Constitutional Reform and its Impact on TVET Industry in Nepal

Fourth report in support of developing understanding and finding the way forward for federalizing the TVET sector in Nepal – Organized Industry

Report

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TVET Federalization Nepal

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Contents

List of Abbreviations

AOAN	Airlines Operators Association of Nepal
CAN	Computer Association Nepal
CBPI	Confederation of Bagmati Province Industries
CCI	Chamber of commerce and industry
CEHRD	Center for Education and Human Resource Development
CNI	Confederation of Nepalese Industries
CTEVT	Council for Technical Education and Vocational Training
EELI	Education-Employment Linkage Index
ENSSURE	Enhanced Skills for Sustainable and Rewarding Employment
ETH	Swiss Federal Institute of Technology
FCAN	Federation of Contractors' Association Nepal
FNCCI	Federation of Nepalese Chamber of Commerce and Industries
FNCSI	Federation of Nepali Cottage and Small Industries
FWEAN	Federation of Women Entrepreneurs Association of Nepal
GDP	Gross domestic production
GIS	Geographic information system
GoN	Government of Nepal
HAN	Hotel Association Nepal
HRM	Human resource management
ICT	Information and communications technology
IIPBN	Industry and Investment Promotion Board of Nepal
MCSI	Micro, Cottage, and Small Industries
MoLESS	Ministry of Labour, Employment and Social Security
NARA	Nepal Association of Rafting Agencies
NBI	Nepal Business Initiative
NCC	Nepal Chamber of Commerce
NCS	National Competency Standards
NPR	Nepalese rupee
NSIC	Nepal Standard Industrial Classification
NVQF	National Vocational Qualification Framework
NVQS	National Vocational Qualification System
PAN	Permanent Account Number
PCTEVT	Provincial CTEVT
RPL	Recognition of prior learning
SSC	Sector Skills Committee
TAAN	Trekking Agencies Association Nepal
TSSP	TVET Sector Strategic Plan
TVET	Technical Vocational Education and Training
VAT	Value-added tax

List of Figures

List of Tables

1 Executive Summary

The federalization process of Nepal's education system, since 2015, has introduced significant legislative changes, including those affecting the Technical and Vocational Education and Training (TVET) sector. The 2023 TVET Sector Strategic Plan (TSSP) outlines a comprehensive three-phase approach to enhancing the TVET system. A key challenge remains achieving active and effective industry involvement in TVET initiatives. This report analyses the conditions needed for **robust industry engagement in the TVET sector**, examines the industry's organizational structure, identifies potential roles, and explores success factors and barriers. The report uses a mixed-methods approach, including a survey and focus groups with employers, and maps relevant industry associations and institutions relevant to the TVET sector, categorizes stakeholders at national, provincial, and local levels, while assessing the legal framework for synergies with high-level decision-making bodies.

1.1 Literature findings

The short literature review focuses on the role of the industry and its various actors in the TVET sector. The key element of TVET is the cooperation between actors in the education and employment systems. The intensity of cooperation can be measured using the **Education-Employment Linkage Index** (EELI). The EELI for Nepal is weaker compared to other countries, highlighting a significant gap in the industry involvement in the TVET system. Addressing this gap is crucial, as TVET programs offer diverse benefits beyond immediate financial gains for companies. Engaging employers in training ensures alignment with labour market needs, reduces skill mismatches, and improves employment outcomes. Employer involvement in curriculum development fosters continuous learning and workforce adaptability. Dual TVET apprenticeship systems are particularly beneficial, as **companies experience significant net benefits**. This encourages firms to invest in apprenticeship programs without incurring prohibitive expenses. While the net benefits of TVET programs suggest minimal need for long-term subsidies, initial financial support from donor partners is crucial to cover system overhead costs during the establishment phase of a robust TVET system. Furthermore, the ideal TVET curriculum **balances generality and specificity**, catering to both rapidly evolving and stable economic environments. **Transferable skills**, particularly soft skills, are critical for today's labour markets. These skills are best learned in workplace settings, where practical application enhances learning. Dual TVET programs, which combine learning in the workplace with education at TVET schools, help integrate youth into the labour market, reducing labour market mismatches.

On a systemic level, **industry engagement** is crucial. Relying solely on government for curriculum design risks a mismatch between skills and market needs. Employers, who understand the required skills best, can train apprentices to meet labour market demands. Involving **forward-thinking firms** throughout the entire curriculum value chain – design, application, and feedback – ensures educational programs align with current labour market requirements. This approach enhances program relevance and strengthens economic competitiveness. Initial dual TVET pilot projects in Nepal, such as the 24-month dual TVET developed by Enhanced Skills for Sustainable and Rewarding Employment (ENSSURE), generate significant net benefits, equivalent to four months of skilled employee wages.

1.2 Legal framework developments

The federalization of Nepal's education system, initiated in 2015, has led to significant legislative changes, particularly in the TVET sector. The ongoing process aims to decentralize educational governance, ensuring that TVET programs address both local and national labour market needs. The following legal documents represent key innovations that are particularly relevant for the TVET sector.

The **Labour Act 2017** outlines provisions for workers' rights, interests, and safety, offering flexibility in employment types and including specific regulations for trainees and apprentices. The **Industrial**

Enterprises Act 2020 aims to strengthen the industry sector by providing incentives, such as tax deductions for training expenses and additional support for marginalized groups. The Act also highlights the role of the Industry and Investment Promotion Board (IIPBN), which could be an interesting option also for the TVET sector. The **Federal TVET Act**, currently under discussion, aims to improve organization and coordination between federal and provincial levels. This report may help refine the Act by clarifying the roles and responsibilities of the industry sector. In the absence of a national act, provinces such as **Bagmati and Gandaki have developed their own TVET laws**. These laws focus on establishing TVET councils or academies to manage and regulate TVET at the provincial level.

Furthermore, policies and strategic plans play a crucial role in shaping the TVET sector. The **TVET Industry Strategy 2019**, developed by the Confederation of Nepalese Industries (CNI), highlights the importance of industry participation in TVET and recommends reforms to enhance the quality and relevance of TVET programs. The **TSSP (2023-2032)** outlines a comprehensive ten-year strategy to enhance TVET capacity, focusing on institutional knowledge sharing and minimizing workforce demand-supply mismatches. Key components of the plan include equity, access, quality, relevance, coherence, transferability, and governance. The **16th Periodic Plan** emphasizes the creation of employment through skilled human resources and the role of digital technology in education, advocating for collaboration between industry sectors and all levels of government to provide demand-led training. The **Five-Year Plan by Ministry of Labour, Employment and Social Security (MoLESS)** targets skill development, promotion of domestic employment, occupational health and safety, and social security, highlighting the need for industry collaboration in apprenticeship and curriculum development.

1.3 The nexus of the industry sector

Globally, the industry sector plays a vital role in shaping education programs amid rapid changes in qualification requirements driven by digital transformation. Emerging technologies like artificial intelligence are drastically altering job demands, requiring employees to develop transferable skills that can adapt to new challenges. This rapid change presents significant challenges for educational institutions, which often lag in updating curricula to meet labour market needs. For example, the EELI is a critical measure of the integration between education and employment systems. Studies indicate that while some countries achieve high linkage levels through strong education-industry partnerships, others like Nepal show lower linkage levels despite ongoing reforms. This finding emphasizes the need for continuous collaboration between educational institutions and industry, along with regular curriculum updates to meet market needs.

In Nepal, industry involvement in TVET has been minimal and short-term. Effective TVET systems require substantial, systematically organized, and coordinated industry engagement. This report **maps the structure of the industry sector in Nepal,** categorizing industries based on economic activities and examining the roles of various employer associations at federal, provincial, and local levels.

This report, influenced by focus group discussions, proposes the creation of a **TVET Industry Council** comprising key federations to coordinate TVET policies and represent the industry's voice. This council would ensure that all relevant associations at national and sub-national levels work together efficiently. The report emphasizes the importance of integrating industry perspectives into the TVET system to better prepare young professionals for the labour market. It advocates for stronger partnerships between the government, educational institutions, and the industry sector to enhance the effectiveness and relevance of TVET programs. The goal is to build a resilient TVET system that fosters economic development and social inclusion.

1.4 Survey among companies

The chapter about the industry's role in TVET presents results from a **quantitative survey of companies**, aimed at identifying training needs, assessing willingness to provide apprenticeships, and

determining readiness to collaborate on curriculum design. This approach fosters shared responsibility in skills development, ensuring that TVET programs remain relevant and contribute to economic growth and workforce development. The survey, conducted between December 2023 and January 2024, targeted various sectors including agriculture, tourism, construction, and manufacturing, achieving a response rate of 21.5% from a pool of 2,785 employers.

The survey reveals several key insights about the current state of the field, employers' characteristics, and their difficulties in finding skilled workers. The results highlight a significant skills gap, particularly in soft skills, which employers consider more important than hard skills. Employers from all economic sectors are represented, though there is an over-representation of the secondary sector and an under-representation of the primary and tertiary sectors (see Appendix A, Figure A.1). This imbalance is attributed to the labour market structure, where primary and tertiary sector companies are often micro, family-operated firms that are less likely to be members of employer associations.

The survey reveals a significant skills gap, with many workers lacking formal training or holding only higher education degrees, creating a precarious skills gap with a missing middle of employees possessing mid-level TVET skills. This gap hinders company growth, particularly in the secondary sector. Companies reported using various recruitment strategies, with a strong focus on the local job market and less emphasis on the global job market. To retain talent, employers offer above-market pay, though this is only moderately important. Informal on-the-job training is a key strategy for micro firms, while primary sector employers and micro-companies value apprenticeships and temporary placements.

Despite recognizing the benefits of training, only 40% of companies offer training, mostly providing informal traineeships. Only 3% offer apprenticeships, and 10% participate in the ENSSURE dual TVET apprenticeship program. Most training programs have dedicated trainers, suggesting good training quality wherever offered. Barriers to training include lack of time, resources, knowledge on how to train, and concerns about poaching and emigration. Employers are moderately satisfied with the current TVET governance but have concerns about its consistency, quality, and alignment with labour market needs. Employers generally view training programs positively, especially those that offer some benefit – monetary or otherwise. They prefer shorter training programs, lasting between one to twelve months.

We conclude that enhancing company involvement in the TVET system requires improvements in governance and the federalization process. Strengthening these areas would help build a more sustainable workplace-based education system for youth, addressing the significant skills gaps and better aligning the workforce with industry needs.

1.5 Results of employer focus groups

The **qualitative results from the focus groups** conducted in Kathmandu, Hetauda, and Janakpur in January 2024 provide critical insights into the role of industry in the TVET system. Discussions with 8 to 20 industry representatives per session were audio-recorded, transcribed, and translated for thorough analysis. The focus groups primarily explored the industry's perspective on the survey results, the main issues industry faces, and expectations from the government and industry associations.

Participants generally agreed with the survey findings, affirming a significant shortage of skilled workers, particularly in soft skills such as communication and problem-solving, which are in even shorter supply than hard skills. This shortage is a longstanding issue, affecting productivity and growth across various sectors. For instance, the ICT sector struggles to find skilled local workers, leading to a cycle where trained employees often switch jobs for better pay.

One primary theme was the importance of workplace learning. Participants emphasized that essential skills, particularly soft skills, are best learned in the workplace rather than in educational institutions. Comparisons with international studies suggest that on-the-job training is crucial for developing these

competencies. The focus groups also highlighted the need for better training programs and qualifications to address the skills gap and enhance the overall skill level in the labour market.

Barriers to effective training include high costs, time requirements, and the risk of trained employees being poached by other companies. Despite these challenges, participants acknowledged the value of training in meeting production needs and keeping up with technological advancements. There was a consensus on the benefits of collaboration for sharing training strategies, reducing administrative burdens, and developing common certification standards to mitigate issues like poaching.

The focus groups emphasized the need for stronger government involvement and policy support in implementing effective training programs. They called for the government to facilitate rather than excessively regulate industry, advocating for more industry autonomy and decision-making power particularly in curriculum development and training initiatives. Establishing and empowering sector skills committees (SSCs) with decision-making authority for training and curriculum alignment with industry needs was deemed essential.

Participants expressed their willingness to contribute to strengthening the TVET sector in several ways. They emphasized the importance of setting up and actively participating in SSCs, pooling resources for training programs, providing learning spaces and staff, and engaging in curriculum development. This collaborative approach is essential for addressing skill shortages and ensuring high-quality training.

Industry associations were expected to play a crucial role in initiating and establishing SSCs. Participants highlighted the need for these associations to advocate for ethical practices within industries, ensuring fair treatment and safe working conditions for workers. They also stressed the importance of reducing bureaucratic barriers that hinder training initiatives and implementing supportive policies to facilitate industry participation in training activities.

In conclusion, the focus groups underscored the critical need for industry-government collaboration to address the skilled worker shortage. By enhancing workplace learning, reducing training barriers, and empowering SSCs, the industry can better meet its needs and contribute to the overall development of the TVET system. The willingness of industry representatives to actively engage in these efforts reflects a strong commitment to improving the quality and relevance of vocational training.

1.6 Recommendations

1.6.1 Recommendations related to legal framework development

The legal framework has evolved significantly since the new constitution, impacting the TVET sector as well. Based on recent developments, we recommend the following activities:

Employment

- We recommend that the **IIPBN** be carefully considered when structuring the TVET industry and that its potential to acquire rights and obligations in education be fully utilized.
- We recommend revising the existing **TVET industry strategy** based on the findings from this report. The strategy should be recognized and officially approved by national authorities, possibly through the IIPBN.
- Although the law contains important recommendations for improving local employment, we recommend regularly **evaluating sectors** where local workers are scarce. Based on evaluations, corresponding TVET programs should be launched.

Education

- We recommend that the upcoming **national TVET Act** ensure industries play a significant role and that provinces are mandated to lead TVET schools and invest in knowledge sharing.
- The varying approaches of **provincial TVET Acts** illustrate how differently two provinces regulate the TVET sector, largely due to the absence of a national TVET Act. Without national guidelines, provinces are left to independently determine which functions need regulation at the provincial level. Provincial TVET laws must be coherent with a national TVET Act. Therefore, we recommend finalizing and approving the national TVET Act, incorporating the findings of this report and the best practices from provincial legislation.
- To achieve sustainable outcomes in skills development, we recommend that short-term courses adopt **competence-oriented curricula** aligned with formal TVET programs regulated by the Council for Technical Education and Vocational Training (CTEVT). This alignment will facilitate the recognition of non-formally acquired skills and provide access to formal education.

1.6.2 Recommendations based on industry landscaping

The industry sector already well-organized, but its role in the education sector is not always clear. Industry leaders should clarify their specific roles within the education sector and **speak with one voice** when engaging with education stakeholders.

