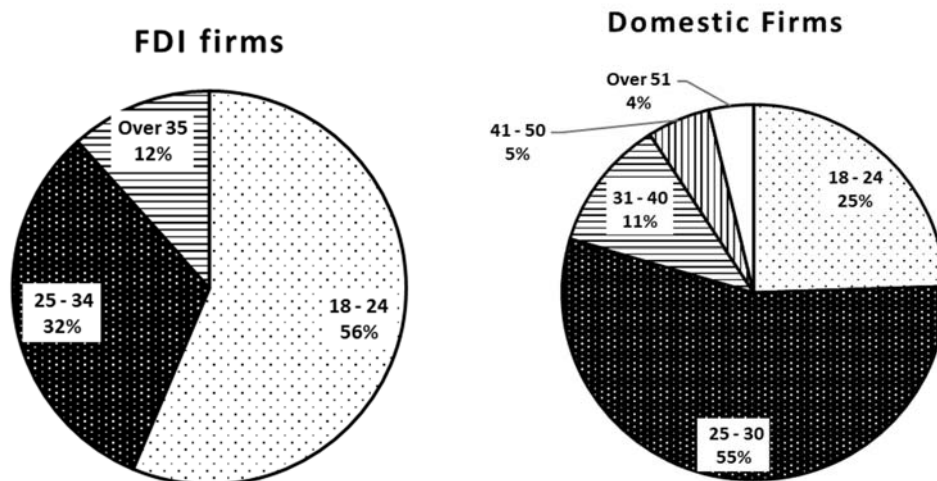
2.3.1 Demography of workers in foreign-invested and domestic firms

From October to November 2017, we conducted a questionnaire survey of 19 garment-production factories in the Hawassa and Bole Lemi I industrial parks. According to the information they provided, the majority of surveyed firms started their operation in Ethiopia after

2014 as part of the global apparel supply chain, exporting to 19 different buyers in eight countries, among whom H&M, PVH, and TCP are top three buyers. At the time of the survey, the surveyed firms employed 21,372 workers, of whom 97 percent were Ethiopian nationals. The remaining 3 percent of employees were expatriates, whose top three nations of origin were Sri Lanka (26 percent of all non-Ethiopian employees), China (19 percent), and India (18 percent). There was only 1 European employee and none from Africa outside Ethiopia. On average, there were 1,125 workers per firm, although the range was from 20 to 4,142.

Meanwhile, domestically owned Ethiopian firms outside of industrial parks, which we surveyed in 2016, were more diverse in age. The oldest had been operating since 1971 and the newest since 2013, with a median start date of 2006. The smallest had only 14 workers and the biggest had 670, with an average of 179. This means that the average number of employees was about 60 percent that of the foreign-invested companies. Unlike FDI factories, which are 100 percent exporters, these domestic firms combine different channels for selling their products. To the question about sales channels, which allowed multiple choices, 13 firms gave 44 responses, meaning that, on average, these firms had more than three different types of sales partners, varying from private individuals (15.91 percent) to small businesses (13.64 percent) to government agencies and public enterprises (13.64 percent) to international clients (13.64 percent). Six firms—fewer than half of the 13 firms surveyed—reported exporting some portion of their products, but these exports were not constant.

Figure 2: Age composition of workers in sample factories



A large proportion of all garment employees were female (85 percent in FDI firms and

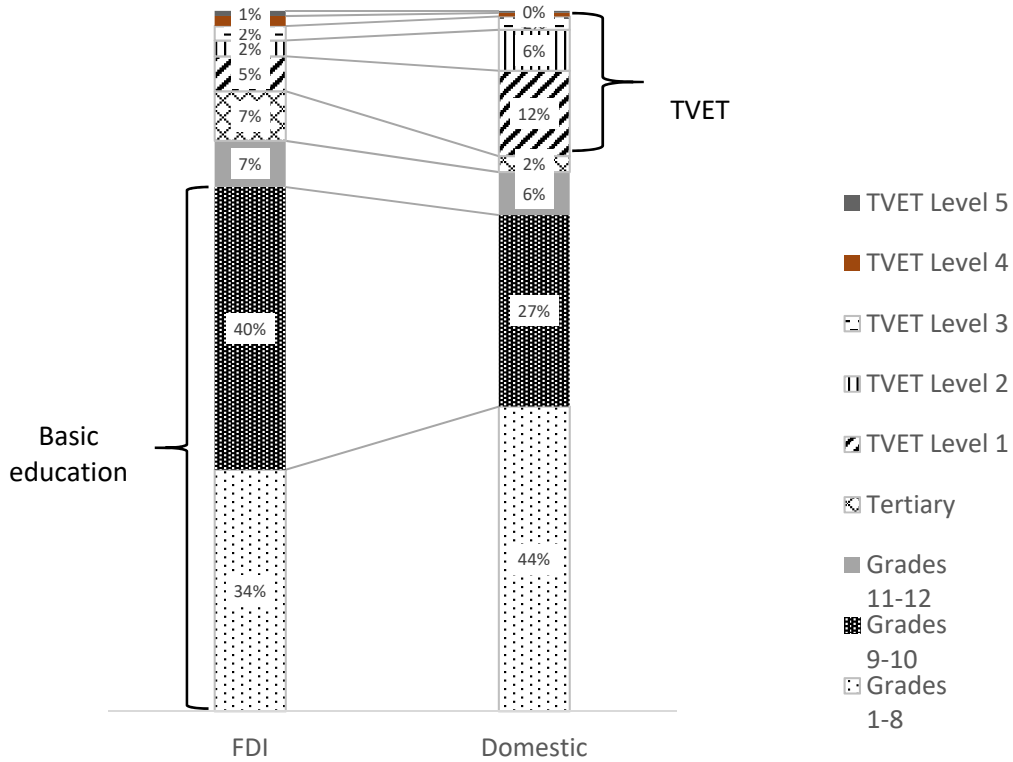
89 percent in domestic firms) and permanently employed (98 percent and 93 percent, respectively). Figure 2 shows the age composition of workers in domestic versus foreign-invested firms. More than half of workers in FDI firms were younger than 24 (56 percent), while in domestic firms, the population between 18 and 24 years old constituted only a quarter (25 percent). Because we used different age ranges in the questionnaires for the two types of firms, exact age comparisons are not possible; regardless, it is apparent that the workers in FDI firms were much younger.

In terms of worker education levels, both foreign-invested and domestic firms have limited numbers of workers with more than a basic general education (combining those having completed grades 11–12 and those with tertiary education): 14 percent and 8 percent, respectively (Figure 3). An overwhelming majority (74 percent and 71 percent, respectively) left basic schooling before completing grade 11. Among these basic education leavers, however, FDI firms are much more heavily weighted with workers who have completed grades 9 or 10, while domestic firms have a much bigger proportion of workers who dropped out of basic education after grades 1 through 8.

According to the authors' interview at Hawassa Industrial Park, to take the aptitude test for employment, which is conducted at the industrial park's grading center on behalf of all tenant firms, applicants are expected to have completed grade 8 to 10 and be between 18 and 35 years old. Similar preferences are heard from managers in Bole Lemi II. In contrast to domestic firms, which accept applicants from a broader spectrum of ages and school certificates, FDI firms have more focused criteria.

Another clear difference between FDI and domestic firms is the proportion of TVET graduates. In domestic firms, workers with TVET education (from Level 1 up to Level 5) constitute one-fifth of the total workforce (21 percent), which is almost twice as large a proportion as in FDI firms (11 percent). Particularly, the proportions differ significantly for TVET Level 1 (12 percent versus 5 percent) and Level 2 (6 percent versus 2 percent). Moreover, in FDI firms, workers with a COC certificate are only 8 percent (188 individuals) of the 2,294 workers who went to TVET. These percentages suggest that the certificates—either of competency or of school graduation—are not the significant factor that determines one's chance of employment in an FDI firm. Meanwhile, domestic firms rely more on TVET, which aims to prepare workers before employment. To investigate the causes for such differences, the next section reviews the practices of training in both types of firms.

Figure 3: Composition of workers by educational level



2.3.2 On-the-job training in foreign-invested and domestic firms, and relationship with TVET colleges

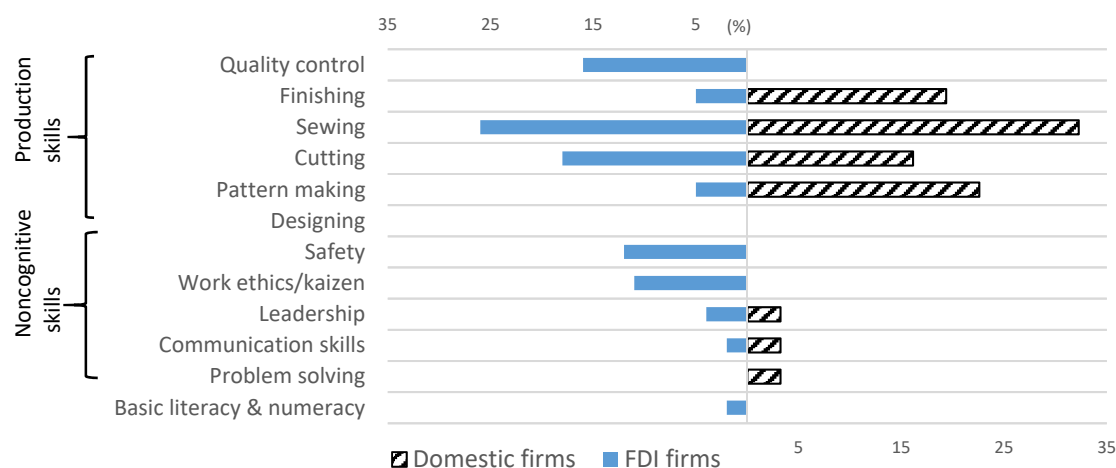
In response to our questionnaire survey, all FDI firms and domestic firms confirmed that they provide training opportunities for their workers. However, a worker’s chance of receiving on-the-job training varies across firms. Among FDI firms, some factories offer the chance of training to only one person out of three per year, whereas other firms provide such opportunities to all workers at least once a year and, in some cases, two or three times. As for domestic firms, the difference is sharper. In some firms, training is so rare an opportunity that less than 3 percent of workers can attend in two consecutive years. Out of 13 domestic firms surveyed, in only 3 did the rate of training participation in two years exceeded 100 percent, an indicator that all workers had a training opportunity at least once in two years. One such firm, whose general manager has a training facility and is very committed to developing the skills of its employees, even allows employees of other firms to attend its training programs. In this firm, the training ratio is exceptionally high, with a participation rate of more than 500 percent, meaning that each worker

has taken part in training programs five times or more over the past two year.

Interestingly, the size of a firm does not coincide with the frequency of its training opportunities. Some smaller firms conduct on-the-job training more actively, while some larger ones do not. It seems the provision of training during employment largely depends on the policy of the respective firm. Particularly in the case of domestic firms, it pretty much depends on the general manager's awareness of the importance of training and willingness to invest time and resources in it. As discussed in the next chapter, according to our survey conducted with workers from domestic firms, workers' performance on the practical skills assessment is significantly related to the firms they work for, and those employed in the firms that are serious about training demonstrate higher performance. Since the skills assessment of workers in FDI firms is yet to be conducted, we cannot yet demonstrate whether the same story applies to workers in FDI firms. Regardless, we should not overlook the importance of on-the-job training to upgrade skills.