A close dialog with the education authorities is essential. The aim should be for both industry and education stakeholders to recognize the mutual benefits of co-producing qualifications. This dialogue becomes more effective when the industry community speaks with a unified voice and represents the entire economy. It is crucial to enshrine the role of economic stakeholders in the new **TVET Act**. Missing this opportunity would be unfortunate, as boosting economic productivity relies on firm, binding commitments from the industry community. However, for the industry sector to fully realise its potential, it must have clearly defined rights, roles, and responsibilities.

If the industry successfully organizes itself according to the model outlined, the following recommendations are made for establishing this organized economy:

- Discuss the existing mapping and improve or expand if necessary.
- Establish a clear structure within a new **TVET industry council**, including membership criteria, tasks, and the roles of sector associations and SSCs.
- Review the **TVET industry strategy** developed under the leadership of CNI, make improvements if needed, and secure approval from all members.
- Define the role of TVET industry representatives in the TVET Act based on the new strategy.
- Recommend that the IIPBN seek approval of this strategy from the Government of Nepal (GoN).
- Allocate TVET industry functions across the three political levels, detailing the roles and responsibilities of industry units.
- Develop processes for all functions managed by TVET industry partners.

1.6.3 Recommendations based on survey and focus groups

The results of the **quantitative study** and the **focus group discussions** shown that there is an enormous shortage of well-trained specialists with labour market-relevant skills. The shortage impedes economic growth. To address this, we recommend the following:

- **Industry (i.e., SSCs) should lead** the development of national competency standards and curricula in collaboration with CTEVT and other relevant stakeholders to better align skills with labour market needs.
- Establish additional **SSCs** under the new TVET industry council to guarantee alignment with company need.
- **Organize the industry sector** to facilitate cooperation and streamline processes within the industry, ensuring a unified voice (refer to recommendations of previous chapter).

- Develop **short-term training for company owners,** explaining the benefits and conditions of offering training.
- Establish and expand TVET infrastructure to train young professionals in **pre-diploma and diploma courses** and promote models like the ENSSURE 24-month dual TVET (apprenticeship) that offer a **return on investment for companies**.
- Increase availability of **short-term, competence-oriented courses** that can later be credited to formal programs though recognition of prior learning (RPL).
- Develop training alliances **involving SMEs** (network of companies willing to train), either led by big companies or provincial chambers of commerce, to ensure broad participation in TVET programs.

We believe that a well-organized and committed industry can significantly enhance the TVET system. A robust TVET system is essential for improving both the standard of living of educated individuals and the overall economic situation. We hope that many of these proposed measures can be implemented effectively.

2 Methodology of Study

Globally, TVET plays a key role as it equips people with practical skills that are essential for various industries. In Nepal, institutions such as the CTEVT and the Center for Education and Human Resource Development (CEHRD) primarily impart theoretical technical skills through formal Technical Schools. However, industry involvement is crucial in designing TVET programs to meet the evolving needs of the workforce. Employers can provide invaluable insight into the needs of industry, increasing the relevance and quality of training while enabling a smoother transition from education to employment, thereby benefiting both the individual and the industry. The low level of employer participation in TVET initiatives in Nepal is a major challenge as it limits skill opportunities for youth and exacerbates the problem of brain drain. Effective industry participation in TVET would be a promising way to retain talent in the country and thus contribute to sustainable economic growth and development. Despite the government's investment in formalizing the TVET sector, there is still a weak link between the industry sector and the government, highlighting the need for better coordination.

Besides the literature and legal framework analysis, this report aims to take a closer look at the status of the industry sector and explore strategies for greater participation in TVET initiatives. By fostering stronger cooperation between industry, education, and government stakeholders, we aim to address the challenges that hinder the effectiveness of TVET and ultimately promote inclusive economic development in Nepal.

2.1 Research questions

To make sound recommendations for the participation of the industry sector in TVET in Nepal, we want to gain a comprehensive understanding of prevailing local conditions. Therefore, our research questions are:

- To what extent does Nepali industry suffer from a lack of skilled labour?
- What are the training initiatives of companies in Nepal so far?
- What are the success factors and barriers of existing TVET programs?
- What incentives would be helpful to encourage companies to co-produce skills and competencies?
- What are the existing strengths and capacities within the industry sector and what is the potential of the industry sector to train skilled workers for a higher growth rate of Nepali industry?
- What are the existing resources, organizations, and legal regulations and what could a new organizational structure of industry associations look like in the federal context for Nepal.
- How can Nepali industry organize itself to become a strong partner in education?

2.2 Methodology

To address these questions, we conduct two different projects. Firstly, in cooperation with local institutions and two umbrella organizations, we map existing associations. We choose an inductive approach for this phase because there is no literature on this and we are dealing with a topic that has hardly been addressed in Nepal to date, namely how the industry can represent its collective interests in TVET. This mapping enables us to identify the appropriate contacts to carry out the second project. Secondly, applying a mixed-method approach, we run a survey among Nepali companies (quantitative part) and validate the results with three focus groups (qualitative part). Chapter 6 explains detailed information about this methodology and the sample size.

Based on the findings, we make suggestions for improving the role of the **organized industry in the TVET system** and explain under what conditions companies would be prepared to invest more in TVET programs.

3 Literature Review

The benefits of TVET programs are wide-ranging and extend well beyond immediate financial gains. One of the key advantages is that engaging employers in the training process ensures that the skills taught are closely aligned with current labour market needs. This alignment reduces skill mismatches and significantly improves employment outcomes for graduates, as they are better prepared for the demands of the job market. Furthermore, involving employers in curriculum design and offering work-based training not only enhances the relevance of education but also fosters a culture of continuous learning and adaptation within the workforce (OECD, 2020). Particularly compelling are the net benefits associated with TVET programs, especially in dual TVET apprenticeship systems. According to a projection study by Bolli et al. (2020b), companies participating in Nepal's dual TVET apprenticeship program experience significant net benefits. The study estimates that these benefits equate to approximately three to four months of an employee's wage. Their analysis highlights that the direct costs associated with employing apprentices such as wages, insurance, and materials are outweighed by the productivity and value these apprentices bring to the company. This positive cost-benefit encourages firms to invest in apprenticeship programs as it enhances their workforce without incurring prohibitive expenses.

Furthermore, the TVET system literature suggests that the positive net benefits do not need the direct financial subsidies to employers in the long term. However, during the initial stages of implementing TVET systems, financial support from donor partners to intermediaries who coordinate new training initiatives with companies might be crucial. Parajuli et al. (2020) recommend that during the investment period, external funding should cover system overhead costs until the TVET infrastructure is fully established. This approach ensures a smooth transition and lays a sustainable foundation for the future, where companies can eventually absorb these costs. Aryal (2020) echoes this sentiment, stressing the importance of adaptable financing strategies that facilitate the institutionalization of the TVET system. This phased financial support helps in overcoming initial hurdles and sets the stage for a self-sustaining TVET ecosystem. Moreover, the socio-economic impact of well-implemented TVET programs can be profound. By equipping individuals with marketable skills, these programs contribute to poverty reduction, economic development, and social inclusion. The long-term benefits include a more skilled and adaptable workforce, which can drive innovation and competitiveness in the global market (World Bank, 2019).

3.1 Skill provision in the workplace

Depending on the generality of the skills that are taught by the education systems, firms may invest in training workers to learn a more specialized skillset that is needed (Geel et al., 2011). However, apprentices want a certain degree of generality in their skillset to being able to compete on the labour market. Eggenberger et al. (2018) suggest that the ideal TVET curriculum should balance generality and specificity by considering the economic and technological context. On the one hand, in rapidly evolving environments with high rates of innovation, occupations should be designed to be less specific, promoting greater flexibility and mobility for workers. This is particularly important for young adults who enter the labour market for the first time. Such an approach allows employees to transition between roles more easily and helps companies adapt their workforce to meet changing technological needs, thereby enhancing their capacity for innovation. On the other hand, to enhance economic growth which goes along with division of labour, more specific occupations are preferable as they align closely with existing job requirements, maximizing effectiveness in such settings. This also enables career ladders within a professional field and makes vocational training attractive.

In today's labour markets, the most critical skills are transferable skills, predominantly soft skills, which are essential for adapting to diverse contexts (Bolli & Renold, 2017). These transferable skills are relevant for navigating our rapidly evolving environment. Bolli and Renold (2017) show that the

workplace proves to be the optimal setting for mastering these skills, enabling students to swiftly apply theoretical knowledge in practical scenarios and thereby contextualize their learning. Moreover, workplaces provide essential resources such as advanced technology, direct customer interaction, and real-world scenarios, all of which facilitate more effective soft skill development compared to traditional school environments.

There are diverse talents, and a highly productive economy needs educated people across the talent spectrum. Academic education is only one part of the spectrum. Emerging economies today need above all practically gifted employees who have plenty of soft skills. There is a lack of this in many countries. Especially teenagers, who want to develop into adults and lead their own lives, often wish for alternatives to become financially independent. Therefore, education system which do not offer an alternative to academic education often experience large labour market mismatches, as students cannot pursue the education which is best for them. To integrate all individuals into the labour market and increase economic well-being, TVET and especially dual TVET help to integrate youth into the labour market (Bertschy et al., 2009).

3.2 The role of the industry engagement in the education system

Relying solely on government to shape the education system and design curricula risks economy-wide skills mismatches, as the government requires information about the skills in demand from the industry sector (Eichmann, 1989). Employers know best what skills are required in the labour market and they can train apprentices perfectly for their own needs. Given employer's ability to swiftly adapt to rapid technological changes, it is crucial to establish a robust employer-education linkage. Engaging forward-thinking firms at the innovation frontier within the education system is therefore essential. This engagement should span not only the curriculum design phase but also extend to the curriculum application phase, ensuring that educational programs are closely aligned with current labour market requirements (Caves et al., 2021; Rageth and Renold, 2019; Renold et al., 2015). By integrating industry perspectives throughout these phases, we can foster more responsive education systems that effectively prepare students for the challenges of the modern workforce. This approach not only enhances program relevance but also strengthens economic competitiveness by equipping learners with the skills demanded by industry.

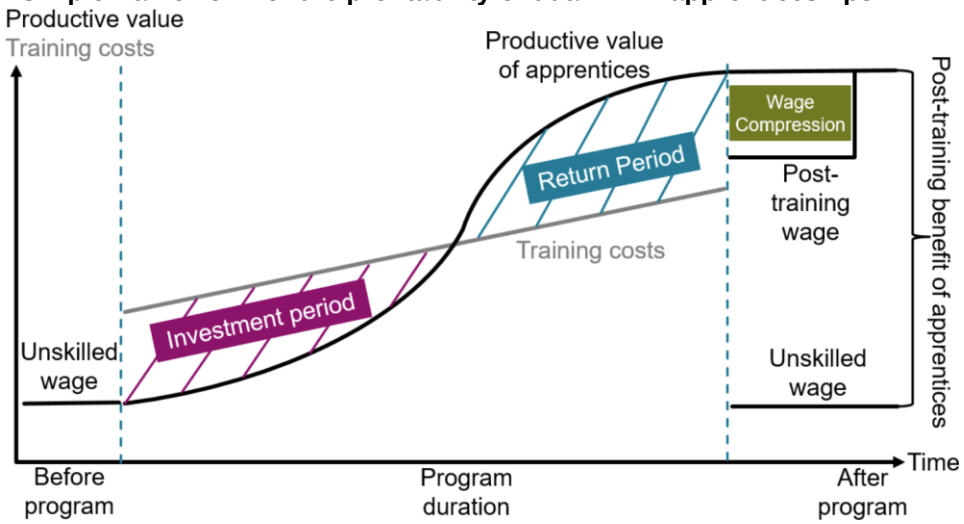
Bolli et al. (2020a) explain that the linkage between education and employment depends on how power is distributed between these two systems. If one of the two systems exercises excessive control over decisions related to TVET programs, the linkage is weaker. Conversely, a stronger linkage is achieved when power is shared equally between the actors in both systems. Programs with a stronger linkage tend to lead to better outcomes for program participants, as the programs are of higher quality than purely school-based training programs due to their proximity to the labour market. Key features of this linkage include empowering stakeholders in the employment system to design qualification standards, determine the timing of program updates and design assessment methods. In addition, a strong emphasis on workplace training as opposed to classroom training is critical to strengthening this linkage. Dual TVET, where apprentices work part-time at the company and the rest of the time they go to vocational school, decreases youth unemployment and increases job quality (Bolli et al., 2021).

3.3 Net-benefits of TVET: the real incentive for a strong employer engagement

A dual TVET program can be designed in such a way that it not only pays off for the apprentice in terms of a wage but also for the employer in terms of revenue. If the program results in a net-benefit for the

employer this has two positive aspects. First, employers do not need to rely on subsidies, and second, the employers do not have to be afraid of competitors in the market poaching trained workers.

Figure 1: A simple framework for the profitability of dual TVET apprenticeships



Notes: Figure taken from Bolli et al. (2020b).

Firms must individually decide whether to offer training. Wolter et al. (2020) highlight key lessons for policymakers when designing effective TVET systems based on a cost-benefit analysis of programs. First, creating conditions where many firms can break even by the end of the apprenticeship period is crucial, as firms with net costs are likely to avoid training. Second, the net costs for non-training firm are so high that subsidies alone, without additional support like flexible labour regulations, may not be sufficient. Third, even with available subsidies, high net costs might limit participation to firms that would break even without subsidies, causing economic losses and market distortions for apprenticeships. Finally, non-training firms face high costs that could limit apprentices' work and learning opportunities. Subsidies could help incentivize these firms to take on apprentices, even if meaningful work is scarce.

Firms' decisions on training program characteristics can be evaluated using a simplified cost-benefit model (Bolli et al., 2020b). Figure 1 illustrates the model, highlighting key factors that influence a firm's training profitability. Key determinants include apprenticeship wages, time utilization, and program duration. Lower apprenticeship wages enhance firms' willingness to offer training positions, as they reduce overall costs. Conversely, if apprentices spend less time in the firm or engage in less productive activities, the firm's productive value diminishes, making them less inclined to offer training opportunities. Additionally, shorter apprenticeship durations are less appealing because they shorten the return period, reducing profitability. Firms are motivated to provide training when they can achieve a profit, meaning the return period must be longer than the investment period. By balancing these factors, firms can create a conducive environment for training that benefits both the apprentice and the firm.