The study also reveals a differential emphasis on training contents between FDI and domestic firms. As Figure 4 shows, in domestic firms, most of the training programs focus on production skills such as sewing, pattern making, finishing, and cutting. Only one factory (3.2 percent) mentioned having taught some noncognitive (soft) skills, such as problem solving, communication, and leadership. FDI factories also conduct a lot of training on production skills. Unlike domestic factories, which cover skills necessary for a wider range of production procedures, from pattern making to finishing, the training in FDI factories tends to focus more specifically on the process of cutting and sewing. FDI factories also train workers for quality control so that the sewn garments will fulfill the specifications of overseas clients, who are global apparel companies. Unlike domestic firms, which internalize all processes of garment production, beginning with design and pattern making, FDI factories receive orders for cutting and sewing based on the designs and patterns provided by the global companies. This difference of business context is reflected in the two types of firms' emphasis in the respective contents of on-the-job training.

Figure 4: Contents of on-the-job training offered, by firm type



Another feature of training in FDI factories is that it pays greater attention to noncognitive skills than training given in domestic firms. Many Ethiopian factories conduct training on workplace safety and work ethics, or *kaizen* (Japanese for “improvement”). *Kaizen* represents a series of activities, modeled after the practices of Japanese manufacturing companies, to improve workers’ attitudes to ensure safety, tidiness, punctuality, and other attributes necessary for enhanced productivity. At the request of the late Prime Minister Meles, the Japanese government brought *kaizen* to Ethiopia, and it is currently used in TVET colleges across the country as well as more than 200 companies. Although not necessarily the same as its original Japanese definition, in Ethiopia, the term is used with an additional connotation of the disciplined subordination of production workers. The emphasis on *kaizen* and safety training in FDI factories is mostly for machine operators, who are expected to do the “cut-and-saw” work accurately and efficiently, and not so much for supervisors and managers, who are expected to provide leadership and solve problems.

In both FDI and domestic factories, the majority of training is provided on site (75.5 percent and 62.0 percent, respectively), by either inside trainers or invited trainers. At the same time, domestic firms tend to utilize off-site training programs offered by organizations such as TIDI, the Ethiopian Textile and Garment Manufacturers Association, and private trainers more than do FDI firms. Overall, FDI factories tend not to rely on external training programs, either before or during employment. They appreciate workers who have left basic education but have good trainability, and they do not count on any vocational certificates, from either TVET colleges or COCs. To train their employees, they also do not use external services much, but instead hire

in-house trainers or invite trainers to provide training programs for their workers on site. For these “trainable” young people who have not finished basic school, they provide focused training on cut-and-saw skills and work ethics.

Meanwhile, domestic factories employ more people from TVET and rely on external training programs to upgrade their employees’ skills. Also, 8 out of the 13 domestic factories that took part in our survey (61.5 percent) accept interns and students from TVET for practical training, an arrangement that in Ethiopia is called *cooperative training*. These TVET students who come to factories for training are often paid salaries. During the period of cooperative training, the factory managers examine their potential and, if they meet expectations, employ them after graduation. As some managers explained, domestic factories do not have much capacity, in terms of both labor and finance, to train their employees in house. Therefore, TVET graduates who have already learned the basics of garment production can be good candidates for employment in such factories. Similarly, when they want to upgrade the skills of their employees, they often need to look for external programs that fit to their needs, rather than hire in-house trainers.

Regardless of the demand for a pretrained workforce, half of the domestic firms surveyed (seven) reported that they have never worked with TVET colleges in searching for new employees. The lack of partnership with TVET colleges is more serious in FDI firms, with 63.2 percent not working with them.

3 Differing perceptions of employees' skill needs: Comparison between trainers and employers¹

This chapter compares trainers' and employers' perceptions of workers' skills. The major source of data for this comparison is the practical skills assessment (Row 3 in Table 1) conducted in January 2016, matched with questionnaires for factory managers, TVET trainers, and workers (Rows 1, 2, and 4 in Table 1). Our assessment was uniquely designed to combine information on garment workers' production skills with data on the skills factory managers and trainers perceive as important. While it assessed factory workers' production skills, it also asked employers and trainers about their desired levels of cognitive, noncognitive, and production skills in order to compare differences in expectations between employers and trainers—that is, to look at both the demand and supply sides of worker skills. By doing so, this assessment can examine the domains of supply-demand mismatches along multiple skill dimensions. In addition to identifying the **supply-demand gap in expectations** for workers' skills, the skills assessment matched with the questionnaire allows us to identify (1) whether the expectations from the labor market and from the training institutions correspond to the **self-evaluations of workers**, and (2) whether **stakeholders' demographics and professional backgrounds** affect their perceptions of skills.

3.1 Methodology

The contents of the skills assessment of machine operators were designed based on the core competencies identified in the EOS. The activities were relatively simple and took about 30 minutes per assessment taker. With the advice of experts on quality management within garment factories, we prepared groups of activities to assess skills in four areas: (1) pattern development, (2) analysis of garment structure, (3) machine sewing, and (4) finishing of the garment. The points of assessment included the following (details are shown in Table 2):

1. Pattern making: We gave a shirt to workers and assessed whether they could draw the pattern from which its sleeves were cut. The assessment comprised five items, examining workers' knowledge of the pattern's key elements, such as armhole, sleeve cap, and sleeve bottom.
2. Garment structure analysis: We asked workers to compare two shirts and explain how their construction differed. This assessment had six items, mostly concerning the skills of

¹ This chapter is modified from a published article (Yamada, Otchia, and Taniguchi 2018).

- accurately measuring important parts of the garment and comparing two shirts accordingly.
3. Sewing: These activities tested the skills of sewing small pieces of cloth using the sewing machine. The assessment was made on five items, including the straightness and consistency of stitch, finishing without wrinkles or twists, and appropriate preparation of the needle and threads.
 4. Finishing: Finishing skills are those of ironing and folding, assessed on four items.

Assessors used a five-point Likert scale, ranging from 1 = *very unsatisfactory* to 5 = *highly satisfactory*, to grade the performance of workers. Across the four areas, there were 20 assessment items (Table 2). Instead of giving detailed scoring guidance through standardized assessment criteria, we let the assessors grade the workers' performance based on their own judgment. This decision was made for consistency with our objective of examining differences between employers and trainers in the relationship between their perceptions about skills and their assessment of a specific worker's skills.

Table 2: Checkpoints of skills assessment

Point of assessment	Domain
1_1 Can draw the rough shapes of the right and left sleeves	Pattern making
1_2 The drawn patterns distinguish the difference of the curve for the front and back sides of the sleeve	Pattern making
1_3 Can measure and write the rough length of the armhole	Pattern making
1_4 Can measure and write the rough length of the sleeve cap	Pattern making
1_5 Can measure and write the rough length of the sleeve bottom	Pattern making
2_1 Width of the body sections of two shirts	Garment structure
2_2 Length of the body sections	Garment structure
2_3 Diameters of the sleeves	Garment structure
2_4 Length of the sleeve from the top	Garment structure
2_5 Size of the neckline	Garment structure
2_6 Width of the chest	Garment structure
3_1 Straightly and consistently 1 cm inside the edge	Sewing
3_2 Without wrinkles or twists	Sewing
3_3 With an appropriate tension of the needle and bottom threads	Sewing
3_4 Straight and consistently within 1.0 mm and 1.5 mm from the hem	Sewing
3_5 Nicely done with a proper thread tension	Sewing
4_1 The shirt is ironed without wrinkles and distortions	Finishing
4_2 Both front and back sides of the shirt are ironed clearly	Finishing
4_3 Parts such as pocket, placket, tucks, and collar are ironed clearly	Finishing
4_4 The shirt is folded flat and clearly	Finishing

In addition, assessors responded to questionnaires designed to enable us to analyze their

grading patterns in relation to their respective backgrounds. For this purpose, the questionnaire for factory managers and TVET trainers contained identical question items on expectations for cognitive, noncognitive, and production skills but different items on respondents' backgrounds and their institutions/firms. In addition, the questionnaire for the workers who took part in the assessment asked them to assess their own production skills and behavior at the workplace.

3.2 Characteristics of workers' production skills

Using the point scores given to each assessment taker for 20 checkpoints by 9 assessors, we ran a factor analysis and attained four factors, namely, "pattern making," "garment structure," "sewing," and "finishing." These four clusters matched the four domains of vocational skills that the assessment was designed to examine. Factor loading of these four factors accounts for about 97 percent of total variation in the sample population, which indicates that our model satisfies convergent validity and that the further analysis based on these four factors closely represents the character of the performance of the workers on the original 20 assessment points. Based on this result, the following discussion uses these factors, which represent four domains of skills.

In addition to the separate scores for the four categories of tasks, we also include their combined scores in the analysis, because performance in the four categories of work turned out to be highly correlated and seemed to require analysis not only separately but also as a comprehensive whole. As Table 3 shows, the assessment scores for pattern making and garment structure are positively and strongly correlated (46.27 percent). The same applies to the relationship between sewing and finishing (40.83 percent) and, to a lesser extent, between garment structure and finishing (33.58 percent). Although sewing skills are not so much correlated with the skills of analyzing garment structure and making a pattern, they are significantly correlated with finishing skills. Based on these outcomes, one can argue that those workers who perform highly in sewing are also likely to be good in finishing, while performance in analyzing garment structure and making patterns is determined by different conditions. In other words, people who are good at sewing and finishing may not necessarily be the same people who have high scores for pattern making and garment structure.

Table 3: Relationships among domains of practical skills

Domain	Combined	Pattern	Structure	Sewing	Finishing
Combined	1				
Pattern	0.6918*	1			
Structure	0.7967*	0.4627*	1		

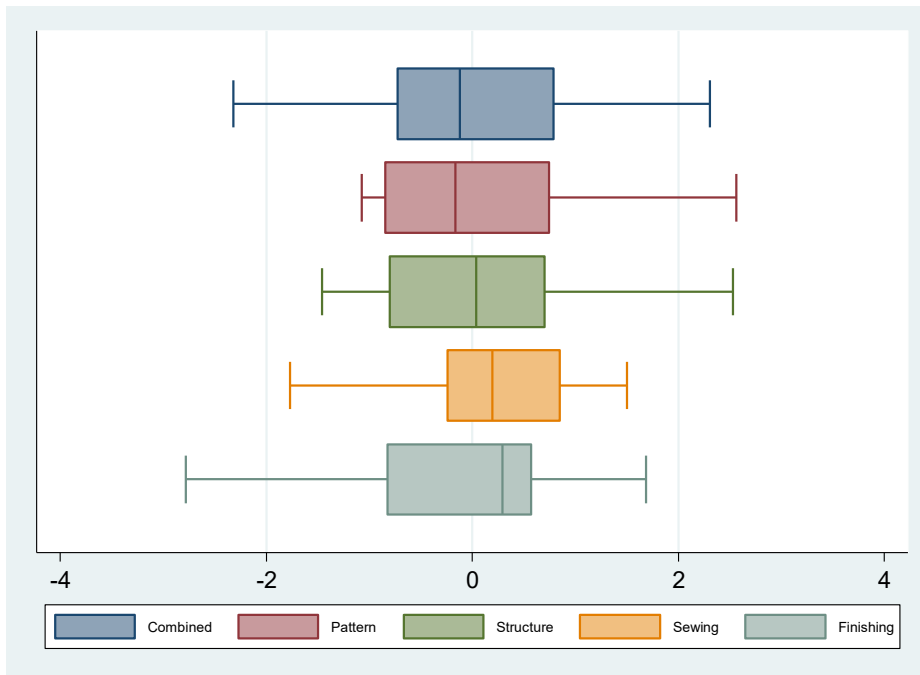
Sewing	0.6638*	0.2393*	0.2744*	1	
Finishing	0.6454*	0.2362*	0.3358*	0.4083*	1

Note: * Pairwise correlation is significant at 5 percent level (two-tailed).

Turning now to the distribution of the assessment scores, it is worth noting the differences in competencies among the sampled factory workers. Figure 5 shows the distribution of scores for each category of tasks. The width of the box represents the second and third quartiles, and the whiskers indicate the highest and lowest scores, while the vertical line in the center of each box shows the average. The average points and the score distribution for sewing and finishing are more toward the right than the other boxes, with few workers receiving low scores. On the other hand, pattern making assessment scores and, to a lesser extent, structure analysis scores are skewed to the left, showing that a limited number of workers attained high scores. In pattern making, few workers could carry out the required tasks, and the differences in capacity among workers were rather obvious. One of the significant reasons for the low performance in pattern making is that it is not a task frequently practiced by relatively new workers within the factory. Some interviewees in the factories argued that patterns are generally sourced from a large brand or created by clients, and most patterns are standardized for use in many operations in various countries. Moreover, some medium-sized factories can afford to hire a highly skilled designer—usually an expatriate—with advanced knowledge of computerized pattern making to create patterns in a specialized section of the factory.

In sum, the majority of garment factory workers' skills consist of sewing and finishing (including ironing) the products. In these two skill domains, the differences in performance across workers are smaller than in other domains, presumably because of daily practice and factory-based on-the-job training for upgrading skills. According to our study, workers from factories that provide more training outperform those from factories with fewer training opportunities. Skills for analyzing garment structure and making patterns varied widely among assessment takers, and more than a few people could not even grasp the idea of the required tasks. We found that those workers who did well in tasks related to pattern making and structure were TVET graduates. From this result, we can assume that these are the kinds of skills taught in school but not trained during employment. Therefore, the experience of preservice vocational education is the significant determinant of performance in these two areas.

Figure 5: Distribution of assessment scores



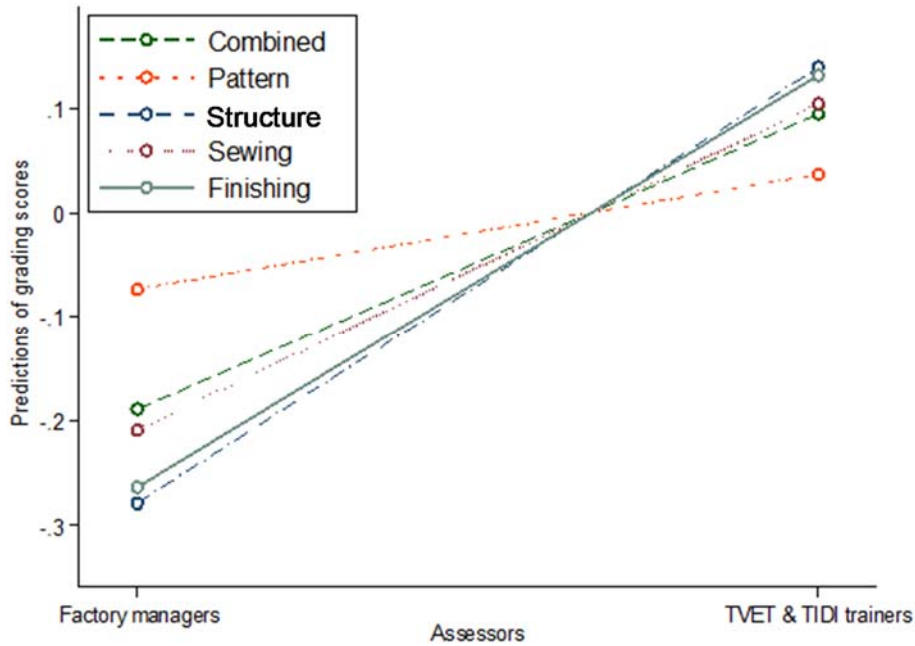
3.3 Gaps in production skill expectations between employers and trainers

Now we turn the analysis to the main question of our research, whether there is any difference in the pattern of skills grading between the supply and demand sides of garment production. The supply side is represented by trainers (including both TVET college trainers and TIDI trainers) and the demand side by employers. We originally treated TVET and TIDI trainers separately, assuming, as explained earlier, that TIDI trainers would represent a neutral position between the supply and demand sides. However, since the two groups' grading patterns were similar, we decided to consider them together.

Figure 6 contrasts the grading patterns of trainers and employers. We standardized the average scores for each category of tasks at 0 and plotted the scores given by the two groups of assessors—trainers and employers—based on their distance from the overall average. Figure 6 demonstrates TVET and TIDI trainers' general tendency to give higher scores for the performance of workers, whereas employers tended to be critical by scoring lower, even though both groups of assessors were looking at the performance of the same group of workers concurrently. In other words, the actual performance, the workers to be evaluated, and the context of the assessment were all the same. Therefore, this clear and consistent tendency in grading can be considered to represent a difference in expectations when each respective group looks at the tasks done by workers. In addition, the slopes of the lines are steeper for garment structure, sewing, and finishing,

meaning that the mismatch in expectations between the supply and demand sides is bigger in these domains of skills. As explained above, the scores for pattern making are generally low, resulting in a lack of statistically significant impact of any factors on pattern making, including the variable for trainer-employer difference.

Figure 6: Perception gap in garment production skills



One reason for the difference between trainers and employers may be the different approaches to training on the respective sides. TVET colleges’ training aims to develop all-rounders who can follow the steps of garment making from measuring the body of a customer to making a pattern, sewing, and finishing the garment, so that trainees can be either self-employed or employed at a factory. For instance, the TVET model curriculum for Level 1, used in sample schools, allocates 24.28 percent of total time to pattern making and fabric layout and cutting, 25.97 percent to sewing, and 8.72 percent to noncognitive (soft) skills, among others. Level 2 allocates no time to sewing but puts more emphasis on pattern making and finishing, which account for 39.92 percent and 30.11 percent, respectively, of total time (Addis Ababa City Administration TVET Agency 2010).² Meanwhile, when factories employ new workers, they provide initial intensive training that normally lasts for approximately two weeks. After that,

² This is probably because students are supposed to do cooperative training in factories for about 70 percent of their training time. However, as discussed elsewhere in this report, the implementation of cooperative training faces several constrains, reducing its effectiveness.

workers are mainly initiated into sewing. Workers learn other skills, such as ironing and embroidery, as they become more experienced. Therefore, the bigger the factory, the less exposure newer workers have to pattern and structure, whereas those in smaller factories tend to perform a wider variety of functions.³ Few factories give reading and writing tests, since their main goal in hiring is to supply ready labor to the sewing lines. These differences in the focus and mode of training reflect the differing expectations in the school and in the factory. Since they assess the quality of work on a commercial standard, factory managers tend to be severe in their assessment, particularly on sewing. TVET trainers, on the other hand, are educators who assess performance in comparison with the average of the cohort and based on the criteria of the EOS, which are quite comprehensive.

Second, the differences in education and work experience between trainers and employers seem to be another cause of the gap in their assessments of skills in structure, sewing, and finishing, as well as combined skills. When trainers were asked about their work experience in a factory, the majority reported having none, a common pattern among TVET trainers, who mostly transit directly from their own education. Conversely, many current employers have long experience working on the production line, having climbed the ladder to become a supervisor and then a manager, and finally having opened their own business. Some of them even serve as trainers themselves in their factories due to the high demand for sewing skills.

Related to the second point, yet another important reason for the divergence in grading seems to be the limited interaction between TVET colleges and factories. In the Ethiopian dual TVET system, training is conducted in both schools and factories. The role of TVET trainers in the cooperative training portion of the program is very limited. Currently, their role is to seek enterprises for apprenticeship, prepare training plans, and follow their implementation, among others. However, trainers do not take an active part in the execution of the cooperative training, which is solely administered by the factory supervisor. This lack of cooperation and dialogue reduces the efficiency of the cooperative training and its spillover effects to other TVET students who might indirectly benefit from trainers' exposure to current industry needs. Of the 30 TVET trainers who responded to our questionnaire, only 28 percent acknowledged having used the machines and equipment of factories, and 18 percent said they had provided consulting services to factories. During our fieldwork we defined a number of additional issues in relation to TVET-factory interaction, one of which is that factory managers are not willing to make their machines and equipment available for TVET training due to lack of insurance and the possibility of misuse.

3 For instance, one participant in the skills assessment had no experience in ironing, despite the fact that she had been working in a factory for a couple of years.

Of the production managers who were interviewed, 54 percent (7 out of 13) indicated that they had never worked with TVET institutes to hire new employees, and only 23 percent said they had accepted interns from TVET institutes.

3.4 Relationship between skills expectations and assessments

Thus far, we have argued that the gaps in the assessment of workers' garment skills between TVET/TIDI trainers and factory managers are due to their respective work contexts and backgrounds as well as their limited interaction with each other. This section analyzes how the assessment of workers' actual skills is related to the assessor's estimation of young workers' skills in general, as expressed in the questionnaire. Our questionnaires also included questions about assessors' impressions of workers' cognitive and noncognitive competencies, but here we focus on production skills because of their comparability with the results of the skills assessment. To this end, we first provide some descriptive evidence on the differing estimation of workers' garment production skills between factory managers and TVET trainers.

The analysis of the assessor questionnaire, summarized in Table 4, indicates that TVET trainers estimate the general level of young workers' skills to be higher in all domains of skills, partly because of their tendency to evaluate generously and partly because of their lack of exposure to the reality in the factories. The mean scores that the factory managers gave for the assumed skills of young workers are lower for all areas, meaning that the managers tend to perceive newer workers as not well prepared for their tasks. Specifically, there are large gaps in the estimation of workers' skills between TVET trainers and factory managers in sewing and structure, at 0.586 and 0.575 percentage points, respectively. One possible explanation for higher scores from the TVET trainers is that they spontaneously give high scores on most of the items because they are required by the curriculum to transmit all of those skills. On the other hand, factory managers tend to be critical of skills trained in places other than their own factory, including TVET colleges.

Another important reason for the differences in scoring is that factory managers value noncognitive skills more highly than TVET trainers do. The issues related to noncognitive skills will be discussed further in the next chapter. In fact, in addition to technical skills, factory managers appreciate skills such as punctuality, obedience, and discipline, whereas TVET trainers value literacy and numeracy skills. It is worth noting, however, that the noncognitive skills that employers value receive only 8.72 percent and 3.51 percent, respectively, of teaching time in the curriculum of TVET Levels 1 and 2 (Addis Ababa City Administration TVET Agency 2010).