One practical exemplary case study for Nepal is Renold et al. (2024a) who conduct a survey to evaluate the ENSSURE program, a 24-month dual TVET program. They find that the program generates a net benefit of about four months skilled employee wages by the end of the program period. Despite the positive net benefits of industry-financed training, we recommend that initial support be provided to industry associations during the investment period to replace – in the long term - the role of the intermediary organization ENSSURE, which is funded by donor partner money. This support is crucial to cover system overhead costs until the dual TVET system is fully established and operational. During this initial phase, financing from donor partners can ensure smooth implementation and integration. Once the system is institutionalized and industry organizations have taken over the intermediary role which ENSSURE project plays at the moment, companies can assume the financial responsibility, sustaining the training programs independently. In the third report, we recommended donor partner funds to finance the industry organizations engaging in TVET programs (Renold et al., 2021).

4 Nepal's Dynamic Legal Framework Relevant for TVET

We have been following the federalization process in Nepal through numerous work trips, a long-term research cooperation with Kathmandu University, and systematic analysis and monitoring of the implementation of the new constitution in the education sector. The first TVET federalization report (Renold & Caves, 2017) assesses how the TVET sector should be designed, considering the new constitutional provisions. The second TVET federalization report (Renold et al., 2018) mainly focuses on the ongoing legislative processes and policy developments. We also highlight the importance of financial flow analysis, which must be considered in the transition process from the old to the new regulatory framework. Additionally, we summarize the projects that are essential for the TVET sector. The third TVET federalization report (Renold et al., 2021) discusses the significance of TVET federalization by highlighting the need for integrating new TVET legislation within the broader legal frameworks. It emphasizes coordination across political and operational levels, the importance of a national centre for TVET (currently CTEVT), and the distinction between formal TVET programs and non-formal skills development. The third report also outlines the necessity of aligning TVET sector financing with the Inter-Governmental Fiscal Bill and provides comprehensive insights for legislative improvements to enhance the TVET sector's attractiveness and effectiveness. This fourth TVET federalization report summarizes the latest developments in the regulatory framework and interprets its significance for the TVET sector, particularly for a substantial involvement of the industry sector in TVET.

4.1 TVET-relevant acts

4.1.1 Labour Act, 2017

The Labour Act of 2017 defines workers' rights, interests, and safety across sectors, outlining flexible working hours and various employment types, including regular, time-bound, casual, or part-time employment. The Act includes provisions for trainees and apprentices, according to which they can be hired pursuant to the curriculum of educational institutions. The Act introduces a safety concept and health committee in firms with 20 or more employees. The safety and health committees ensure safety rights for all workers including interns and apprentices.

4.1.2 Industrial Enterprises Act, 2020

The Industrial Enterprises Act of 2020 outlines the importance an easy, predictable, and effective management of the industry sector to build a dynamic and robust economy by mobilizing the available resources to the maximum extent possible, enhancing the production of industrial goods or services, and increasing employment opportunities by creating an investment-friendly and competitive industrial environment. Further, does the Act describe the provisions for registration and regulation of industries: outline the category of industry in terms of size and type, from micro to large-scale industries and from manufacturing to service industries, as well as industries with national pride. Among others, the Act highlights the provision of income tax deduction if the industries are considering inclusion, additional facilities for women and person with disabilities as well as for the expenses of training and education of the staffs. Concretely, industry is entitled to additional 15% of tax levy able on the income of that year if at least 50% of the Nepali citizens employed are women, Dalit, or persons with disabilities. Manufacturing industry is entitled to deduction of income tax from the training expenses paid to trainees if at least 10% of its total strength of human resources are trainee workers, and of expenses incurred in development of production capacity of human resources in the industry. Similarly, 35% tax exemption is applied for female owned enterprise.

Art. 20 describes the composition of the IIPBN, which is of great importance for the present study, as the chairpersons of the various cross-sectoral associations are members at national level. The article 49 of the Act is about the industrial human resource, which is elaborated a: (1) Human resource required for an industry shall be fulfilled from Nepali citizens. (2) Notwithstanding anything contained in subsection (1), if such human resource with any specific skill or competency required for an industry is not available from Nepali citizens in spite of the publication of an advertisement in a newspaper of national circulation or for a senior level management post, the industry may, on the recommendation of the Department under subsection (3), appoint a foreign citizen for a maximum of five years by obtaining labour permit under the prevailing labour law. (3) When making a recommendation for the purpose of subsection (2), the industry registration body shall ascertain that the industry has made an effort to fulfil the human resource with the specific skill or competency as demanded from Nepali citizens, the human resource with such skill or competency is required for the industry and such human resource is not available in Nepal and recommend to the Department of Labour for labour permit.

4.1.3 Federal TVET Act and relevant bylaws

The federal TVET Act is still under discussion. This may be helpful to consider the findings of this report on the inclusion of industry. The third Federalization Report outlines the role of industry in TVET legislation, whereas this report contributes to better organizing the industry sector to create a more effective TVET system.

Due to the overdue national TVET Act, certain existing legal bases had to be amended for the innovations in the TVET sector. The CTEVT has revised its existing rules and promulgated few bylaws to implement its current mandates in line with the constitution of 2015. The CTEVT's revised rules contains information regarding i) the qualification award to youth up to NVQF level 5 and ii) clarified roles of industries in apprenticeship (CTEVT, 2024b). Similarly, CTEVT has also developed bylaws related to accreditation of TVET institutions and licensing of TVET instructors. Both bylaws are approved by the CTEVT for its implementation (CTEVT, 2024a).

4.1.4 Provincial TVET Acts and relevant bylaws

Due to the lack of national TVET regulation, individual provinces have started to draw up their own TVET Acts. These include the provinces of Bagmati and Gandaki. We summarize the unauthorized English translations below.

Bagmati Province

The Bagmati Province TVET Act 2077 of 2020 aims to develop skilled human resources, enhance employment opportunities, and improve the economic standards of the people in the Bagmati Province. The Act establishes a **TVET Council** to manage and regulate TVET, with members from various government departments and field experts. The duties of the Council include policy formulation, establishment of TVET centres, and certification management. Additionally, the Act defines the qualifications and responsibilities of the Chief Executive Officer, who oversees daily operations and supports policy implementation. The recognition of non-formal certificates is also included in the act. Funding for the Council comes from government grants and other sources, with strict auditing and financial reporting requirements. Overall, the Act seeks to align TVET with the socio-economic needs of the province, supporting broader goals of economic development (CTEVT Bagmati).

In the meantime, the ministerial council of Bagmati Province based on the provincial TVET Act has approved bylaws regarding the establishment of the Provincial CTEVT (PCTEVT) under the Ministry of Social Development. The bylaws elaborate the roles and responsibilities of the PCTEVT as follows:

i) Develop and implement the National Vocational Qualification Framework (NVQF) in coordination with federal and local governments.

ii) In cooperation with the industry sector, implement TVET programs that are aligned with labour market needs.
iii) Monitor and strengthen the capacity of the accredited skill assessment centre and conduct skill assessments.
iv) Assess and certify prior learning and skills.
v) Perform mandated roles regarding the accreditation of TVET institutions.
vi) Perform mandated roles regarding the licensing of instructors.
vii) Develop curricula based on the national curriculum framework and labour market needs.
viii) Strengthen the capacity of TVET institutions at the provincial and local government levels.
ix) Develop and implement scholarship policies for TVET institutions at provincial and local government levels.
x) Provide career counselling services.
xi) Offer apprenticeships in collaboration with professional and industry associations.
xii) Provide affiliation to TVET institutions for pre-diploma and diploma level TVET programs.
xiii) Prioritize dual TVET apprenticeships.
xiv) Undertake other activities as directed by the provincial government.

Gandaki Province

The **Gandaki Province TVET Academy Establishment and Operation Act** aims to standardize, certify, and implement market-demanded training within Gandaki Province. The primary purpose of the Act is to ensure TVET aligns with labour market needs, thereby enhancing employment opportunities and supporting economic development.

The Act establishes the TVET Academy as an autonomous corporate body with competences including property management and contract conclusion. The Academy is responsible for approving short- and long-term plans, annual budgets, and TVET policies and strategies. It is also responsible for evaluating TVET programs, standardizing skills certification, and managing curriculum development.

The Act outlines the formation of the Academy Assembly, comprising members from various governmental and non-governmental sectors, and the creation of an Executive Committee to oversee policy and plan implementation. The Academy is also authorised to establish and operate public polytechnics, affiliate with institutions that meet established standards, and provide necessary certifications and accreditations.

Additionally, the Act provides for the establishment of a separate Academy Fund, comprising government grants, loans, and income from training services, with stringent auditing and financial management practices. It emphasizes collaboration with national and international agencies and recognizes certifications from affiliated institutions.

4.2 Policies relevant for TVET Sector

National policy documents are an important source for the development of a robust TVET sector. They provide information on long-term and concrete objectives. We summarize important innovations below.

4.2.1 TVET Industry Strategy, 2019

Industry sector strategies in TVET sector were developed and endorsed by the CNI in 2019, highlighting the importance to reform TVET policies, acts, and activities.[1] This document serves as a basis for

[1] This industry sector strategy is not published. However, the authors got access to the unpublished version.

developing strategies in the TVET sector and highlights key areas where the industry sector would like to contribute. These are:

- **Access and equity:** Collaborate in apprenticeship programs to serve people with disabilities, economically disadvantaged individuals, and in marginalized communities;
- **Quality and relevance:** Industries to lead SSCs or committees and full participation in TVET programmes from skills need assessment, course design and development, implementation (providing apprenticeship or industry training opportunities, supervision, and monitoring), assessment and evaluation, certification to employment;
- **Mobility and permeability:** Support in developing tertiary non-university professional education; support in assessment and recognition of skills;
- **Governance and management:** Participation in advisory boards of TVET institutions at a national level, establishment of Education Committee within each industry association;
- **Research and innovation:** Collaborate and contribute for research, innovation and information management and expansion of associations at state and local level;
- **Knowledge sharing:** Collaboration for exchange of experience and transfer of knowledge between work and learning;
- **Sustainable financing:** Invest on the specific training that meets the firm and industry needs;
- **Science and technology:** Partnering for development in digitalization, Information Technology and Geographic information system (GIS) management;
- **Monitoring, evaluation and feedback:** Assess and evaluate the performance of the trainees based on competency, provide feedback to training providers;
- **Structure and implementation framework:** Participation in Councils, Examination Boards at federal, provincial, and local level.

This first TVET industry strategy initiated by the umbrella organization CNI is unique in the context of the development of TVET systems in low- and middle-income countries. The strategy outlines the industry's interest in collaborating with education sector stakeholders. It details the rights and obligations that industry representatives wish to uphold, as well as those they are willing to assume.

4.2.2 TVET Sector Strategic Plan, 2023

The TSSP (2023-2032) by the GoN, Ministry of Education, Science and Technology (Lamsal & Bajracharya, 2023) outlines a comprehensive strategic plan for TVET, aiming to enhance the sector's capacity to provide relevant and quality TVET aligned with labour market demands. The plan is structured to unfold in three phases over ten years, focusing on institutional knowledge sharing, minimizing workforce demand-supply mismatch, and expanding TVET services to produce competent graduates for both national and global job markets. Key components include equity and access, quality and relevance, coherence and transferability, and governance and management. The rationale for this strategic initiative emphasizes addressing the existing gap in employment-relevant skills and formalizing a response system to labour market needs.

This TSSP is of importance for the TVET sector in Nepal, as it shows in detail the phases in which the sector should be developed over the next years. Provided that the responsible actors implement this plan as intended, significant improvements in the sector can be predicted.

4.3 Periodic plans relevant for TVET sector

4.3.1 16th periodic plan

The 16th periodic plan, focusing on “Good Governance, Social Justice and Prosperity,” emphasizes the need for training and education aligned with labour market demands. According to the concept paper,

the plan aims to create domestic employment by developing skilled human resources and leveraging demographic dividends at all three government levels. It also highlights the importance of digital technology in education, collaboration with industry, and all three levels of government provide demand-driven training. This approach is intended to enhance youth employment and contribute to the country's socio-economic development.

4.3.2 Five-year plan of the Ministry of Labour, Employment and Social Security

The MoLESS has endorsed its five-year periodic plan (2022-23 to 2026-27). Skill development training is one of the six key pillars in the plan. Other pillars include promotion of domestic employment, occupational health and safety, management of foreign employment, contribution based social security, and good governance. The plan includes establishment of a model skill training centre in all seven provinces and coordination with provinces and local governments for minimizing duplication and overlapping of skill training. The plan outlines collaboration with industries for the provision of apprenticeship and industry-based curriculum development. The plan also includes the provision of skills training to prospective migrants and recognition of skills and competencies of returnee migrants.

4.4 Recommendations

Industry and labour relationships

- We recommend that the **IIPBN** be carefully considered when structuring the TVET industry and that its potential to acquire rights and obligations in education be fully utilized.
- We recommend revising the existing **TVET industry strategy** based on the findings from this report. The strategy should be recognized and officially approved by national authorities, possibly through the IIPBN.
- Although the law contains important recommendations for improving local employment, we recommend regularly **evaluating sectors** where local workers are scarce. Based on evaluations, corresponding TVET programs should be launched.

Education

- We recommend that the upcoming **national TVET Act** ensure industries play a significant role and that provinces are mandated to lead TVET schools and invest in knowledge sharing.
- The varying approaches of **provincial TVET Acts** illustrate how differently two provinces regulate the TVET sector, largely due to the absence of a national TVET Act. Without national guidelines, provinces are left to independently determine which functions need regulation at the provincial level. Provincial TVET laws must be coherent with a national TVET Act. Therefore, we recommend finalizing and approving the national TVET Act, incorporating the findings of this report and the best practices from provincial legislation.
- To achieve sustainable outcomes in the skills development sector, we recommend that short-term courses adopt **competence-oriented curricula** aligned with the formal TVET programs regulated by the Council for Technical Education and Vocational Training (CTEVT). This alignment will facilitate the recognition of non-formally acquired skills and provide access to formal education.

5 The Nexus of the Industry Sector in TVET

5.1 Context

The industry sector plays a major role in education programs worldwide. The driver for this is the digital transformation as this is leading to very rapid changes in qualification requirements (e.g., Schendzielorz, J. et al., 2024; Dalgıç A. et al., 2024, Antweiler et al., 2024; Sapper et al., 2021). Artificial intelligence will lead to entire processes being controlled digitally; for example, architecture firms are able to carry out creative processes much faster with artificial intelligence and robots will take over tasks in hotels, schools, and care institutions. Finally, translation programs will lead to less demand for professional translation, to name just a few examples. Hence, new digitally supported technologies are changing products, processes, and services, and this also places different demands on employees. They must have skills that are transferrable to new challenges. This kind of change in the world of work is challenging educational institutions. Their pace of adapting curricula to the requirements of the labour market is far too slow. Therefore, the demand for educational programs in cooperation with industry stakeholders is increasing.