Table 4: Skills that TVET trainers and employers consider young workers generally to have

Variable	Total		Factory manager		TVET trainer	
	Mean	SD	Mean	SD	Mean	SD
Combined	4.026	0.557	3.744	0.785	4.148	0.379
Pattern	3.767	0.726	3.564	1.031	3.856	0.544
Structure	4.209	0.818	3.808	1.234	4.383	0.486
Sewing	4.140	0.560	3.731	0.665	4.317	0.404
Finishing	4.116	0.697	3.962	1.108	4.183	0.425

Note: Mean = average; SD = standard deviation.

Having discussed the difference in estimation of workers' garment production skills between factory managers and TVET trainers, we now move on to discuss how these impressions influence the assessors' evaluation of workers' observed skills. Table 5 displays the results of a regression analysis using the five categories of skills as dependent variables to determine whether the assessors' general impression about garment workers' skills affects their grading of the performance of actual workers. In conducting this analysis, we statistically control for the effects of individual workers' experience, age, gender, and education, as well as the factories where they worked, so that we can examine, without being affected by other factors, the interaction between assessors' grading of assessment takers' actual skills and their general impression of workers' capacity. Table 5 shows that the assessors' impressions of workers' general capacity significantly affect their grading for sewing, finishing, and the four domains combined. The lack of statistical significance in pattern making arises from the fact that even the trainers recognize the low demand for these skills in the labor market.

Table 5: Effects of general impression of workers' skills on grading scores

	(1) Combined	(2) Pattern	(3) Structure	(4) Sewing	(5) Finishing
Impression about workers' skills in general	0.384**	0.014	0.202**	0.674***	0.551*
	(0.181)	(0.206)	(0.100)	(0.140)	(0.133)
Worker control	Yes	Yes	Yes	Yes	Yes
Factory control	Yes	Yes	Yes	Yes	Yes
Constant	-1.848**	-0.897	-1.179***	-1.892***	-1.305**
	(0.730)	(0.735)	(0.444)	(0.600)	(0.569)
N	171	171	171	171	171
R ²	0.669	0.686	0.667	0.683	0.718

Note: All estimates control for years of experience, age, gender, education, and factory where

employed. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

3.5 Discussion and policy implications

This chapter set out to identify the areas of garment production in which Addis Ababa TVET trainers' impressions about workers' general capacity and their assessment of workers' observed skills differ from those of factory managers. A key strength of the present study is that we designed an assessment based on the EOS for garment workers (Levels 1 and 2) and asked TVET trainers and factory managers to concurrently evaluate the skills of the same set of workers with one to three years of experience. We focused on skills in four domains of garment production: pattern making, knowledge of garment structure, ability to assemble fabric with a sewing machine, and finishing of a garment. We used the same four domains in a survey of both factory managers and TVET trainers on the skills they said they consider young workers generally to have. The combined dataset allowed us to study gaps in both impressions and actual assessments of workers' performance between factory managers and TVET trainers. Our first set of results shows the existence of gaps in assessing workers' knowledge of garment structure, ability to assemble fabric with a sewing machine, finishing skills, and combined performance. Pattern making was the only task in which the assessment pattern of TVET trainers matched that of employers. The lower competence of workers in pattern making seems to be one of the main reasons for the lack of a statistically significant difference in this domain. Another important factor is that pattern making is not a task frequently performed by less experienced workers in a factory.

We identified three main reasons for the gaps in assessment patterns between the supply and demand sides of the trained workforce. First, despite the fact that both TVET trainers (on the supply side) and factory managers (on the demand side) conduct some workforce training, the former at formal TVET colleges according to the national occupational standards and the latter in the factory, they have distinct market-oriented priorities and modes of training, which affect their focus of assessment. Second, the educational and work experience of assessors themselves affects their grading behavior. Third, gaps occur due to limited interaction between the supply and demand sides. The new TVET curriculum in Ethiopia pledged to offer cooperative training as a bridge from classroom to factory for TVET trainees. At this moment, however, the implementation of cooperative training does not involve trainers very much, and collaboration between TVET colleges and factories is still limited. If well implemented, cooperative training, in addition to its benefits for trainees, would also allow trainers and employers to learn from each other and reduce perception gaps.

Our second set of findings contrasted the trainers' and managers' stated expectations for

the skills of relatively new garment workers with their actual evaluations of workers. The results were obtained by matching the questionnaire for TVET trainers and factory managers with the results of the skills assessment. We found that the TVET trainers' expectations concerning garment production skills are statistically significantly different from those of the factory managers, in that the former have higher expectations and the latter are very critical. Interestingly, we found that these differences in expectation affect the evaluation of workers' skills by causing the two groups to use different evaluation criteria. Finally, we show that factory managers have a greater appreciation for noncognitive skills in new workers, such as discipline, punctuality, and obedience, than TVET trainers have, perhaps because the EOS emphasizes these skills less than other skills. The TVET curriculum, based on the EOS, allocates less than 10 hours for such soft skills at Levels 1 and 2, the level of line operators in factories (Addis Ababa City Administration TVET Agency 2010).

The evidence from this study suggests that, first, if it is meant to prepare the workforce for factories, the EOS should be updated to match the skills expected by employers, especially for TVET Levels 1 and 2. A related challenge, however, is that a significant proportion of TVET graduates become self-employed instead of being employed in the factories. While the skills demanded for self-employment are different from those needed in factories, the EOS seems to try to meet the needs of both groups. Second, there is a need to reform the methods of assessing the competence of TVET trainees, given the different expectations and criteria of evaluation in use on the demand and supply sides of the skilled workforce. Finally, interventions for enhancing the partnership between training institutions and factories, including cooperative training, should be considered in order to increase the relevance of school-based TVET.

4. Factors influencing the formation of noncognitive (soft) skills and the role of TVET⁴

As discussed in Chapter 3, questionnaire responses revealed that stakeholders, particularly factory managers, highly value noncognitive skills. We know that workers with a similar level of production skills do not necessarily perform with equal efficacy in an actual work setting. Therefore, what makes their performance differ must be their other capacities, either cognitive (literacy and numeracy) or noncognitive (attitudinal). Based on these observations, this chapter analyzes the factors that determine workers' level of noncognitive skills, in contrast to their production skills. As explained in Chapter 3, the practical skills assessment focused only on production skills. However, the questionnaires for all participants—workers, factory managers, and TVET/TIDI trainers—included questions about noncognitive skills. The analysis in this chapter largely relies on the self-evaluation of workers who took part in the practical skills assessment. By doing so, we can analyze the link between their performance of production skills and their self-estimated noncognitive skills.

4.1 Methodology

First of all, we composed a variable on noncognitive (soft) skills using 10 items in the questionnaire for workers who participated in the skills assessment described in Chapter 3. In each item, workers were asked to report their behavioral tendency for a given situation, based on a five-point scale ranging from 1 = *not likely at all* to 5 = *very likely*. Out of these 10 question items, we used factor analysis to construct a unified variable. During this process, we eliminated 3 question items that had little uniqueness and did not seem to contribute much. The factor analysis on the remaining 7 items yielded four factors, presented in Table 6. Factor 1 turned out to be able to explain more than 70 percent of the noncognitive skills of all workers sampled, with a contribution of 70.60 percent (see the shaded column of Table 6), so we used Factor 1 as the variable to represent noncognitive skills for further analysis. The items that turned out to constitute the relevant noncognitive skills of garment-sector workers are those related to keeping a clean, tidy, and organized workplace; being disciplined; and reporting to supervisors regularly on the progress of work and any problems related to it. Therefore, investigating the factors most closely related to workers' level of these noncognitive skills will reveal the avenues, such as

⁴ This chapter is modified from a published article (Yamada and Otchia, forthcoming).

experience, household characteristics, and background of education and training, that may offer an effective means of improving noncognitive skills through TVET.

Table 6: Question items that constitute noncognitive skills

Question item	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
I will continue a routine task even if there are some defects. (Reverse question)	0.2228	-0.1600	-0.1042	-0.0684	0.9092
I wash my hands when I return from a break.	0.3177	0.4072	-0.1311	0.1261	0.7002
I report any problem with the sewing machine to the leader.	0.3585	-0.5065	0.1762	0.1134	0.5710
I can tell whether the sewing machine is in good or bad condition.	0.5051	0.0571	0.3149	-0.1439	0.6218
I clean the sewing machine regularly.	0.5030	0.1315	-0.1678	-0.2140	0.6557
I clean the workplace after the day's work.	0.6037	-0.1879	-0.2034	0.1385	0.5397
I report unsafe working conditions to my supervisor.	0.2402	.04425	0.2076	0.1300	0.6865
Eigenvalue	1.20935	0.69968	0.27088	0.13601	
Proportion (%)	70.60	40.84	15.81	7.94	

To continue the analysis, we used information gained from the questionnaires for factory managers and workers, as shown in Table 7. To understand the characteristics that may influence the formation of noncognitive skills, we contrasted the relationship of workers' self-reported noncognitive skills with the variables in Table 7 to the relationship of their assessed production skills with the same set of variables. That is, with the workers' scores on production skills and their self-reported noncognitive skills as dependent variables, we looked at the independent variables listed in Table 7. The independent variables fall into three categories, work-related experience (record of employment before the current factory, whether the worker is currently in charge of sewing, and whether the worker graduated from TVET), workplace conditions (availability of on-the-job training and whether or not the factory exports), and workers' socioeconomic background (household size, wealth, parents' education, family members' involvement in the garment industry, and experience of migration).

Table 7: Variables used for analysis

Variable	Definition	Source of data
Production skills	Combined score	Practical skills assessment (see Chapter 3)
Noncognitive skills	Factor analysis	Workers' questionnaire
Job experience	1 = worked before, 0 = first job	Workers' questionnaire
In charge of sewing	1 = main task is sewing	Workers' questionnaire
On-the-job training	1 = firm provides on-the-job training	Factory managers' questionnaire
Exporter	1 = firm exports	Factory managers' questionnaire
TVET	1 = TVET graduate	Workers' questionnaire
Household size (log)	Logarithm of number of household members	Workers' questionnaire
Wealth index	Factor analysis of household items	Workers' questionnaire
Family involvement in the garment sector	1 = yes	Workers' questionnaire
Father's education	1 = no education, 2 = primary or secondary, 3 = TVET	Workers' questionnaire
Mother's education	1 = no education, 2 = primary or secondary, 3 = TVET	Workers' questionnaire
Migration	1 = school was in Addis Ababa	Workers' questionnaire

4.2 Determinants of noncognitive (soft) skills in comparison with production skills

Table 8 shows the result of multiple regression analysis using the variables listed in Table 7. Model 1 is about the factors influencing vocational (production) skills and Model 2 is about those affecting noncognitive skills. In the process of analysis, we found that the educational background of workers (whether TVET graduate or not) is closely linked with the variables that indicate their socioeconomic background, such as household size, wealth, parents' education, and migratory history (whether they are originally from Addis Ababa or migrated from elsewhere). Including variables that are endogenous to educational background in further analysis, in parallel with other variables, would increase the error of the analysis through multicollinearity. Therefore, we conducted this analysis in two steps. The first step is shown in columns (2) and (4) of Table 8, which use workers' educational background (TVET or not) as the endogenous variable and socioeconomic conditions as exogenous variables. Doing so controls for the effect of socioeconomic factors, which are not the direct determinants of skills themselves but indirectly influence skills through the TVET variable. Therefore, the second level of analysis, shown in

columns (1) and (3), indicates the magnitude of influence from factors that directly influence the levels of production (vocational) skills and noncognitive skills, respectively.

Table 8: Determinants of vocational and noncognitive skills

Determinant	Model 1: Vocational skills		Model 2: Noncognitive skills	
	Factors of direct influence	TVET graduate or not	Factors of direct influence	TVET graduate or not
	(1)	(2)	(3)	(4)
Job experience	0.292 (0.186)		1.694*** (0.174)	
Main task is sewing	-0.508* (0.264)		0.530* (0.293)	
On-the-job training	0.727*** (0.184)		0.011 (0.377)	
Exporter	-1.321*** (0.182)		1.376*** (0.184)	
TVET	0.065 (0.172)		1.129*** (0.401)	
Household size (log)		0.148** (0.072)		0.188*** (0.063)
Wealth index		0.157*** (0.014)		0.148*** (0.019)
Family involvement in the garment sector		-0.373*** (0.065)		-0.282*** (0.079)
Father's education = primary		-0.664*** (0.062)		-0.559*** (0.092)
Mother's education = primary		0.233*** (0.079)		0.209** (0.082)
Mother's education = TVET		-0.454*** (0.080)		-0.674*** (0.078)
School was in Addis Ababa		0.610*** (0.052)		0.576*** (0.074)
Constant	0.748*** (0.287)	0.161** (0.063)	-2.309*** (0.441)	0.075 (0.059)
Observations	171	171	171	171

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.2.1 Background of TVET graduates

First, we will examine the factors determining the educational backgrounds of workers. As explained earlier, all participants in the skills assessment were female. Those with formal education through TVET were generally from relatively better-off families and grew up in Addis Ababa and its vicinity. Columns (2) and (4) of Table 8 indicate a strong positive correlation of having graduated from TVET with the variables “wealth index” (0.157 and 0.148 under Models 1 and 2, respectively) and “school was in Addis Ababa” (0.610 and 0.576, respectively), all at the significance level of $p < 0.01$. On the other hand, having a family member who works in the garment industry (-0.373 and -0.282 under Models 1 and 2, respectively) and having a mother who graduated from TVET (-0.454 and -0.674, respectively) both demonstrate a negative correlation with the worker’s being a TVET graduate (all at the significance level of $p < 0.01$). This result means that there is no atmosphere of artisanship at home, such as working in garment factories or managing a tailor shop in town, that prompts these women to attend TVET. Finally, TVET graduates’ fathers’ level of education is relatively high. The variable “father’s education = primary” shows negative correlation with TVET graduation (-0.664 under Model 1 and -0.559 under Model 2, at the significance level of $p < 0.01$), implying that fathers’ education is secondary or higher.

In sum, among the garment factory workers studied, TVET graduates are from better socioeconomic conditions than nongraduates. This tendency also hints at the possibility that TVET graduates have different aspirations for future employment and different reasons for working in the garment industry than those who arrive at the factory straight from basic education. In households whose members have higher levels of education, parents tend to let a child continue formal education without terminating it after basic education. Those whose examination results do not permit access to the academic track go to TVET. As mentioned earlier, the Ethiopian government is increasing the intake of TVET students steeply, and it assigns students their school and major in a rather top-down manner, resulting in some students’ being allocated to programs for which they have no passion. Some observers argue that under these circumstances, students’ motivation for learning will be lower, and even once they are employed, their commitment to work will be lower (Edukans Foundation 2009; Hailu 2012). Garment and textile programs are among those expanding fastest in TVET. As discussed earlier, GTP II (2015/16–2019/20) highlights TVET as a significant means of industrial development and strengthening. Ironically, this policy measure itself is partially causing the structural mismatch between the supply and demand sides for skilled workers. This issue should be considered jointly by the ministries and offices involved in industry development and training.

4.2.2 Noncognitive versus production skills

Next, we examine factors related to the competencies—both production and noncognitive—of workers, including educational background, as just discussed. Model 1 (in Table 8) shows that TVET education is not a significant determinant of production skills, while inversely, the effect of on-the-job training on production skills is significant (0.727 at significance $p < 0.01$). Although TVET provides a broad curriculum, including body measurement, design, pattern making (both computer-based and manual), cutting, sewing, and finishing, at least for employment at the factory, such an education in TVET seems not to have led to the formation of production skills. Rather, those who work in factories that are active in training their workers score higher in skills assessment.

This result corresponds with our argument in Chapter 3 that, although the EOS tries to kill many birds—that is, to meet many different types of employment demands—it may fail to meet any of the specific needs of FDI firms, domestic firms, and self-employment. Regarding the domestic firms in Addis Ababa at least, our study confirms this mismatch of training.

Table 8 also shows that work experience does not much affect the performance of production skills, implying that in the factories, the formation of production skills does not require much accumulation of experience, and the effect of on-the-job training is rather instant.

Meanwhile, the determinants of noncognitive skills (Model 2 in Table 8) are very different from those of production skills. First of all, TVET graduates and workers with longer experience have better noncognitive skills (1.129 and 1.694, respectively, at the significance level of $p < 0.01$). As mentioned in Chapter 2, the Ethiopian government has been enthusiastic in adopting kaizen, the Japanese model of production improvement. The government established a kaizen institute in 2011 to promote this model, and more than 200 manufacturing enterprises in Ethiopia are said to be currently implementing kaizen. A significant part of kaizen activities is to train workers for an attitude of safety, tidiness, punctuality, and other attributes necessary for enhanced productivity. These kaizen activities are implemented not only in enterprises but also in TVET colleges. In the TVET colleges we visited, the slogan of the five S's—*seiri* (sorting out), *seiton* (setting in order), *seiso* (cleaning), *seiketsu* (neatness), and *shitsuke* (discipline)—is raised frequently in classrooms and workshops to convey the importance of tidiness, cleanliness, discipline, and safety. Such school-based promotion of kaizen seems to influence the formation of noncognitive skills among TVET graduates. The attitudinal capacities that kaizen involves, unlike production skills, which are to be inscribed in bodies, are changes in values and judgment, which are difficult to make happen overnight. In a way, noncognitive skills constitute a kind of

culture unique to a specific environment, such as a school or factory, in which someone is situated. Therefore, while the schools and factories aim to establish such a kaizen or attitudinal culture in their organizations, students and workers internalize these values by being in places where such a culture prevails. Therefore, although a set of production skills specific to a certain workplace can be acquired in a short time, without the accumulation of work experience or TVET education, the acquisition of noncognitive skills must rely on experience in TVET colleges and factories that promote the associated attitudes.

Moreover, it is worth noting that factories that export some of their products tend to have workers with higher noncognitive skills (1.376, with significance of $p > 0.01$). Exporting firms have to fulfill the detailed product specifications and quality standards required by the client firms, resulting in tighter quality control in the workplace. These specifications require not only quality in the products but also efficiency and accuracy in production procedures as well as discipline on the part of workers involved in production. Therefore it is important that workers who graduate from TVET colleges be exposed to the values and attitudes of kaizen before employment, and that they further their noncognitive skills while they are employed in the factories, in order to meet the required quality standards.

4.3 Discussion and policy implications

Recently, the importance of noncognitive skills—the capacity to process information, make appropriate judgments to solve problems in a given situation, and interact smoothly with others in work and daily life—has been increasingly highlighted. These skills are called by different names, such as *soft skills* or *21st-century skills*, but the common idea behind them is that the cognitive knowledge or theories learned in textbooks are not enough to solve problems in actual life. Meanwhile, practical and vocational skills cannot be adapted effectively either if the person who uses those skills cannot analyze the situation in which the skills are to be used. Regardless of this heightening discussion, however, not much has been learned about noncognitive skills, because there are no established methods to investigate how such skills are formulated and what elements constitute them. The aim of this project has been to develop a tool to capture the noncognitive skills of workers as part of the comprehensive whole of their work-related capacities, along with cognitive and production skills.

The analysis demonstrates that for the formation of noncognitive skills, such as those incorporated in kaizen, one needs to be exposed for a certain period to some environment—such as school or a factory—that incorporates these values about expected attitudes. These skills stand

in clear contrast to production skills, which can be formulated without much school-based training or long work experience and thus can be shaped rather quickly. For the Ethiopian government, which is expanding TVET, it would be positive news that TVET education influences workers' level of noncognitive skills. Various sections of the EOS emphasize the importance of developing the ability to make a judgment according to context and to solve problems. The very fact that TVET colleges promote kaizen slogans on their campuses is evidence that the philosophy of the EOS to promote noncognitive skills is reflected in the educational practices of those colleges. At the same time, in terms of teaching time in TVET, the lion's share is allocated to production skills, as discussed in Chapter 3. Despite such weight given to the training of production skills, employers conduct in-firm training for new employees, no matter whether they graduated from TVET or not. This situation is a distortion between curricular intention and reality, which needs urgent countermeasures.

Last, we must clarify that the noncognitive skills we could capture in the current study are restricted to those of machine operators who have worked in the current factories for less than three years. So far, our assessment has not included supervisors of the machine operators or managers involved in marketing and strategizing the business of the factory. Noncognitive skills are not only applicable to subordinate workers but associated with any kind of position, although their nature differs according to the worker's expected role in the workplace. To improve production, the skills of workers at different levels must be improved under common objectives but with different specifications according to their individual responsibilities. To foster such an organizational culture of improvement, shared from the floor level to management, worker training, not only on production skills but also on noncognitive skills, needs to be strengthened both before and during employment. For that to happen, an organic partnership between TVET colleges and industry is indispensable.

5. Differing perceptions about education in TVET: Comparison between TVET trainers and students

Following the analysis of workers' actual skills and the differential expectations of them on the training and employment sides, this chapter focuses on gaps in perception existing within the TVET colleges. We will compare what TVET trainers perceive and what students perceive about the contents of training, in relation to their views about the employment prospects of TVET graduates. In doing so, we will analyze the links not only between the supply and demand sides of the skilled workforce but also between preservice TVET and the world of work.

The data we use for the analysis in this chapter were collected at seven public TVET colleges in Addis Ababa. As explained in Chapter 1, after our first-round survey in January 2016, we did a second round of data collection in September 2016, at seven TVET colleges, distributing questionnaires to 162 students and 53 trainers (Rows 5 and 6 of Table 1). Although the first-round survey covered five TVET colleges, for the sake of capturing diverse situations, we added two relatively new colleges that have rapidly increased their intake of students into garment-related programs. Similar to our approach in comparing the perceptions of workers' skills between employers and trainers, in this second round, we included some identical items in questionnaires for trainers and students so that we can directly compare the two groups' perceptions. Survey items requested trainers and students to rate the levels of importance and of difficulty of 5 cognitive, 26 noncognitive, and 20 production skills.