The digital transformation has an impact on qualification requirements, as employees in companies must be able to adapt to constantly changing requirements. Concurrently, it also has an impact on the education sector and particularly on full-time schools and universities. Curricula in the education sector change slowly and are rarely aligned with the needs of the labour market. Bolli et al. (2021) for example investigate the impact of TVET programs on the youth labour market. The authors examine how different types of secondary education, including general education, school-based TVET, and dual TVET, affect labour market integration and job quality for 15- to 24-year-olds. The study utilizes fixed effects regressions on panel data from 35 countries between 2004 and 2014, finding that while school based TVET may hinder labour market integration, dual TVET tends to improve both integration and job quality. Furthermore, school-based education programs hardly contribute to develop soft skills. Bolli and Renold (2017) explored the optimal settings for learning various skills, focusing on a survey among professional tertiary education and training business administration students in Switzerland. They conclude that strategic management, human resource management (HRM), organizational design, and project management are best taught in school, whereas soft skills are more effectively acquired in the workplace, with some exceptions like analytical thinking and organizational skills, which can be equally learned in both settings.

Because the digital transformation will lead to powerful changes in the coming decades, it is essential to organize the competencies and skills required on the labour market in a collaboration between industry and education stakeholders. In this chapter, we summarize the evidence for selected TVET programs, point out which actors from the employment system need to be engaged, and how the economy could be organized for a strong TVET system.

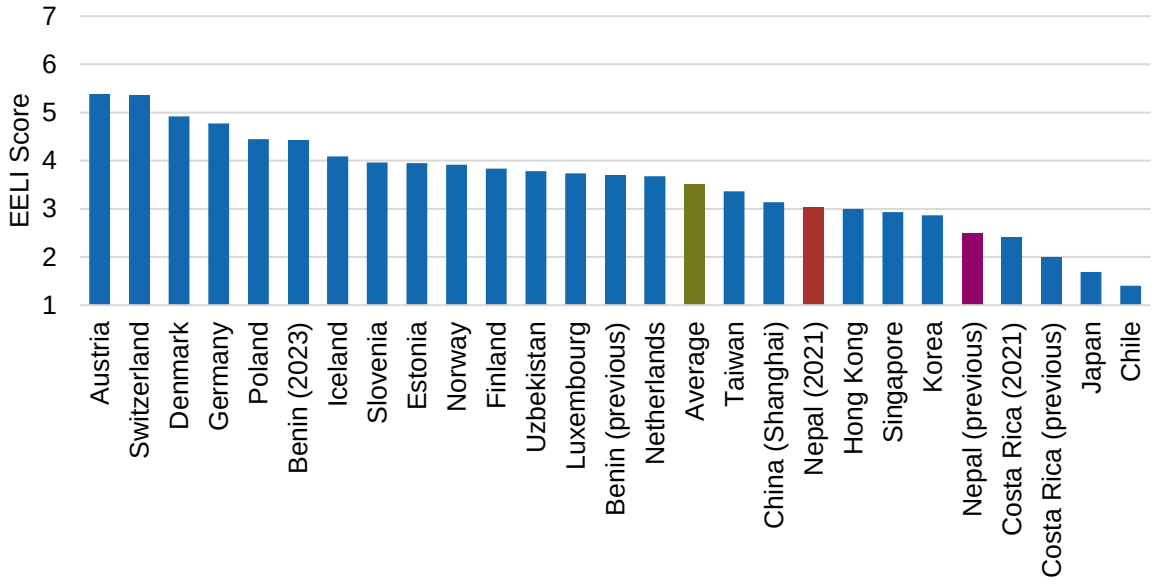
5.2 Education-Employment Linkage Index

A critical aspect of TVET is the robust cooperation between stakeholders in both the education and employment systems along the curriculum value chain. The EELI, developed by the Swiss Federal Institute of Technology's (ETH's) Chair of Education Systems, measures this integration within TVET programs. Caves et al. (2021) explored how TVET programs in Benin, Chile, Costa Rica, and Nepal link education with employment using the EELI. Their findings indicate that Benin exhibits a relatively high education-employment linkage. This success is attributed to the integration of formal education into an existing informal employer-led program, which enhances the alignment of educational outcomes with labour market needs.

In contrast, Chile, Costa Rica, and Nepal demonstrated lower linkage levels, despite ongoing reforms aimed at improving integration. The study highlights various strategies for enhancing linkage, tailored to the developmental stages of each country's education systems and economies. For instance, recommendations include fostering closer partnerships between educational institutions and industries, updating curricula to reflect current market demands, and enhancing practical training opportunities within the industry. Paudel (2024) revisits the EELI measurements and reports only gradual improvements. His dissertation emphasizes that Nepal still faces significant challenges in developing an efficient TVET sector that effectively cooperates with industry stakeholders. The slow progress suggests that further reforms and sustained efforts are necessary to strengthen the education-employment linkages.

The concept of linking education to employment is critical for ensuring that graduates possess the skills needed by the labour market. Several studies have emphasized the importance of this linkage in various contexts. For example, the World Bank (2019) highlights that effective TVET systems require strong partnerships between educational institutions and industry, continuous curriculum updates, and a focus on both theoretical and practical skills training. Similarly, the OECD (2023) discusses the need for policy frameworks that support such partnerships and provide incentives for industries to participate actively in the education process. These findings emphasize the importance of social dialogue, involving employers, workers, and governments, in shaping effective TVET policies.

Figure 2: EELI results in the international context



Notes: Benchmark of EELI results. Average (green); Nepal 2017 (purple); Nepal 2021 (red), own depiction with updated data based on Caves et al. (2021).

The industry sector is a crucial stakeholder in the TVET sector. Their participation in TVET policy- and decision-making processes is often regarded as key to the development of a sustainable TVET. The engagement of the industry sector in TVET is short-term and non-decisive in nature. The SSCs are one of the important platforms for the active engagement of the industry sector. Until now the SSCs are formed by the CTEVT which limit the leadership potentials of the industry sector in the TVET. Although there exist few good examples of industry sector engagement such as collaboration in apprenticeships, the leadership role of the industry sector is not yet evident. It is also the reason that the industry sector does not see itself as a partner in TVET rather they view TVET as an equity measure instead of a productivity-enhancing tool. The industry sector invests only around 1% of overall revenues in training and developing human resources (Niti Foundation, 2022). Without a systematic and substantial involvement of the industry, the TVET system is unlikely to achieve the desired effects. This is particularly important in the 21st century in the context of rapidly changing labour markets.

To enable employers to develop their commitment (e.g., as outlined in the TVET Industry Strategy, see chapter 4.2.1), the industry sector must first be organized and coordinated. An overview of existing industry organizations that can play a role in TVET is essential. This task is much more complex in a federal context than in a centrally managed country. We devote the following chapter to this task.

5.3 Mapping the structure of the industry sector

This study focuses on the formal labour market, specifically registered companies, and organizations. Although the informal sector is crucial in Nepal, it is not included here due to the challenges of incorporating non-registered firms. Listing informal organizations, such as tribes and clans, would be beneficial but is beyond the scope of this study.

We aim to include all organizations and institutions involved or expected to be involved in education, both now and in the future. These entities encompass member companies with varying levels of activity in education. We are developing a conceptual approach for mapping these organizations, ensuring it considers the federal context by covering national, provincial, and local levels.[2]

5.3.1 Industry sector categorization

Table 1 compares the industry categories defined by the Nepal Standard Industrial Classification (NSIC), the IIPBN, and the Federation of Nepalese Chamber of Commerce and Industries (FNCCI).

The NSIC categorizes industries into 21 economic activities, including agriculture, construction, manufacturing, real estate, and activities of extraterritorial bodies (Central Bureau of Statistics, 2018). The Industrial Enterprises Act of 2020 classifies industry based on fixed capital into five categories: a) micro, b) cottage, c) small, d) medium, and e) large. Additionally, the act classifies industries by the nature of goods and services into eight categories: a) energy-based, b) manufacturing, c) agriculture and forest products, d) mining, e) infrastructure, f) tourism, g) ICT, and information dissemination technology, and h) service. Agriculture, while providing two-thirds of employment and contributing one-third to gross domestic product (GDP), mainly operates in a subsistence mode.

The IIPBN, established under Article 20 of the Industrial Enterprises Act 2020, includes ten sectors such as agriculture, tourism, energy, and manufacturing, and is mandated to regulate and facilitate foreign direct investment in these sectors.

On the other hand, the FNCCI is the largest association in Nepal, with 121 district/municipal chapters, 123 commodity associations, and 208,580 member companies (Federation of Nepalese Chamber of Commerce and Industries, 2024). FNCCI categorizes industry sector firms into ten categories, including major sectors like agriculture, energy, tourism, and infrastructure. Commodity associations represent a significant portion of the industry and trading sectors.

In contrast, the CNI focuses exclusively on industrial activities and has a significantly smaller membership compared to FNCCI. CNI manages key industry sectors through specialized committees, including those for industry, infrastructure, and tourism.

[2] We focus exclusively on employer organizations in this study and do not address the role of trade unions or employee organizations. The role of trade unions and employee organizations in the TVET sector should be explored in a separate study.

Table 1: Categories aligned across different bodies

NSIC by Central Bureau of Statistics	IIPBN[3]	FNCCI
Agriculture, Forestry and Fishery	Agriculture	Agriculture
Mining and Quarrying	Mines and Minerals	Mines and Minerals
Manufacturing	Manufacturing	Manufacturing
Electricity, Gas, Steam and Air Conditioning Supply	Energy	Energy/Hydropower
Water Supply, Sewerage, Waste Management and Remediation Activities		
Construction	Infrastructure	Infrastructure
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles		
Transportation and Storage	Transportation	Aviation
Accommodation and Food Service (Hotel and Restaurant)		
Information and Communication	ICT	ICT
Financial and Insurance Activities	Banking and Finance	Banking and Financial
Real Estate Activities		
Professional, Scientific and Technical Activities		
Administrative and Support Service Activities	Services	
Public Administration and Defence, Compulsory Social Security		
Education	Education	
Human Health and Social Work Activities	Health	Health and Education
Arts, Entertainment and Recreation		
Other Service Activities	Tourism	Tourism
Activities of Households as Employers, Undifferentiated Goods and Services Producing Activities of Households for Own Use		
Activities of Extraterritorial Organization and bodies		

5.3.2 Employer association at federal level

The following paragraph outlines employer associations across three political levels, categorizing them into “cross-sectoral associations,” “sectoral associations,” and “SSCs.” The discussion focuses on their potential roles and interactions with TVET functions. This mapping is essential because the industry sector has had limited influence when engaging with educational government entities and development partners. A contributing factor is the absence of a unified and coordinated stance on TVET issues from

[3] See chapter 3 of the Industrial Enterprises Act, 2076 (2020)

the industry sector. Additionally, the paragraph elaborates on the current responsibilities of these associations and proposes potential future roles they could play in strengthening the TVET sector.[4]

The existing associations of enterprises or employers can be categorized into **cross-sectoral umbrella associations** at federal level, sector specific associations at federal level, province, district, and municipal chapters of federal level associations. Additionally, we list **sector associations** known to us that are active at national level.[5] Table 2 provides information on key associations operating at the federal level, including their members, current functions, and recommended possible TVET functions. Sector-specific federal associations are also the members of FNCCI, Federation of Nepali Cottage and Small Industries (FNCSI), or CNI. For example, the Federation of Contractor Association of Nepal, which includes its provincial and district chapters and member companies, is also a commodity association within FNCCI. Many federations operate similarly. Additionally, enterprises often belong to multiple associations simultaneously, such as a star-rated hotel being a member of the Hotel Association of Nepal, FNCCI, and CNI. This overlap can lead to multiple counting when summing up membership figures. Generally, municipal and district-level associations consist of individual companies, whose representatives then serve in provincial associations. Different organizations have varying membership categories; for instance, CNI categorizes members as a) promoter, b) corporate, c) institutional, and d) provincial chapters, while FNCCI includes a) district/municipal chambers of commerce and industry (CCI), b) commodity associations, c) bi-national CCIs, and d) associate members.

The federal-level cross-sectoral and sector-specific associations are consulted by government ministries and development partners when formulating policies and legal provisions. The chairperson of FNCCI, CNI, FNCSI, and the Federation of Women Entrepreneurs Association of Nepal (FWEAN) are members of the IIPBN and thus have the ability to directly advise and influence national policy These leaders are prominent in political and economic discussions, which are widely covered by the media. However, discussions often focus more on business environment issues, such as taxes, bank interest, infrastructure, and promotional activities, rather than on skills and TVET. This limited focus, coupled with insufficient dialogue between employers and TVET providers, contributes to a mismatch between the demand and supply of skilled human resources and weakens collaboration between employers and TVET providers at various levels.

Recognizing this gap, SSCs have been established to engage more closely in the TVET cycle. SSCs are employer-led institutions assist government authorities in developing sector-specific occupational skills maps, identifying current and future needs in various occupations, and creating competency standards. They also oversee the development of courses for specific qualification levels. In recent years, federal associations have begun to lead SSCs as part of their functions. For example, CNI hosts the SSC for manufacturing, with its vice president serving as the chair. Currently, all six SSCs are operational at the federal level and may include representatives from provincial and local organizations.

Table 2: Systematic structure of industry organizations at the federal level

Cross-sectoral umbrella associations at federal level			
Name	**Member companies/ associations**	**Current main functions**	**Recommendation for TVET role**
TVET Industry Council[6]		*Planned, but not yet existing in Nepal*	*Coordinating body for whole TVET sector: speak with one voice, main partner for GoN.*

[4] Given the dynamic nature of this sector, we cannot guarantee that this study includes a comprehensive list of all associations.
[5] While the Nepali federal structure does not place significant emphasis on districts, district chapters of organizations like FNCCI still exist due to historical practices.
[6] This has not yet been decided, although some industry representatives are considering it.