In addition to questions about the skills and background of respondents, we also asked many questions about cooperative training so that we can compare the perceptions of trainers and students about the implementation of cooperative training. As mentioned earlier, the Ethiopian Ministry of Education made it compulsory that 70 percent of a TVET program be provided in private-sector firms, leaving only 30 percent to take place in the TVET colleges. The idea is to let students acquire practical skills in the actual work environment. Such workplace training is called "cooperative training" and is expected to happen as a strong partnership between the TVET colleges and the firms that accept student trainees. As discussed in Chapter 3, however, more than half (54 percent) of factory managers who took part in our survey reported that they had never cooperated with TVET colleges, and only 23 percent said they accept TVET students for cooperative training. Despite the policy intentions, therefore, there seem to be serious challenges to establishing positive relationships between firms and TVET colleges to train the workforce jointly.

By comparing the perspectives of TVET trainers and students on education in TVET, the necessary skills to be taught/learned, and their experience of cooperative training, we intend to capture the issues related to educational provision and curriculum in TVET in relation to the perceived prospects of employment for students. The analysis presented in this chapter is preliminary and will

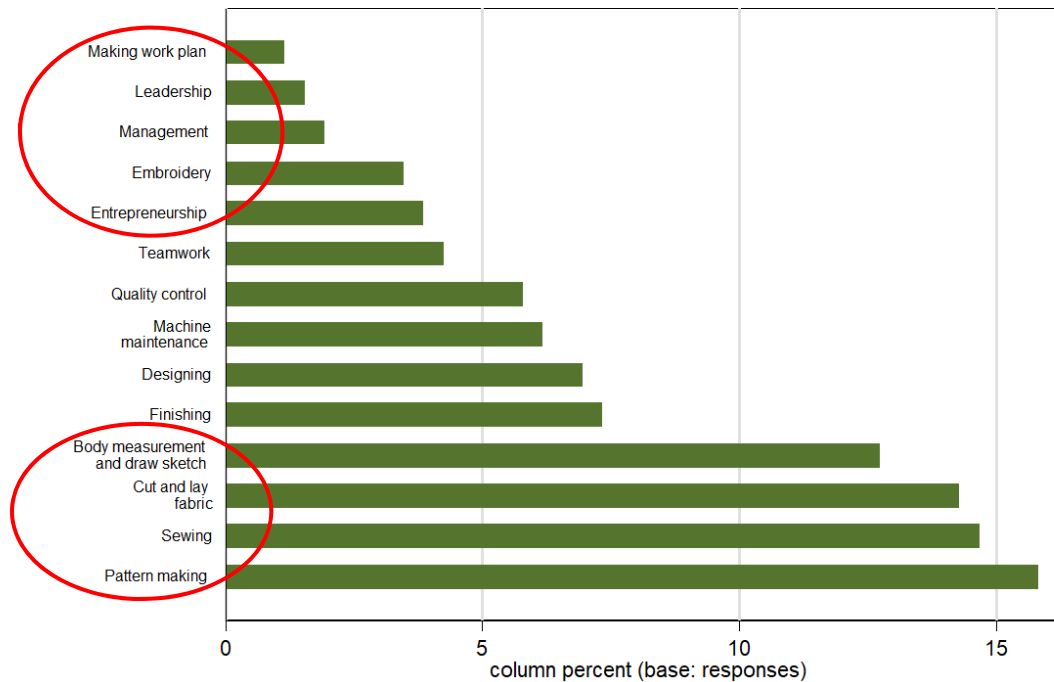
be deepened for presentation in the final report.

5.1 Mismatch between TVET trainers' priorities and students' aspirations

Figure 7 shows the domains of skills that TVET trainers prioritize in teaching. We asked trainers to select, from a list of noncognitive and production skills, the top three types of skills they highlight in teaching students who are training for COC Levels 1 to 3. We aggregated the points given to each domain of skills so as to grasp the general pattern of prioritization among trainers in the seven sample TVET colleges. As Figure 7 shows, the kinds of skills trainers emphasize are basic production skills, such as body measurement, laying out and cutting fabric, sewing, and pattern making. Meanwhile, the kinds of skills that are not emphasized are those necessary for running a business, such as work plan formulation, leadership, management, and entrepreneurship.

This pattern of teaching priorities demonstrates a stark contrast to what trainees want to learn. Our study found that students want to learn skills to run a business, such as entrepreneurship and making a work plan. Also, we found a significant gap between TVET trainers and trainees in terms of their desire to teach and to learn basic garment production skills such as sewing. Our interpretation of this result is that students do not value these basic production skills as much as trainers do because most students aspire to be self-employed. Of 162 trainees surveyed, more than 60 percent mentioned that they are likely to be self-employed after graduating from the TVET course. At the same time, fewer than 10 percent of students predicted they would be employed in the factories. These job aspirations might be related to the fact that a large portion of TVET students are from relatively well-off families and have parents and siblings who tend to occupy leadership positions in offices or run their own businesses. This observation is consistent with students' preference for supervisory skills. Among garment production skills, students highly value pattern making, design, and machine maintenance. As mentioned earlier, in the factories, new workers are assigned to work on sewing lines. Meanwhile, patterns are supplied by overseas clients or made by expatriates. Students' greater interest in learning pattern making and design than in learning other basic production skills, such as sewing, suggests that they aspire to be in a higher position—either in management or within the production process—than machine operator. This tendency in students' aspirations is consistent even among Level 2 students, who are supposed to be trained for basic production, according to the EOS.

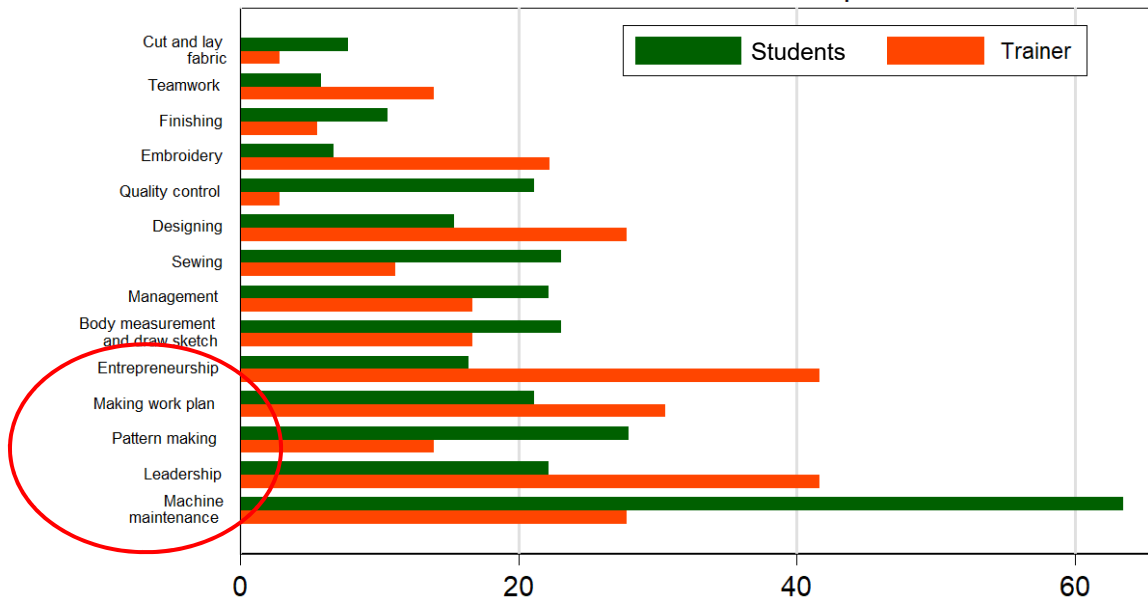
Figure 7: Teachers' priorities in teaching: Levels 1 to 3 combined



Whereas Figure 7 is about skills that respondents prioritize or consider to be important, Figure 8 shows the skills they consider to be difficult—difficult to teach for trainers and difficult to learn for students. The bigger the difference in length between the green bar and the orange bar in Figure 8, the greater the perception gap on the difficulty of that particular domain of skills. Significant differences of perception are found regarding skills in machine maintenance, leadership, and entrepreneurship. In particular, trainers consider entrepreneurship, making a work plan, and leadership to be difficult topics to teach, yet as we discussed above, students consider these the most important topics to learn. Meanwhile, students tend to feel that production skills such as pattern making and machine maintenance are difficult to learn. Overall, trainers are more confident in teaching production-related skills, particularly these basic ones.

Here one can observe several gaps of perception between TVET trainers and students, and between TVET trainers and employers. In TVET, students aspire to be self-employed or in a supervisory position, yet trainers are not confident about teaching entrepreneurship and leadership. Trainers are confident about teaching basic production skills, which students are not very excited about. Meanwhile, in the garment industry, the workforce demand is mostly for machine operators on the production line, rather than designers or pattern makers, let alone supervisors. With such multiple mismatches of expectation, the structure designed to create a supply-demand partnership for training a skilled workforce is standing on shaky ground, with none of these stakeholders fully committed to the prospects raised in government policy.

Figure 8: Most difficult skill to teach for trainers and to learn for students



5.2 Varying levels of satisfaction with cooperative training

As shown in Figure 9, trainees' average level of satisfaction with cooperative training was 3.12 on a scale of 1 to 5—just around the middle—which means that students did not evaluate such training either positively or negatively. At the same time, their level of satisfaction varied largely by school. Figure 9 shows the level of satisfaction with cooperative training among students in seven sample schools. The highest level of satisfaction is seen in school E, where the average score was close to 4, while in school F, it was far below 3. Figure 9 also presents, for comparison, the perceptions of trainers in the respective schools. Overall, trainers are less satisfied than students, but the relative level of satisfaction by school demonstrates a similar pattern for trainers and students. Only for school C do the perceptions of trainers and students show different trends, with trainers rating school C as high as school E (whose satisfaction level is highest for both students and trainers) but students' level of satisfaction with school C at about average.

Overall, our analysis indicates some relationship between a school's teaching methods and the quality of its cooperative training. First, students tend to express higher satisfaction with cooperative training set up by schools that use more participatory approaches in their in-school practical training (e.g., by demonstrating the way of doing things). Also, schools with a greater proportion of trainers holding higher-level certificates are likely to have greater student satisfaction with their cooperative training.

During the cooperative training itself, several factors seem to affect the level of satisfaction.

First, students value the experience of operating specialized industrial machines. With TVET colleges lacking adequate equipment, both TVET trainers and students praise factories that provide access to modern machines or hand tools because they complement the basic knowledge learned in TVET colleges with industry-based skills. At the same time, many teachers complain that factories involved in cooperative training do not understand the units of competency that the EOS requires workers to have and do not train students systematically according to these requirements. Thus, the effectiveness of cooperative training could be enhanced if factory supervisors were more willing to follow the EOS requirements.

Figure 9: Level of satisfaction with cooperative training, by school



5.3 Discussion and policy implications

This chapter has provided some initial analysis based on questionnaire responses from TVET trainers and students. The findings point to two issues: One is the gap in expectations between trainers and students regarding the contents of skills to learn or teach. The other is perceptions of the effectiveness of cooperative training, which constitutes a significant part of TVET education (70 percent of the total training hours).

In terms of perceptions of important skills, the gap between students and trainers seems to be caused by their different views about job prospects for TVET graduates. Students aspire to be self-employed or in a supervisory position, rather than employed as a floor worker in a factory. At the same time, trainers are not confident about teaching the skills necessary for the types of work to which students aspire, such as entrepreneurship, leadership, and planning. Trainers are

confident about teaching conventional TVET subjects, which are basic production skills. Partly because of their confidence and familiarity with them, trainers also consider those basic production skills to be more important than entrepreneurship and leadership.

As for cooperative training, students' responses were rather indecisive, expressing no strong opinion about its efficacy, either positive or negative. The average level of satisfaction with cooperative training is lower for trainers than for students, which means that trainers are more critical about its implementation. Indeed, they complain about factories' lack of commitment to and noncompliance with the EOS framework during cooperative training. Some even charge that factories simply use cooperative students as a supplementary workforce. Ironically, as reviewed in Chapter 3, factory managers also express mistrust in TVET trainers and therefore minimize partnerships with them.

Still, the level of satisfaction with cooperative training varies across schools. Schools that students consider to use more practical and participatory teaching methods garner higher levels of satisfaction with their cooperative training. Also, schools with a greater proportion of trainers holding higher-level certificates are likely to have greater student satisfaction with their cooperative training.

6. Conclusion

6.1 Summary of key findings

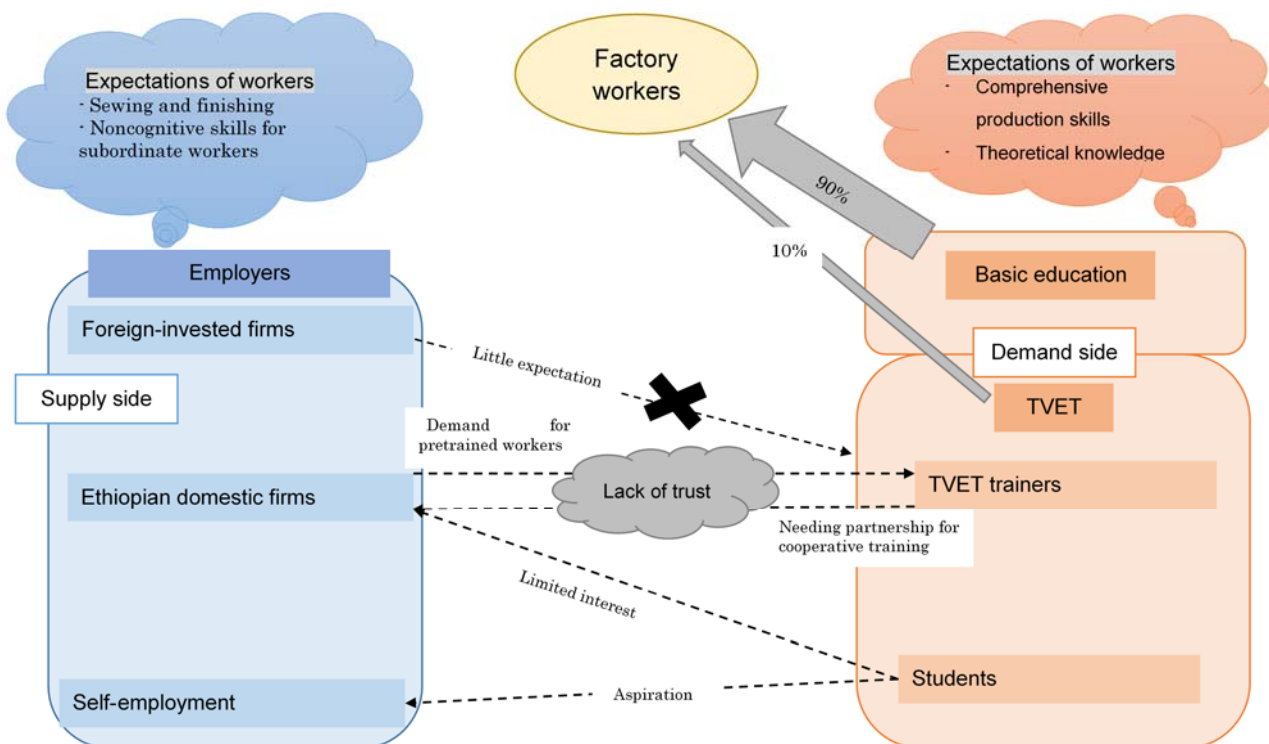
This study analyzed data gathered from January 2016 to November 2017 (Figure 1) to accomplish several aims. First, it aimed to specify the areas of mismatched perceptions about necessary skills among training providers, employers, and workers. In addition to perceptions, it also compared these skills against what workers can actually do. In addition to determining which specific domains of skills different stakeholders value, the study also tried to identify factors that affect these perceptions by examining the background of questionnaire respondents and assessment takers, such as educational and professional experience and socioeconomic background. Further, it investigated the necessary conditions for the formation of different types of skills by contrasting production skills and noncognitive skills. In doing so, it also contrasted the differential effects of preservice training in TVET colleges and of firm-based training during employment.

The garment-sector labor market in Ethiopia is characterized by the parallel existence of foreign-invested firms, domestic firms, and self-employment. So far, our study has revealed that the skills demanded for employment in domestic firms and for self-employment are very different in nature, yet the EOS tries to overarch both sets of skills. The SKY project is preparing

to conduct a large-scale skills assessment with workers in foreign-invested firms in industrial parks. The analysis of the resulting data should give us a more comprehensive picture of skills development and employment in the Ethiopian garment industry. The initial survey with FDI factory managers, discussed in the present paper, suggests that workers in those factories are younger and fewer of them hold TVET certificates than in domestic firms. Foreign factories prefer young workers with a good level of basic cognitive potential, but without preservice training on production skills. Meanwhile, domestic firms often look for workers from TVET because they do not have the capacity to train their own workers and therefore seek to benefit from external training services both before and during employment. Still, even among domestic firms, partnerships with TVET are limited because of factory managers' lack of trust in the capacity of these institutions and their trainers to prepare the workforce properly.

As we demonstrate in Figure 10, there are few layers of mismatch exist in the perceptions of skill contents, not only between TVET and employers but also between TVET trainers and students. The readers would recognize demands and expectations are causing mismatches at various levels, which require us to consider those problems comprehensively, without treating them as separate issues. The root causes of them are linked at the bottom but in twisted ways.

Figure 10: Perceptions of stakeholders toward one another



For example, in Chapter 3, we highlighted the mismatch of skill expectations between employers and trainers. Our survey found that TVET trainers want workers to have skills that cover all processes of garment production, including pattern making and analysis of garment structure in addition to cutting, sewing, and finishing. This preference for comprehensiveness manifests in the fact that TVET graduates perform better than nongraduates on a wider range of skills, including pattern making and sewing, although their performance in sewing and finishing may not be outstanding. Meanwhile, factory managers, whose interests are focused on sewing and finishing skills, are very severe in grading workers' performance in those two domains of skills. We also found that workers' overall performance depends greatly on their competence in sewing and finishing, and this level of competence is influenced by the availability of training and quality control in the workplace. In sum, skills in sewing and finishing are shaped on the job, and the effect of training appears rather quickly in the performance of workers on those tasks.

In contrast to employers, whose criterion for evaluating workers' performance is whether the product can fulfill commercial requirements, trainers seem to appreciate workers' effort, position within their cohort, and improvement over their own past performance. In other words, TVET trainers grade by comparing the persons who perform tasks, while factory managers compare outputs.

Chapter 5 focused on TVET colleges and tried to identify the nature of differential perceptions between TVET trainers and students. In TVET, partly because of students' socioeconomic background and the high value they place on their educational certificates, students aspire to be self-employed or in a supervisory position rather than to be employed as a floor worker in a factory. At the same time, trainers are not confident about teaching the skills necessary for the types of work students aspire to, such as entrepreneurship, leadership, and planning. Trainers are confident about teaching conventional TVET subjects, which are basic production skills, yet they are not very familiar with the latest machines used in the factories. Therefore, there are gaps on two ends. On the one hand, trainers' perceptions about important skills do not match students' aspirations. On the other hand, trainers' skills in teaching basic practical subjects do not correspond to the expectations of industry. Meanwhile, in the garment industry, the workforce demand is mostly for machine operators on the production line, rather than designers or pattern makers, let alone supervisors. TVET graduates are not excited about such job opportunities in the factories. Therefore, in spite of the labor demand, TVET-trained people do not apply for such jobs very often. Further, since TVET trainers' skills are not frequently updated, even though they themselves are confident about teaching the skills they know, factory managers do not consider these skills appropriate. A final layer is the mismatch of the EOS, which

broadly covers skills from body measurement and sewing to pattern making and design, and the specific demands of the garment industry. With such multiple mismatches of expectation, the structure designed to create a supply-demand partnership for training a skilled workforce is standing on shaky ground, with none of its stakeholders fully committed to the prospects raised in government policy.

Last, it is important to point out that noncognitive or soft skills are as important as production skills. As discussed in Chapter 4, people with similar practical skills may not necessarily yield the same amount or the same quality of product when they are put on the production lines. The output difference is caused by other types of skills, such as analysis of issues and problem solving. The questionnaire for factory managers revealed that managers highly value noncognitive skills such as punctuality, discipline, and tidiness. Also, workers' self-estimation of these noncognitive capacities is an important determinant of their performance. One positive finding of our study for TVET is that TVET graduates demonstrate higher levels of noncognitive skills than those trained only in the factories. This result must be partly because of the kaizen movement that the Ethiopian government promotes in TVET colleges with the aim of improving students' work ethic. For the formation of noncognitive skills, people need to be exposed to an environment in which their attitude and behavior are evaluated according to an ethical framework, a clear contrast to production skills, which can be formed rather quickly, without much school-based training or long work experience. In terms of teaching hours in TVET, the lion's share are allocated to production skills, as discussed in Chapter 3. Still, exposure to kaizen in TVET, which is transmitted not only through classroom teaching but also as a kind of school culture, has effects that are not available to people who do not go through it.

The noncognitive skills that we analyzed in relation to the production skills of machine operators are those required of a worker in a subordinate position, who is expected to be disciplined and efficient in conducting required work. At the same time, as discussed in Chapter 5, TVET students are interested in learning noncognitive skills related to running their own business or being in a supervisory position. So far, we have not included supervisors and managers in our assessment sample. However, noncognitive skills are not only those of subordinate workers but are associated with any kind of position, although their nature differs according to the employee's expected role in the workplace. For the improvement of production, the skills of workers at different levels have to be improved under common objectives but with different specifications according to their individual responsibilities. One interesting finding is that TVET graduates working in factories were shown to be better at noncognitive skills appropriate for subordinate workers, while students who are currently in TVET colleges want to learn

entrepreneurship and leadership. Given that noncognitive skills are largely a matter of mind-set and attitude, as long as workers are exposed to a broad orientation to improve the effectiveness of production, these skills may be elastically adapted to different contexts, regardless of the aspirations of workers.