FNCCI	121 district/municipal chambers of commerce and industries, 123 commodity/sectoral associations, 400,000 member companies	Plays a key role in national business and industrial development. Establishes sound industrial relations across Nepal. Reinforces the industry community's commitment to societal issues. Provides advisory services to the government on business and industry matters. Engages in lobbying to influence the formulation and execution of industry-friendly policies, acts, and programs.	Advocate and provide strategic inputs to government, TVET agencies, and donors. Collaborate for delivery, management, and governance of TVET schemes.
CNI	7 province chapters, 350 member companies	Encourages positive competition and competent management among industry. Promotes domestic and foreign investment. Creates employment opportunities in the country's industry and corporate sectors.	Advocate and provide strategic inputs to government, TVET agencies, and donors. Collaborate for delivery, management, and governance of TVET schemes.
FNCSI	354,000 enterprises	Promotes micro, cottage, and small industries (MCSIs) through a wide range of activities and services. Organizes various promotional activities like interaction, training, workshops, seminar, conferences, and exhibitions.	Advocate and provide strategic inputs to government, TVET agencies, and donors. Collaborate for delivery, management, and governance of TVET schemes.
Nepal Chamber of Commerce (NCC)	More than 1,600 ordinary members, more than 8,000 registered firms are affiliated	Assists in developing the national economy by promoting and protecting commerce and industries in both the private and public sectors.	Collaborate with government, TVET agencies, and donors for delivery, management, and governance of TVET schemes.
Federation of Woman Entrepreneurs' Associations of Nepal (FWEAN)	67 district chapters, 5,500 members companies	Advocates for issues related to female economic participation. Enhances the capacity of women entrepreneurs. Supports firms owned by women entrepreneurs. Increases outreach of FWEAN.	Coordinating body for whole TVET sector: speak with one voice, main partner for GoN. Advocate and provide strategic inputs to government, TVET agencies, and donors. Collaborate for delivery, management, and governance of TVET schemes.

Sectoral association at federal level			
Federation of Contractors' Association Nepal (FCAN)	12,408	These associations are membership-based organizations that represent specific industry sectors. They unite to advocate for the interests of their member companies. They have chapters at the provincial and municipal levels, effectively serving as federations for specific sectors, such as hotels and contractors. Additionally, they provide advisory services to the government on creating and implementing favourable legal and policy environments.	Advocate and provide strategic inputs to the newly created **TVET industry council.** Coordinate roles and responsibilities with **cross-sectoral organization** and **SSCs**.
Federation of Handicraft Associations of Nepal	4,000		
NADA Automobiles Association of Nepal	3,200		
Trekking Agencies Association Nepal (TAAN)	2,183		
Nepal Coffee Federation	2,000		
Federation of Nepal Furniture & Furnishing Entrepreneurs Associations	1,400		
Export Council of Nepal	749		
Association of Music Industries Nepal	700		
Floriculture Association Nepal	667		
Nepal Gem and Jewellery Association	500		
Hotel Association Nepal (HAN)	225		
Nepal Carpet Manufacturer and Exporter Association	173		
Nepal Biogas Promotion Association	148		
Footwear Manufacturers Association of Nepal	75		
Nepal Association of Rafting Agencies (NARA)	70		
Garment Association Nepal	63		
Dairy Industries Association	43		
Independent Power Producers Association, Nepal	40		
Nepal Agriculture Machinery Entrepreneurs Association	29		
Airlines Operators Association of Nepal (AOAN)	16		
Renewable Energy Confederation of Nepal	9		
Federation of Computer Association Nepal (CAN)	7		

SSCs at federal level			
Manufacturing	11	SSCs are government-recognized, industry-led bodies that help bridge the gap between labour market demand and TVET supply. They develop occupational sectoral maps that reflect the current labour market situation and forecast future skill needs according to the qualification framework. Based on these maps, SSCs facilitate the development of National Competency Standards (NCS), curricula, and program delivery. As key entry points for the latest labour market data from employers, SSCs play a crucial role within the TVET system.	Represent the sector in TVET-related occupational design and monitoring issues. Advocate and provide strategic inputs to the newly created **TVET industry council.** Coordinate roles and responsibilities with **cross-sectoral organization** and **sector organizations** at all three levels of government.
Agriculture	11		
Construction	11		
Hospitality	11		
ICT	11		
Automobile	9		

5.3.3 Employer association at province level

Under the new federal structure, employers have reorganized by establishing provincial chapters in all seven provinces. These chapters function similarly to their federal counterparts but focus on provincial-level issues and government interactions. While district or municipal chapters maintain direct communication with federal associations, provincial chapters play a bridging role. They are crucial for advocating, suggesting, and influencing provincial policies, investment priorities, and laws.

However, provincial chapters have not fully realized their potential in contributing to TVET functions, as their roles are not yet clearly defined by new laws. For instance, in Bagmati Province, individual employers are appointed to decision-making committees, while in Gandaki Province, the President of the Provincial NCC holds a similar role. Large national umbrella organizations represented in the IIPBN have not yet taken on a significant role.

Currently, provincial employer associations assist by providing market demand information, facilitating industry-school collaboration, and contributing to skills certification through RPL.[7] Given the diverse economic needs, demand-supply gaps for skilled labour, and varied TVET infrastructures across provinces, there is potential for provincial industry sectors to enhance their collaboration with federal entities like SSCs. Table 3 provides information on key umbrella associations operating at the province level, including their members, current functions, and recommended possible TVET functions.

[7] Due to the currently unclear data situation, we focus only on cross-sectoral associations at the provincial level. Sector associations, along with SSCs, are particularly crucial at the national level for developing occupational framework curricula.

Table 3: Systematic structure of industry organizations at province level

Cross-sectoral umbrella associations at province level				
	Name	**Member companies/ associations**	**Current main functions**	**Recommendation for TVET role**
Koshi Province	FNCCI - Koshi Province	56,000	Plays a catalytic role in national business and industrial development. Establishes sound industrial relations and provides advisory services to the government and lobbies for industry-friendly policies, acts, and programs.	Contribute to federal level SSCs, develop labour market databases for provinces, and support the TVET cycle. Facilitate collaboration between TVET schools and partner companies for dual TVET apprenticeships, assist existing workers with skills certification through recognition of prior learning, and support re-skilling and up-skilling initiatives for current employees.
	FNCSI - Koshi Province	4,500	Provides technical support to the potential entrepreneurs. Lobbies with provincial government for policy refine and other industrial legal obligations. Promotes cottage and small industries in the province.	
	CNI - Koshi Province	100	Provides policy inputs on industrial development, investment, export promotion, trade facilitation, and industrial relations. Acts as a think tank for the industrial sector and the country's economy.	
Madhesh Province	FNCCI - Madhesh Province	23,000	Plays a catalytic role in national business and industrial development. Establishes sound industrial relations and provides advisory services to the government and lobbies for industry-friendly policies, acts, and programs.	
	FNCSI - Madhesh Province	15,000	Provides technical support to the potential entrepreneurs. Lobbies with provincial government for policy refine and other industrial legal obligations. Promotes cottage and small industries in the province.	

	CNI - Madhesh Province	30	Provides policy inputs on industrial development, investment, export promotion, trade facilitation, and industrial relations. Acts as a think tank for the industrial sector and the country's economy.
Bagmati Province	FNCCI - Bagmati Province	70,000	Plays a catalytic role in national business and industrial development. Establishes sound industrial relations and provides advisory services to the government and lobbies for industry-friendly policies, acts, and programs.
	FNCSI - Bagmati Province	27,500	Provides technical support to the potential entrepreneurs. Lobbies with provincial government for policy refine and other industrial legal obligations. Promotes cottage and small industries in the province.
	Confederation of Bagmati Province Industries (CBPI)	196	Provides policy inputs on industrial development, investment, export promotion, trade facilitation, and industrial relations. Acts as a think tank for the industrial sector and the country's economy.
Gandaki Province	FNCCI - Gandaki Province	18,000	Plays a catalytic role in national business and industrial development. Establishes sound industrial relations and provides advisory services to the government and lobbies for industry-friendly policies, acts, and programs.
	FNCSI - Gandaki Province	4,000	Provides technical support to the potential entrepreneurs. Lobbies with provincial government for policy refine and other

			industrial legal obligations. Promotes cottage and small industries in the province.
	CNI - Gandaki Province	65	Provides policy inputs on industrial development, investment, export promotion, trade facilitation, and industrial relations. Acts as a think tank for the industrial sector and the country's economy.
Lumbini Province	FNCCI - Lumbini Province	30,700	Plays a catalytic role in national business and industrial development. Establishes sound industrial relations and provides advisory services to the government and lobbies for industry-friendly policies, acts, and programs.
	FNCSI - Lumbini Province	4,400	Provides technical support to the potential entrepreneurs. Lobbies with provincial government for policy refine and other industrial legal obligations. Promotes cottage and small industries in the province.
	CNI - Lumbini Province	55	Provides policy inputs on industrial development, investment, export promotion, trade facilitation, and industrial relations. Acts as a think tank for the industrial sector and the country's economy.
Karnali Province	FNCCI - Karnali Province	13,700	Plays a catalytic role in national business and industrial development. Establishes sound industrial relations and provides advisory services to the government and lobbies for industry-friendly policies, acts, and programs.

	FNCSI - Karnali Province	15,000	Provides technical support to the potential entrepreneurs. Lobbies with provincial government for policy refine and other industrial legal obligations. Promotes cottage and small industries in the province.	
	CNI - Karnali Province	56	Provides policy inputs on industrial development, investment, export promotion, trade facilitation, and industrial relations. Acts as a think tank for the industrial sector and the country's economy.	
Sudurpaschim Province	FNCCI - Sudurpaschim Province	25,800	Plays a catalytic role in national business and industrial development. Establishes sound industrial relations and provides advisory services to the government and lobbies for industry-friendly policies, acts, and programs.	
	FNCSI - Sudurpaschim Province	1,500	Provides technical support to the potential entrepreneurs. Lobbies with provincial government for policy refine and other industrial legal obligations. Promotes cottage and small industries in the province.	

5.3.4 Employer associations at municipal or district level

It was not feasible to gather and present data for each industry sector association at the municipal or district level. Therefore, for analysis, we collected data from the FNCCI, the largest federation of firms and industries (FNCCI, 2024). The FNCCI's foundational units are its district or municipal chapters, where individual companies or enterprises can become members. Elected representatives from these companies represent FNCCI at the provincial and federal levels, with voting rights transferred to chapter leaders for provincial and federal elections.

As shown in Table 4, FNCCI reports a total of 208,580 member companies across its 121 district or municipal chapters. However, membership data is missing for 23 chapters. Based on the average membership size of available data, the total number of FNCCI members nationwide is estimated to be around 257,532. FNCCI claims a membership of 400,000 by including members of affiliated

associations, though this figure is difficult to verify. These members include companies and enterprises of various sizes that employ skilled workers. At this level, meaningful collaboration with TVET schools occurs, and FNCCI members are a valuable source of information on industry demand. This analysis highlights a significant potential for companies to engage in training programs.

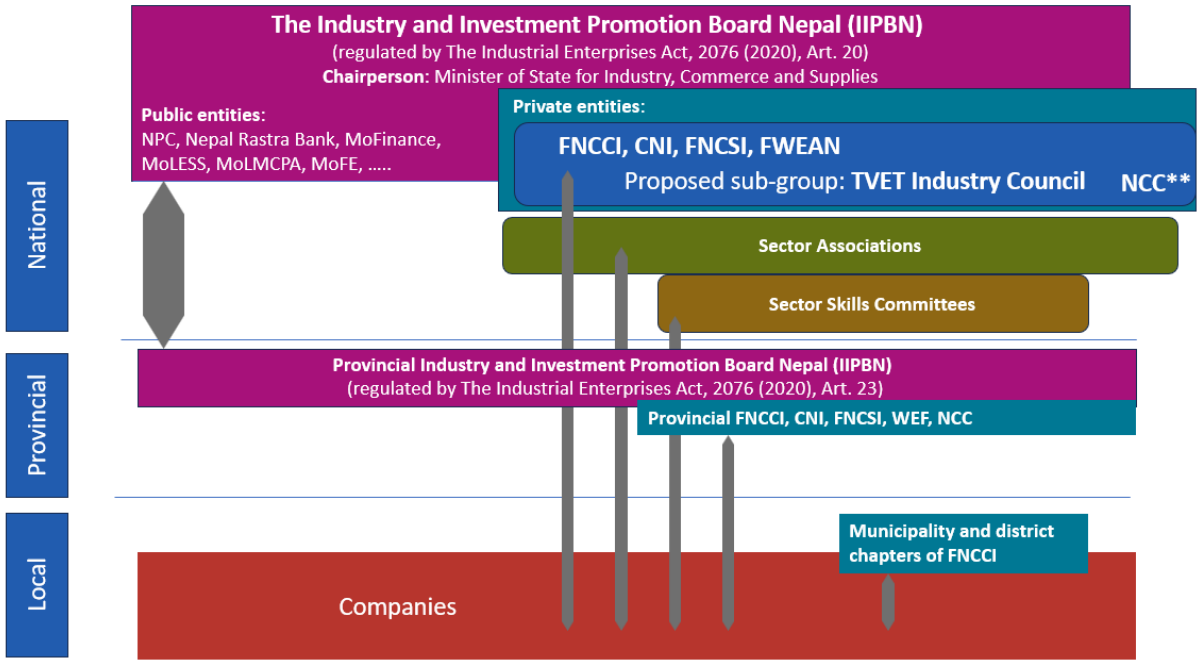
Table 4: Systematic structure of industry organizations on the provincial level

Province	Municipal/district chapters	Member companies	Missing data from the chapters
Koshi Province	29	56,817	6 Chapters
Madhesh Province	15	25,541	4 Chapters
Bagmati Province	19	24,473	7 Chapters
Gandaki Province	16	29,305	2 Chapters
Lumbini Province	21	32,874	4 Chapters
Karnali Province	10	13,706	
Sudurpaschim Province	11	25,864	
Total	**121**	**208,580**	

Our industry association mapping indicates that while many organizations already exist, their roles and collaborations are not always clear, which can limit potential synergies. To address this, we propose a structured approach for industry involvement in the TVET sector, informed by the legal framework, particularly the Industrial Enterprises Act. The aim is to ensure that industry, crucial to the TVET sector, operates cohesively across all political levels and speaks with one voice.

Figure 3 illustrates a proposed structure. Since the chairpersons of four major cross-sectoral associations are members of the influential **IIPBN**, there is an opportunity to consolidate industry representatives into a **TVET industry council**, which is currently being established. Other cross-sectoral associations may also be included if necessary. The absence of the NCC from the IIPBN is unclear to the authors. The proposed TVET industry council would incorporate all national sector associations and the newly created SSCs, uniting all relevant associations at national level. The cross-sectoral associations will determine who takes over the lead of the TVET industry councils. This person will represent the **TVET industry** in the IIPBN as well as the GoN.

Figure 3: Mapping of relevant industry entities on the national, province, and local level with proposed solution to coordinate all TVET issues.



(*) These cross-sectoral organizations could create **a TVET Industry Council** to coordinate TVET policies, rights and duties of industry in the TVET system
(**) NCC = Nepal Chamber of Commerce is not represented in the IIPBN, but maybe included in a TVET Industry Council

5.4 Recommendations

Provided the industry successfully organizes itself according to the proposed model, the following steps are recommended for establishing this organized economy:

- Discuss the existing mapping and improve or expand if necessary.
- Establish a clear structure within a new **TVET industry council**, including membership criteria, tasks, and the roles of sector associations and SSCs.
- Review the **TVET industry strategy** developed under the leadership of CNI, make improvements if needed, and secure approval from all members.
- Define the role of TVET industry representatives in the TVET Act based on the new strategy.
- Recommend that the IIPBN seek approval of this strategy from the Government of Nepal (GoN).

6 Unveiling Insights: Industry's Role in TVET

6.1 Introduction

In the previous chapter, we analysed the role of industry at the macro level and showed how industry in the TVET sector could speak with one voice. This chapter focuses on the micro level, i.e., the specific companies. Conducting an industry survey is vital for identifying specific training needs, assessing the willingness to provide apprenticeships, and determining readiness to collaborate on curriculum design. This approach cultivates shared responsibility in skills development. By understanding industry perspectives, barriers to engagement can be identified, and strategies to incentivize industry sector investment in training can be developed. This ensures that TVET programs remain relevant, sustainable, and contributes to the economic growth and workforce development. Additionally, such surveys strengthen public-private partnerships, driving innovation and investment in TVET systems.

In this context, the industry sector such as industry associations, individual employers; the industry sector; micro and small enterprises, chambers of commerce and sectoral associations, are needed to be consulted and interacted for their understanding, expectations, and clarity of their roles in the sector.

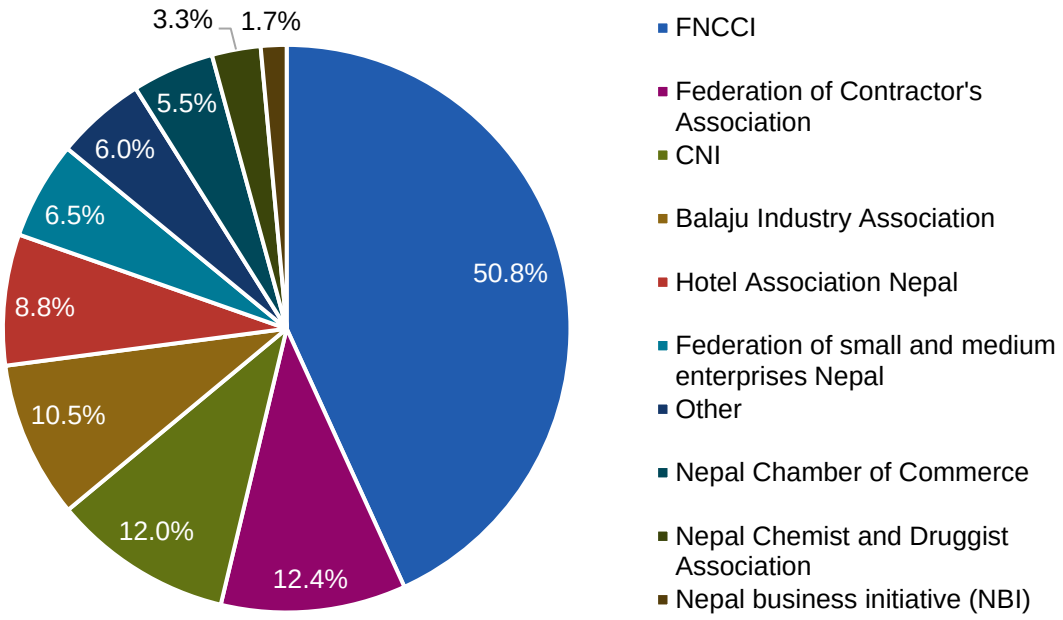
6.2 Survey results

6.2.1 Sample description and response rate

In the pursuit of advancing the TVET sector, an extensive survey on employers' willingness to train was conducted from December 5th, 2023, to January 2nd, 2024. The primary research objective was centred on an in-depth exploration of the prevailing industry landscape, specifically identifying skills gaps and addressing the potentials to mitigate the existing gaps. This study engaged multiple stakeholders, members of prominent organizations such as the FNCCI along with their members from district chambers, commodity associations, and associate companies, the CNI, Hotel Association Nepal, Federation of Contractor's Association, Nepal Business Initiative (NBI), and others who have significant contribution as employers in the context of Nepal.

Employers representing micro, small, medium, and large enterprises across various sectors were reached to ensure a comprehensive understanding of training in the TVET sector. The sectors encompassed agriculture, tourism (accommodation and food services), construction, manufacturing, transportation services, art, entertainment, finance and insurance, forestry, ICT, health care, and services, among others. Out of an initial pool of over 2,785 employers approached, successful engagement was achieved with 796, culminating in 598 completed surveys. This results in a response rate 21.5% complete surveys – on the higher side for such survey types, where response rates generally range between 5 and 15% (e.g., Oesch et al., 2017; Caves & McDonald, 2023; Rageth & Sritharan, 2023). Employer-based surveys often pose difficulties for data collection, as employers are often short of time, wary of sharing too much information, and not always fully engaged in their representative bodies, who themselves may set limits on the data collection process (Caves & McDonald, 2023). In this survey, this was exacerbated by the fact that over a dozen employer associations were involved (see Figure 4). The sample encompasses decision-makers, HR professionals, and managerial staff with a tenure of at least three years within their respective organizations. The selected participants were engaged through a structured survey. The input from these key players aimed to understand how willing firms are to invest in employee training, providing valuable data to improve the TVET sector.

Figure 4: Are you a member of an umbrella association?



Notes: N=581

6.2.2 Description of survey and its results

The survey was divided into four main sections. In the first section, we asked respondents about their own situations concerning five topics: their current labour force, skills requirements, and availability, whether or not they offer training, the reasons for (not) offering training and the extent to which they cooperated with other actors, including other companies, professional and ministry associations and government entities, on training. In the case that a respondent did not offer any training, we asked either about reasons they chose not to, or who they could imagine cooperating with in the case that they did offer training.

The second section of the survey presented respondents with hypothetical training situations and asked them to indicate whether they would be willing to offer training programs in their companies under certain conditions. We randomly varied training length and return on investment, as well as the age, gender, and ethnicity of the program participant, to most accurately pinpoint what elements of the programs and trainees have the most effect on the decision to offer training.

The third section concerns the governance of the TVET system. Respondents were asked to indicate how satisfied they are with certain elements of governance, as well as the intensity of, and satisfaction with, their relationships with the other actors in the system. Finally, the last section asked respondents about their knowledge of, and satisfaction with, various aspects of the federalisation process.

In the next sections, we analyse the results of each of these sections in detail. Overall, response rates to the questions were relatively high and we are therefore confident that the analyses represent the survey sample accurately. We present key results in graphs and tables throughout the coming sections. More detailed results are available in the Appendix A.

6.3 State of the field

The TVET landscape in Nepal is complex, made up of a series of public, industry, and international actors at all administrative levels. In the survey for this report, we asked respondents about the **intensity** and **satisfaction** of their relationships with the other actors involved in training related topics. We asked

the same questions to a broader group of respondents in a survey ran in the context of the Quality TVET for Youth (QualiTY) project – an SDC-funded project seeking to improve quality of TVET and outcomes of TVET graduates. This data is used to create two network graphs that visualize the way that the major actors in the system interact. This is a useful place to begin to contextualize and understand the position of employers and their representatives in the training system.

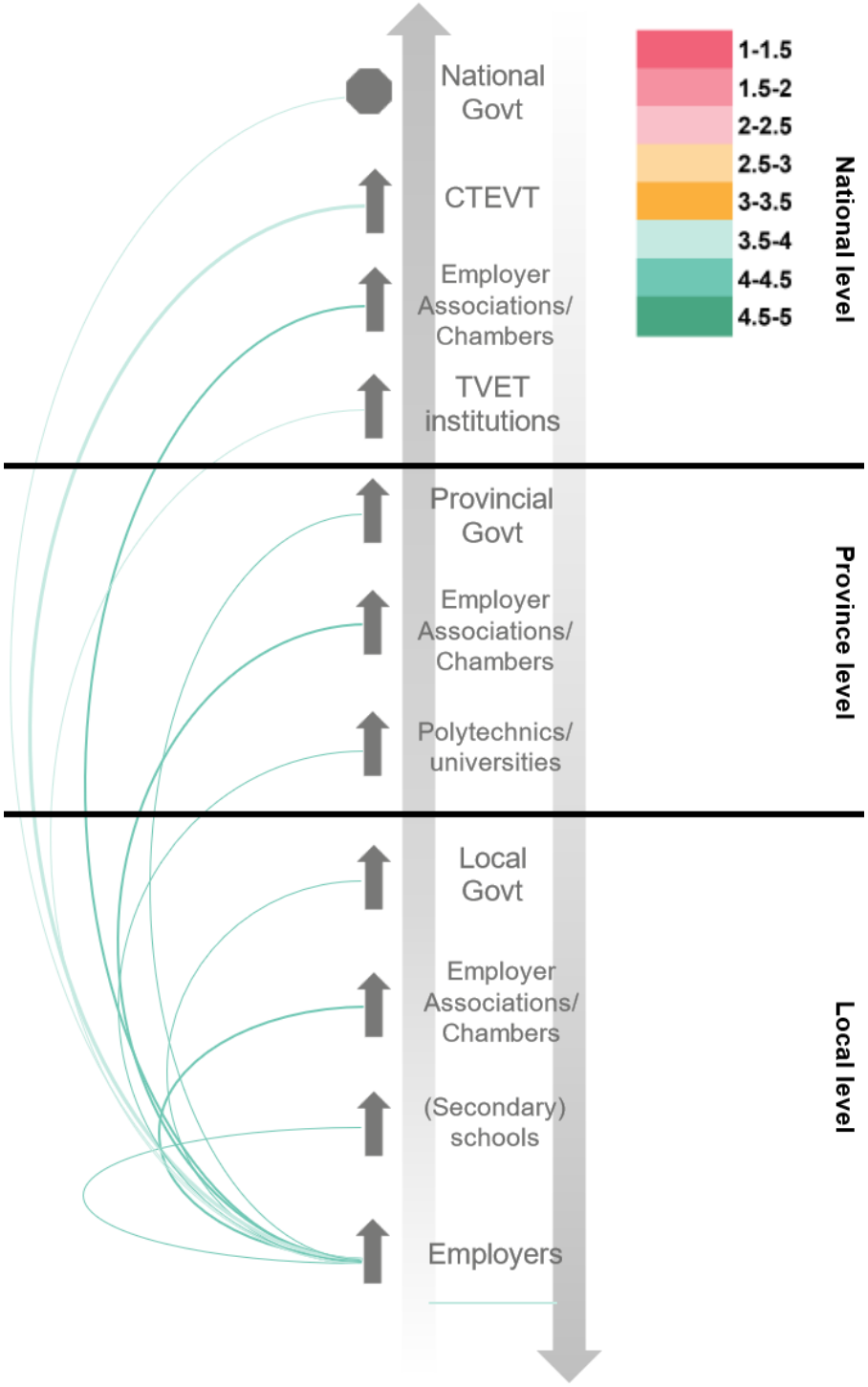
Figure 5 depicts the networks of the employers surveyed, while Figure 6 depicts those of the stakeholders surveyed as a part of the QualiTY survey. In the first, two things are clear: first, respondents indicate they are positive about their relationships with all other actors in the TVET system, at all levels of government. Second, employers indicate very little interaction with the other actors, including with other employers and employer associations. These findings are largely confimed by other analyses on cooperation presented later in the chapter. They also suggest there is a degree of goodwill towards other actors in the system that may be exploitable in order to improve coordination in the system.

Contrastingly, Figure 6 general shows more intense relationships between other system actors. On the other hand, the level of satsifaction expressed by respondents in this survey is consistently lower than that expressed by the employers, significantly so in the “bottom down” relationships from actors at the federal level and provincial levels to actors at the local level. Schools and TVET insitutions are, generally, unsatisfied with local and provincial governments but more satisfied with the national government. They are also not especially satisfied with their relationships with employer organisations, and chambers, although these relationships are indicated to be not at all intense. The employers associations and chambers of commerce and industries also indicate that they are not satisfied with their relationships with schools, TVET institutions and the government. They are, on the other hand, satisfied with their relationships with other employer associations, and indicate that the level of interaction within this group is quite high. This finding also suggests the potential for cross-industry collabouration on workplace training, leveraging exisiting strong, positive relationships between actors in this category.

We note that these results show that the TVET landscape in Nepal is **highly complex**, with many actors spread across multiple levels. This situation requires a **high degree of collabouration and coordination** between the relevant actors to ensure a smooth and positive experience for participants in the system. The results here suggest the groundwork for this is available, but more needs to be done to ensure the system functions as it should. The **positive relationships** that employers express with almost all actors need to be **deepened**. Conversely, the **already deep relationships** between schools, TVET institutes, government agencies and employer groups may need **qualitiatve improvement**.