6.2 Issues raised in the stakeholders' participatory workshop

The SKY research team co-hosted an international symposium to share its initial findings with the Ethiopia Ministry of Education in August 2017. On that occasion, we organized a participatory brainstorming session among TVET trainers, employers, and ministry officials. The issues raised in this workshop are listed in Appendix 1. While many of them overlap with the discussion above, we would like to call attention to some points not discussed in this report. Because our study focuses on skills and stakeholders' perceptions of skills, issues related to structures and resource allocation are outside its scope. Still, these issues must be addressed for the system to function as intended. Therefore, before ending this paper, we will touch on additional issues raised at the participants' workshop.

6.2.1 Capacity of TVET colleges

Many voices were raised to point to the lack of capacity of TVET colleges and their trainers as a cause of the inadequacy of training and inability to meet labor market needs. One such capacity problem is a lack of resources in terms of facilities, equipment, and teaching and learning materials such as textbooks. This problem is also closely linked to the discrepancy between the technology used in the industry and that available in TVET colleges. Sewing machines used in TVET colleges are criticized as outdated, rendering the basic production skills learned there unpractical in the actual workplace.

Some participants argued that it is not only the equipment and tools that are outdated but also skills of TVET trainers. According to them, trainers do not have industry experience and are not equipped with a good enough level of knowledge and skills. Therefore, some people pointed out the necessity of training the trainers before they train the students.

6.2.2 Occupational standards and curriculum

Some stakeholders pointed to the planning and design of the skills development system as the reason for the claimed inadequacy of training. Some industry people complained that research on the labor market and industry should be done before designing the training programs. According to them, because of the lack of precise understanding of the needs of the industry, the

EOS, and hence TVET, are mismatched to the industry. Some also raised the necessity of updating the EOS regularly.

Other participants felt it was irresponsible for industry people to criticize the mismatch of the EOS, because the industry was supposed to have been involved in its design under the philosophy of CBT. If the industry perspective is not reflected in the current EOS, these participants pointed out, that reflects laziness on the part of industry, which did not commit to the design process of the EOS. Participants from the TVET side repeatedly mentioned the lack of commitment from industry stakeholders, which we will revisit in the next section.

Regarding the curriculum, workshop participants discussed the problem of translating the units of competency set forth in the EOS into curriculum and then into specific teaching and learning practices in the school. According to the idea of CBT, the capacities of workers are assessed through their performance of tasks designated by the EOS, not by the completion of curriculum-based training courses. The fact that the majority of TVET graduates do not pass the COC assessment immediately after TVET completion indicates a gap between what is taught in school and what the EOS requires people to be able to perform. Therefore, a closer link between the school curriculum and the EOS is said to be important. At the same time, assessment is an inherent challenge of CBT; it is not supposed to restrict the process of learning but only to measure the outcomes. According to the original design of the system, there should not be any standardized curriculum, but it is clear that CBT will not yield any positive result by giving free rein to teachers who do not fully grasp the ideas behind the system and do not have enough pedagogical and technical capacity. In sum, the issue of TVET colleges' and trainers' capacity is the flip side of the issue of curriculum and training relevance.

6.2.3 Mutual trust between TVET colleges and private-sector firms

We pointed out in earlier chapters that the lack of trust between actors on the supply and demand sides is a significant contributor to the perceived mismatches. Several workshop participants highlighted this concern as well. People from the training side cited a lack of participation from the industry side at all stages of competency-based skills training: setting the EOS, designing the curriculum, assessing the skills of workers at a COC, and accepting students for cooperative training. Seen from the side of training providers, there is a need to raise awareness among industry people so that they will realize the importance of partnering with training providers for improved skills development. Again, this is the other side of the same coin as the complaint from the industry side that TVET colleges and their trainers do not have enough capacity to train people in the expected levels and contents of skills.

6.3 Last thought

As argued earlier, a mismatch exists in multiple aspects of the skills development system of Ethiopia. Therefore, trying to solve one of these problems is like bandaging the leg of a giant elephant that has many wounds throughout its whole body. One needs a bird's-eye view to picture the entire network of issues in different levels and areas of the system. Since the middle of the last decade, the Ethiopian government has devoted a great deal of effort and resources to the reform of the skills development system. Despite such political commitment, the system is facing a lot of criticism from stakeholders in industry and training institutions, and some observers report dissatisfaction among students themselves. To make informed political decisions and implement measures to attend to problems effectively, evidence gained from well-designed research is indispensable. Having worked in African countries for many years and continuing to hear complaints about the skills mismatch, we have decided to contribute to African governments with our academic expertise. We hope the evidence provided in this report will serve as the basis for further discussion among ministries and offices within the government, training institutions, development partners, and industry stakeholders.

References

- Addis Ababa City Administration TVET Agency. 2010. *Ethiopian TVET-System Model Curriculums Based on Ethiopian Occupational Standard (EOS)*. Addis Ababa, Ethiopia: Addis Ababa City Administration.
- . 2015. *Enrolment of Trainees 2005 E.C.* Addis Ababa, Ethiopia: Addis Ababa City Administration.
- Allais, S. M. 2007. “Why the South African NQF failed: Lessons for countries wanting to introduce national qualifications frameworks”. *European Journal of Education* 42(4):523–547.
- Central Statistical Agency of Ethiopia. 2013. *National Statistics Abstract (2003–2014): Manufacturing*. Addis Ababa, Ethiopia: Central Statistical Agency. http://www.csa.gov.et/index.php?option=com_phocadownload&view=categories&Itemid=176.
- . 2014. *The 2014 Urban Employment Unemployment Survey: Statistical Bulletin*. Addis Ababa, Ethiopia: Central Statistical Agency.
- Chakroun, B., and K. Daelman. 2015. *Global inventory of regional and national qualifications frameworks, volume I: Thematic chapters*. Hamburg: UNESCO Institute of Lifelong Learning.
- Edukans Foundation. 2009. *Technical Vocational Education and Training in Ethiopia Mapping*. Addis Ababa, Ethiopia: Edukans Foundation.
- Federal TVET Agency of Ethiopia. 2010. “Ethiopia TVET System.” PowerPoint presentation, Federal TVET Agency, Addis Ababa, Ethiopia.
- Geiger, M. T., and L. C. Moller. 2015. *Fourth Ethiopia Economic Update: Overcoming Constraints in the Manufacturing Sector*. Washington, DC: World Bank Group.
- Government of Ethiopia. 2005. *Education Sector Development Program III*. Addis Ababa: Federal Democratic Republic of Ethiopia.
- . 2010. *Education Sector Development Program IV*. Addis Ababa: Federal Democratic Republic of Ethiopia.
- Griffin, P., B. McGaw, and E. Care. 2011. *Assessment and teaching of 21st century skills*. London: Springer.
- Hailu, E. T. 2012. “Analysing the Labour Outcomes of TVET in Ethiopia: Implication of Challenges and Opportunities in Productive Self-Employment of TVET Graduates.” Master’s thesis, Institute of Social Studies, The Hague, Netherlands.
- Johanson, R.K., and A.V. Adams. 2004. *Skills development in Sub-Saharan Africa*. Washington,

DC: World Bank.

- King, K., and R. Palmer. 2013. *Education and skills post 2015: What evidence, whose perspectives?* NORRAG Discussion Paper No. 6. Geneva: Network for International Policies and Cooperation in Education and Training.
- Krishnan, P., and I. Shaorshadze. 2013. *Technical and Vocational Education and Training in Ethiopia*. London: International Growth Center and London School of Economics and Political Science.
- Moller, L. C. 2015. *Ethiopia's Great Run: The Growth Acceleration and How to Pace It*. Washington, DC: World Bank Group.
- Rauder, F., and R. Maclean. 2008. "Vocational education and training research: An introduction." in Rauder, F., R. Maclean, eds. *Handbook of technical and vocational education and training research*. Berlin: Springer.
- Rychen, D.S., L.H. Salganik. 2003. *Key competencies for a successful life and a well-functioning society*. Göttingen: Hogrefe.
- UNESCO. 2012. *Youth and skills*. Paris: EFA global monitoring report 2012.
- Wolter, S. C., and P. Ryan. 2011. "Apprenticeship." In *Handbook of the Economics of Education*, edited by E. A. Hanushek, S. J. Machin, and L. Woessmann, Vol. 3, pp. 521–76. Amsterdam: Elsevier.
- . 2015. *Fourth Ethiopia Economic Update: Overcoming Constraints in the Manufacturing Sector*. Washington, DC: World Bank Group.
- Yamada, S., and C. Otchia. Forthcoming. "The Effect of Non-cognitive Skills on Comprehensive Capacities of Workers: KAIZEN Education and Workers of Garment Industry in Ethiopia" [in Japanese]. *Journal of International Development Studies* 27(2).
- Yamada, S., C. Otchia, and K. Taniguchi. 2018. "Explaining Differing Perceptions of Employees' Skill Needs: The Case of Garment Workers in Ethiopia." *International Journal of Training and Development* 21 (4): 51–68.
- Zemsky, R. 1997. "Skills and the Economy: An Employer Context for Understanding the School-to-Work Transition." In *Transitions in Work and Learning: Implications for Assessment*, edited by A. M. Lesgold, M. J. Feuer, and A. Black, pp. 34–61. Washington, DC: National Academy Press.

Appendix 1: Comments at the participatory workshop

What are the main causes of the mismatch between TVET and industry?

Governmental commitment

Higher officials should be familiar with the profession

TVET institutions

The gaps are not well identified by the training institutions

Lack of resources & machines

Facilities

Training materials

Provision of training

The means and modality of providing training are not appropriate

Has to be considered the balance and quality of regular training and cooperative training

Trainers must be trained before they provide training

The training program was designed without market research

Technology gap between TVET colleges and industry

The technology our TVET has and technology in our industry (are) too different

The garment machines in the TVET colleges are too old. But these machines in the industries are the latest. That is why gaps in sewing skills occur

Trainers

Capacity of trainers

Lack of industry/factory experience

Lack of knowledge and skills

Lack of capacity to provide training based on industry needs

Trainers are not exactly following the OS

Lack of skill to deliver quality training.

Does not perform up to the standard

Negative orientation toward industry

Do not have updated knowledge of market trends & requirements

Trainees

Trainees' motivation

Gap between trainees' interest and labor market demand

Gap between trainees' interest and the field of training

Trainees do not develop the capacity to apply their skills as required in the industries

Lack of basic knowledge before coming to TVET college

Occupation standard

Mismatch between OS and curriculum, which leads to gaps in the training process

Industry's needs are not clearly reflected in the OS, so TVET institutions can't provide accordingly

Since the OS is developed by the industry, they have to revise OS when it doesn't fit their needs

The responsibility is on the factory side because the OS and standard for assessment were given by the industries

Needs updating according to market requirements

The process of developing the OS has to be improved

Curriculum

The curriculum should be updated regularly

Curriculum does not match industry needs

TVET-industry relationship

Need to build trust between TVET & industry

The industry-TVET linkage is not strengthened to the level expected so industry is not fully participating in skill development

TVET and industry should work together as providers and receivers of a trained workforce

Strengthen linkage between (among) TVET/industry/TIDI.

Industries

Lack of ownership and participation

Lack of involvement in curriculum preparation, assessment, and cooperative training

Lack of awareness of the TVET strategy by the factory people.