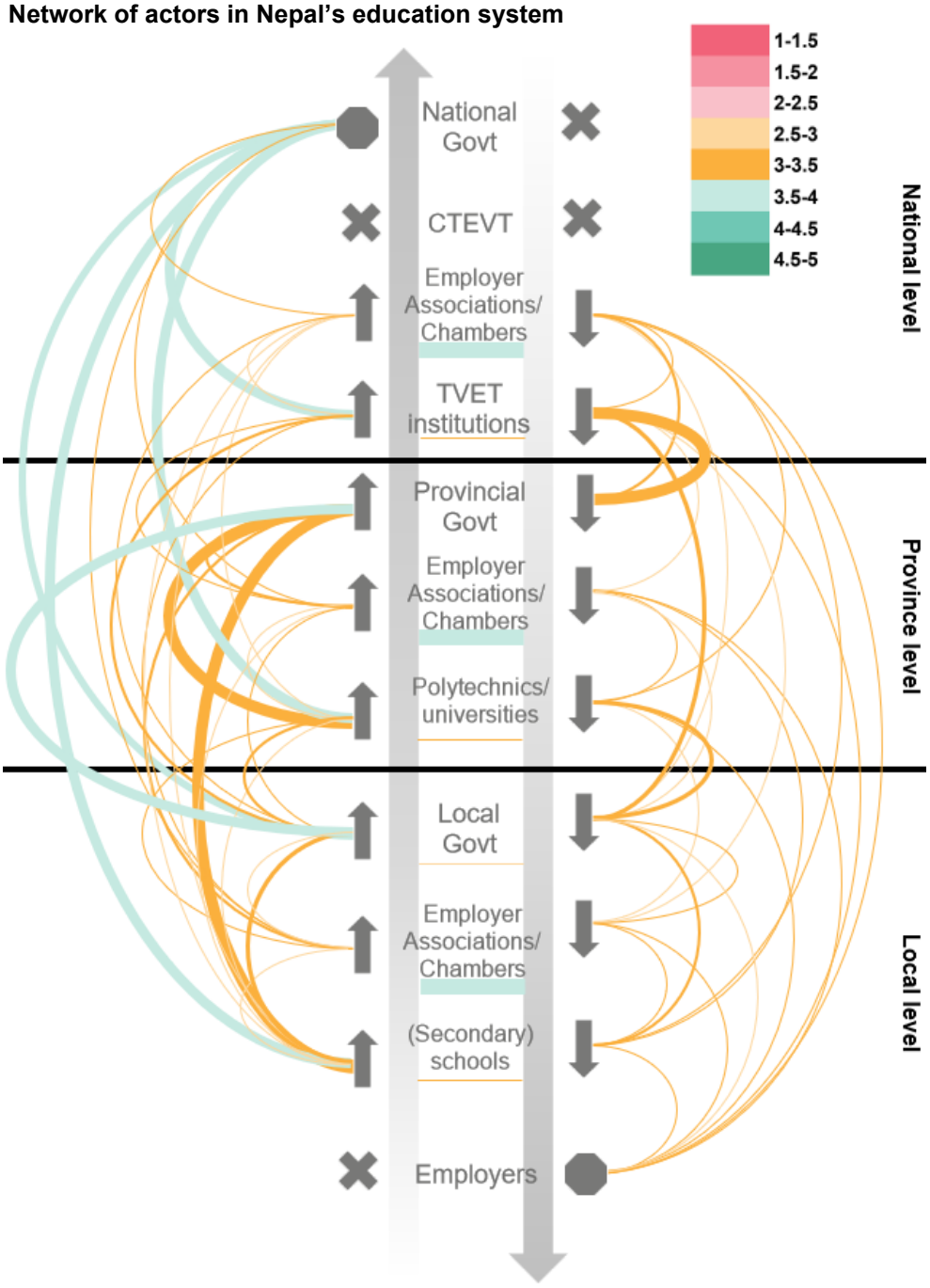
After all, it is not surprising that provincial-level actors do not have very intensive and positive relationships. This would require a consistent transfer of national tasks and the responsibility of TVET schools to the provinces. However, this requires the restructuring of the CTEVT and the existence of adequate TVET Acts at national and provincial level.

Figure 5: Employers' network in Nepal's education system



Notes: Thickness represents reported intensity of relationship. Actors from development partners, national government, CTEVT were not surveyed. Only employment actors were asked about their relationships with the CTEVT. For "Employer associations/chambers", we could not distinguish between the different regional levels, so we created three arcs every time a relationship exists with "Employer associations/chambers". Only employers were surveyed in this survey. N=64.

Figure 6: Network of actors in Nepal's education system



Notes: Thickness represents reported intensity of relationship. Actors from development partners, national government, CTEVT were not surveyed. Only employment actors were asked about their relationships with the CTEVT. For the relationships going away from schools, we could distinguish between the different regional levels. However, for the relationships from other actors towards schools, we could not differentiate between the regional levels, so we created three arcs every time a relationship exists with schools. For "Employer associations/chambers", we could not distinguish between the different regional levels, so we created three arcs every time a relationship exists with "Employer associations/chambers". Employers were not surveyed and CTEVT was not an answer option in this survey. Results derived from analyses presented in Pérez-Viana et al. (2024). N= 1,765.

6.4 Employers' characteristics and their difficulties finding skills

6.4.1 Key characteristics

For the purposes of the remainder of the analysis, we group the employers by their activity sector (primary, secondary, or tertiary), according to Table 5. Table 6 shows the key characteristics.

Table 5: Economic sectors and their composite industries

Primary
Agriculture, Forestry, Fishing and Hunting
Secondary
Mining, Quarrying, and Oil and Gas Extraction
Manufacturing
Construction
Utilities
Tertiary
Professional, Scientific, and Technical Services
Real Estate and Rental and Leasing
Finance and Insurance
Wholesale Trade
Retail Trade
Transportation and Warehousing
ICT
Management of Companies and Enterprises
Administrative and Support and Waste Management and Remediation Services
Educational Services
Health Care and Social Assistance
Arts, Entertainment, and Recreation
Accommodation and Food Services
Other Services (except Public Administration)
Public Administration

While employers from all economic sectors are represented, our sample over-represents the secondary sector (manufacturing, construction and the like), while under-representing the primary and tertiary sectors. We assume this is due to the Nepali labour market structure: primary and tertiary sector companies are more likely to be micro-, family-operated concerns and therefore less likely to be members of employer associations. This is further represented by the fact that only one-quarter of the sample is in the "micro" category, whereas these make up most enterprises in the country (Kharel & Dahal, 2020).

Across the overall sample, a plurality (28%) of employees has only informal training, though those with a bachelor's degree or above represent 27% of the total sample, and 36% of employees in the tertiary sector. This paints a picture of a "hollowed out" skills situation, with both extremes well-represented but less in the middle, and very little of the workforce with technical qualification – just 5% overall, dropping to none in the primary, 3.5% in the secondary and rising to 8% in the tertiary sector.

6.4.2 Difficulty finding skills and hiring strategies

The above findings show a proportionally large number of employees either without formal training or with higher education, and a "**missing middle**" of employees with mid-level, especially vocational, skills. This unequal skills distribution is likely one reason behind the finding that on a scale of 1 to 5 (1=very

easy; 5=very difficult), respondents give an average score of 3.8 to the question "How easy is it for you to find skilled employees on the labour market?" – highest amongst respondents from the secondary sector, at 4.1 (see Figure A.1 in Appendix A). This difficulty in finding workers is cited by almost three-quarters of respondents as a significant hurdle to company growth, as demonstrated in Figure 7. This finding is replicated across all company sizes and sectors with very little variation, as shown in Figure A.2 in Appendix A. Taken together, these findings imply considerable need for a workforce with increased skills. Findings in the remainder of the chapter further suggest that employers should be active partners in this upskilling.

Table 6: Sample description

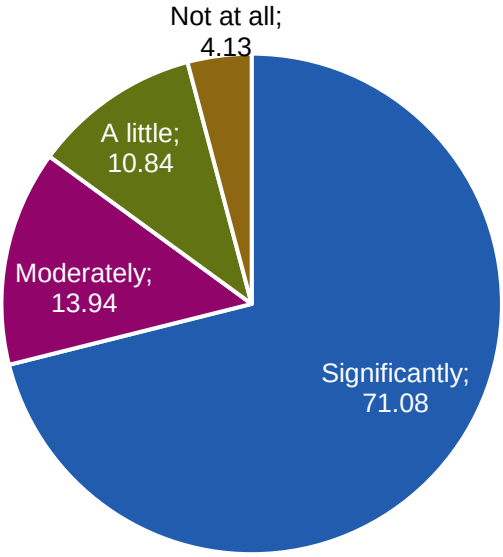
	All companies	Primary sector	Secondary sector	Tertiary sector
Observations	581	16	372	193
Share in sample (%)		2.8	64.0	33.2
Actual value added (%)[8]		25.8	13.1	61.1
Actual employment (%)[9]		21.5	30.8	47.6
Company Size				
Micro (<10)	143	12	60	71
Small (10-49)	321	3	233	85
Medium and large (>50)	117	1	79	37
Training companies	226	5	128	93
Educational attainment (average share of employees with…) N=580				
Only informal education (learning by doing)	28.2	35.6	31.2	21.8
Short-term training	8.8	12.8	9.8	6.5
Basic level (grade 1-8)	11.1	7.8	12.5	8.9
Secondary level (grade 9-12)	14.7	14.7	14.8	14.4
Secondary academic qualification	5.3	1.9	5.9	4.4
Secondary TVET qualification	5.0	0.0	3.2	8.8
Bachelor's degree	19.3	16.6	16.3	25.4
Master's degree or higher university qualification	7.6	10.6	6.3	9.8
Difficulty of finding skilled workers	3.84 (574)	3.53 (15)	4.10 (367)	3.38 (192)

Notes: Number in parentheses is the number of observations

We collect various information about the difficulty of companies in finding skills, in terms of their effect on company growth and how long it takes companies to fill skilled and non-skilled positions. Full results are in Appendix A. Here we present their overall effects in terms of a principal-component analysis. This suggests that the **length of vacancies** is the biggest skills issue for employers. It also suggests that skills shortages are particularly acute in the **secondary sector** and amongst **small companies**.

[8] CES Chair of Education Systems (2022). Factbook Education Systems: Nepal. CES Factbook Education Systems (1st ed.). ETH Zurich.
[9] ibid.

Figure 7: How much does a lack of qualified/skilled employees affect the growth of your company?



Notes: N=581.

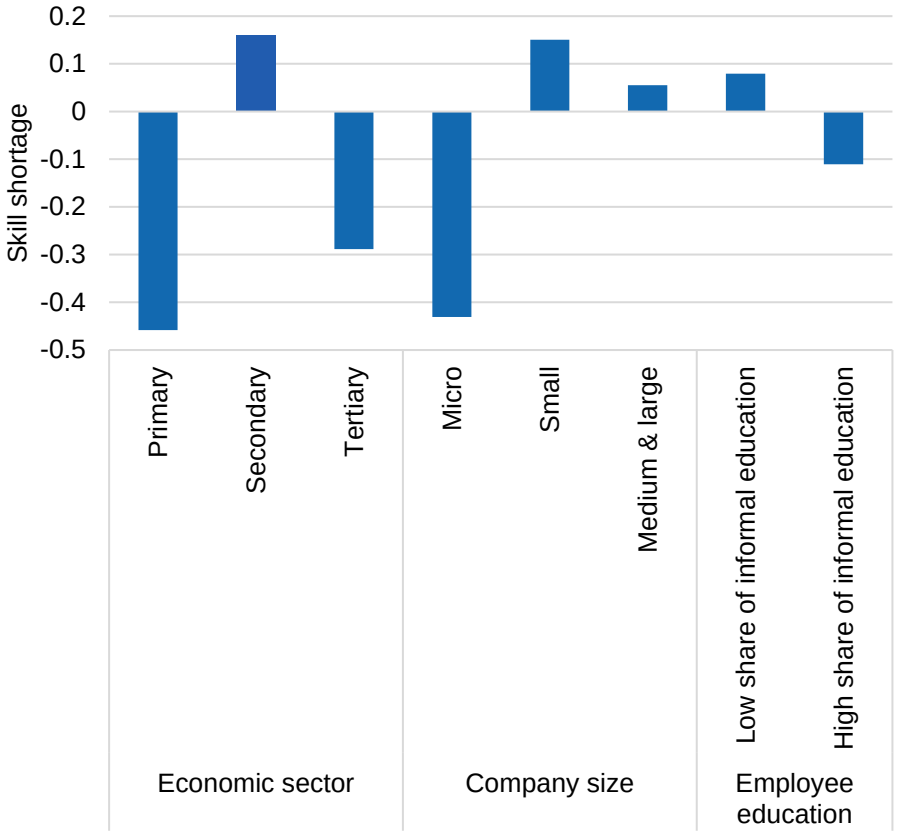
Although employers indicate they are concerned about a lack of skills, the principal-component analysis in Table 7 suggests the lack of skills is not necessarily the greatest problem concerning skill shortage. Moreover, in Figure 9, where we display the average level of satisfaction with new employees' skills, employers seem to be generally satisfied – across all types of employers, the average is over 3 on a five-point scale, though slightly lower for the secondary sector and small companies. Nevertheless, this refers only to skills overall. Focusing on particular skills types, as in the next section, reveals some complexity on this point.

Table 7: Principal component analysis of skill shortage indicators

Variable	Factor1	Factor2	Uniqueness
Effect on company growth	0.3435	0.3713	0.7441
Vacancy duration skilled	0.9594	-0.1229	0.0645
Vacancy duration non-skilled	0.9535	-0.1519	0.0678
Hard skills of new employees	-0.095	0.8471	0.2734
Soft skills of new employees	-0.3156	0.7893	0.2773

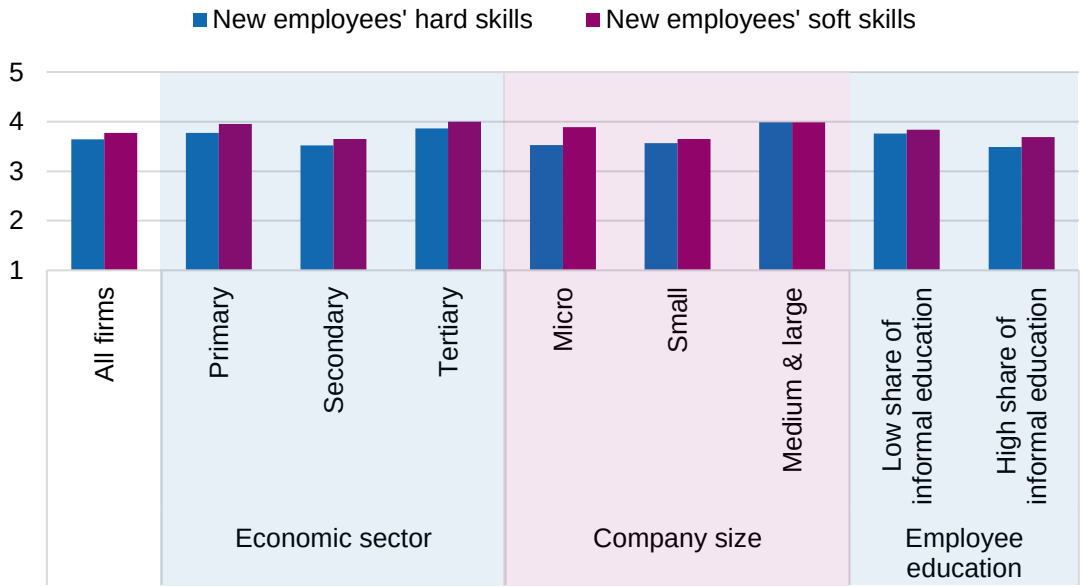
Notes: The table displays rotated factor loadings of a principal component analysis, summarizing the various skill shortage indicators in the first factor. N=534

Figure 8: Summary of skill shortage



Notes: The figure displays an aggregate of the three skill shortage indicators based on the results from a principal component analysis shown in Table 7. The aggregate has a mean of zero and higher values indicate higher skill shortage. N=15, 348 and 171 for primary, secondary, and tertiary sector. N=120, 302, and 112 for micro, small, and medium and large companies. N=311 and 223 for low and high share of employees with informal education.

Figure 9: Heterogeneity of new employee's skills

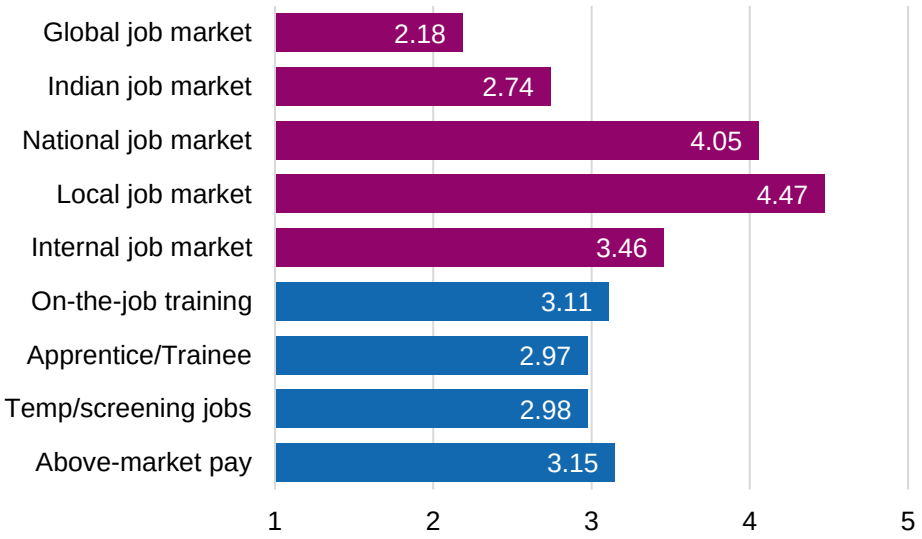


Notes: The figure displays to what extent newly hired employees fulfil the needs of the company in terms of average hard skills (blue) and average soft skills (purple) on a five-point Likert scale (1=Very poor, 5=Very good). N=15, 372 and 193 for primary, secondary, and tertiary sectors. N=142, 321, and 117 for micro, small, and medium and large companies. N=334 and 246 for low and high share of employees with only informal education.

Companies follow various **external and internal** strategies for finding workers. We report these findings in Figure 10. Externally, the companies in our sample place the strongest focus on the **local job market** for recruitment, followed by the **national job market**. Recruiting from **India** is of moderate importance, while the **global job market** is not a source of recruitment in general. **Hiring internally** is considered a less important strategy than the local and national job markets.

Figure 10 shows that to encourage and retain talent, employers indicate they are most likely to offer **above-market pay**, though only at 3.15 on the five-point scale. This is also more important to companies in the secondary sector, and large companies, than other company types (see Table A.1 in Appendix A) Informal **on-the job training** is the next most important strategy, especially for micro firms, while **apprenticeships** and **temporary placements** score at around 3 on the five-point scale and are indicated as more important by primary sector employers and micro-companies. From Figure 11 it is obvious that despite indicating a high level of difficulty in finding workers, companies manage to **fill vacant positions** in **less than a month** on average – this drops to two weeks for companies in the primary and tertiary sectors. Micro companies also manage to fill their positions in two weeks on average, while larger companies tend to need about a month to fill an open position. However, hiring a new employee does not immediately achieve the same productivity level as experienced employees (see Figure A.6 in Appendix A).

Figure 10: How important are the following recruitment strategies for your company?



Notes: The figure displays the importance of various recruitment strategies on a five-point Likert scale (1=Not important at all, 5=Very important). N=581.

6.4.3 Importance and availability of skills

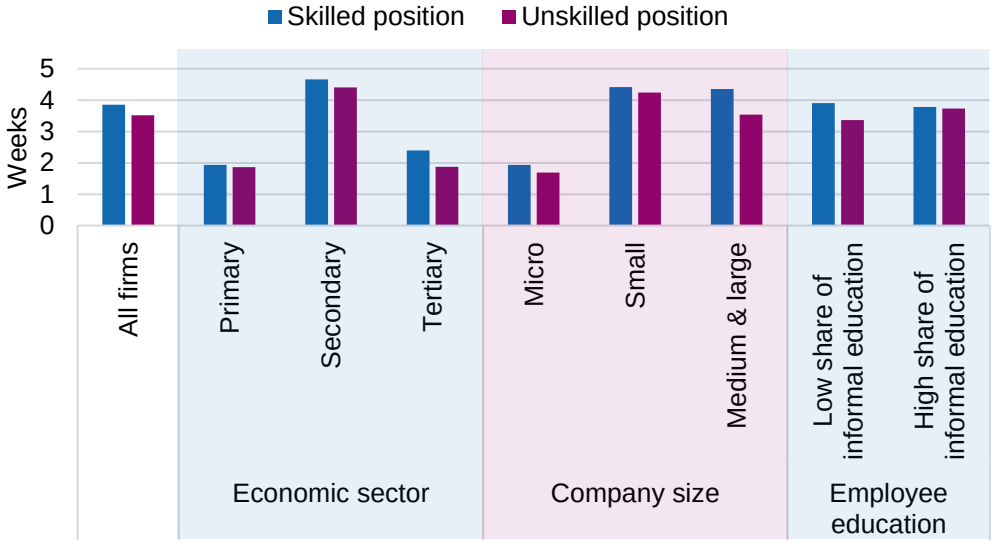
We asked employers about the importance and availability of **hard skills** (generally occupation-specific or technical skills such as mathematics or foreign languages), and **soft skills** (skills that might be more broadly categorized as necessary for work in general, such as efficiency, motivation, and reliability).

Finally, **skills gaps are higher** for skills considered **better learned at work**. While, on the one hand, this is good news for schools, which employers consider to be overall doing an adequate job in delivering the skills best learned there, it points to a **considerable gap** in employer participation in skills development, which could go some way to reducing the skills gap in important skills. In the next section, we present the current state of employer cooperation in training and skills development, before delving into the drivers and barriers to greater training participation. A very similar picture can be seen in the "Willingness to train" study in Colorado (Renold et al., 2017) and in the hotel sector in Uzbekistan (Renold et al., 2024b).

Figure 12 shows that employers consider **soft skills** more important than hard skills (4.5 and 4, respectively), but both to be similar **available on the market** (3.6 and 3.8). Put another way, hard skills on the market come close to meeting the need of employers, but **soft skills are perceived by employers as severely lacking**. Companies in the tertiary sector, and large companies, consider soft skills particularly important, but no case do companies say that their need for soft skills is completely fulfilled (compare Figure 12).

Looking more closely at the specific skills in Table 8, we see soft skill gaps of above 0.7 points on almost all soft skills and some hard skills (notably, job related skills – practice), and above 0.8 points for **commitment** and **ability to handle unfamiliar situations**. Conversely, employers are reasonably satisfied with the availability of advanced mathematics and foreign language skills, with only a 0.1-point gap between the importance and availability of these two skills.

Figure 11: On average, how long does a job vacancy at your company stay open?



Notes: The figure shows average duration of vacancies in a skilled position and unskilled position. N=550, 534 for all firms. N=15, 15; 358, 348; 177, 171 for primary, secondary, and tertiary sector. N=122, 120; 313, 302; 115, 112 for micro, small, and medium and large companies. N=316, 311; 234, 223 for low and high share of employees with informal education.

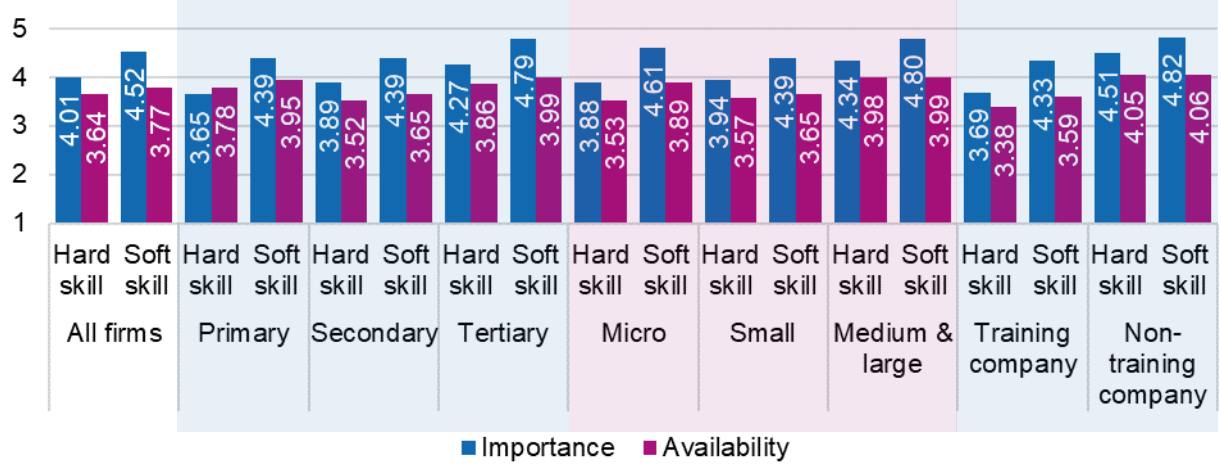
Given the finding that employers consider many skills, mostly soft skills, not adequately available on the labour market, we are interested in learning more of how employers think these skills can best be learned. Specifically, whether they believe that an array of hard and soft skills is better learned at **school** or **in the workplace**.

Table 8 is ranked by importance. It shows the list of skills we put to respondents, with their availability, the skill gap, and ideal learning place. In Figure 13 we plot the same skills on a plane based on their importance and ideal learning place. Three key points stand out. First, **more important skills are considered best learned at work** – the six most important skills, and nine of the top ten, are all considered better learned at work than at school. Second, **soft skills are considered more important**, and they are **considered better learned at work**. Although job-related skills (practice) are considered the most important overall, they beat out soft skills such as reliability, commitment, and teamwork by only hundredths of a point. Other hard skills, such as mathematics, theory, and languages, come only at the end of the ranking.

Finally, **skills gaps are higher** for skills considered **better learned at work**. While, on the one hand, this is good news for schools, which employers consider to be overall doing an adequate job in delivering the skills best learned there, it points to a **considerable gap** in employer participation in skills development, which could go some way to reducing the skills gap in important skills. In the next section,

we present the current state of employer cooperation in training and skills development, before delving into the drivers and barriers to greater training participation. A very similar picture can be seen in the "Willingness to train" study in Colorado (Renold et al., 2017) and in the hotel sector in Uzbekistan (Renold et al., 2024b).

Figure 12: Heterogeneity of importance and availability of hard and soft skills on average



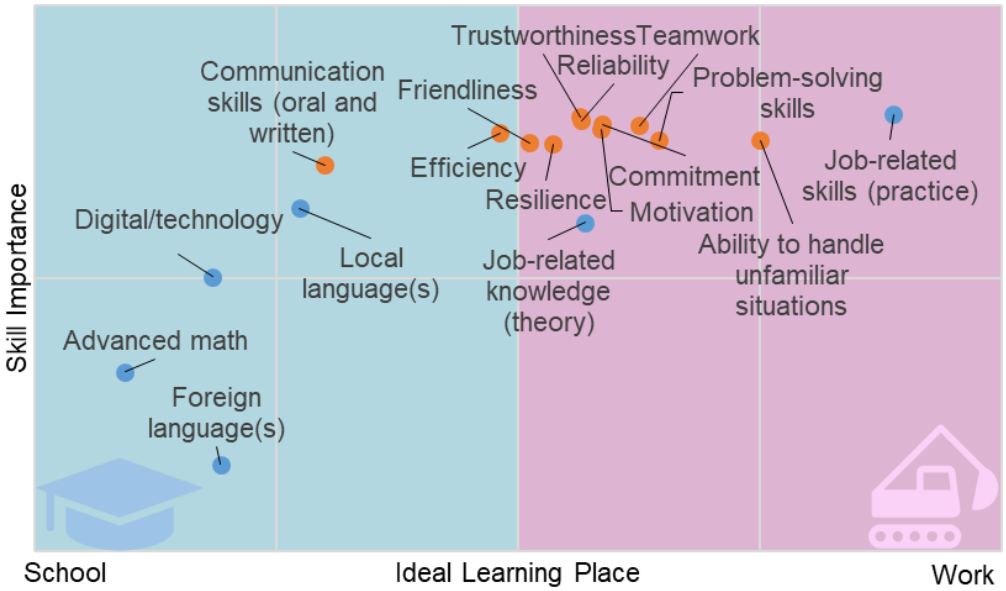
Notes: The figure displays the difference in the average importance and availability of hard and soft skills on a five-point Likert scale (1=Not important at all; 5= Very important). N ranges between 574 and 581 depending on the skill.

Table 8: Skill importance, skill availability, skill gap, and ideal learning place

Skill	Average importance	Average availability	Average skill gap	Ideal learning place
Job-related skills (practice)	4.60	3.89	**0.71**	Work (2.78)
Trustworthiness	4.59	3.82	**0.77**	Work (2.13)
Reliability	4.57	3.81	**0.77**	Work (2.13)
Commitment	4.56	3.75	**0.81**	Work (2.17)
Teamwork	4.56	3.85	**0.71**	Work (2.25)
Motivation	4.54	3.78	**0.77**	Work (2.17)
Efficiency	4.53	3.83	**0.70**	School (1.96)
Ability to handle unfamiliar situations	4.50	3.67	**0.84**	Work (2.50)
Problem-solving skills	4.50	3.71	**0.79**	Work (2.29)
Friendliness	4.50	3.81	**0.69**	Work (2.02)
Resilience	4.49	3.74	**0.75**	Work (2.07)
Communication skills (oral and written)	4.41	3.75	**0.66**	School (1.6)
Local language(s)	4.26	3.92	**0.34**	School (1.55)
Job-related knowledge (theory)	4.20	3.68	**0.52**	Work (2.14)
Digital/technology	4.01	3.61	**0.40**	School (1.37)
Advanced math	3.66	3.56	**0.10**	School (1.19)
Foreign language(s)	3.32	3.20	**0.12**	School (1.38)

Notes: The table displays the average skills gap for hard (bold) and soft (italics) skills on a five-point Likert scale (1=Not important at all; 5= Very important). N ranges between 574 and 581 depending on the skill. Skills are ordered by importance.

Figure 13: Relationship between skill importance and ideal learning place



Notes: The vertical axis is skill importance which is captured in the question "How important are the following skills for your business?" Answers are on a five-point Likert scale (1=Not at all important, 5=Very important). The horizontal axis is calculated based on the question "Where do you think these skills can best be learned?" where answer options are school, unknown, and work. The dots are calculated based on averages of all employers participating in the survey.

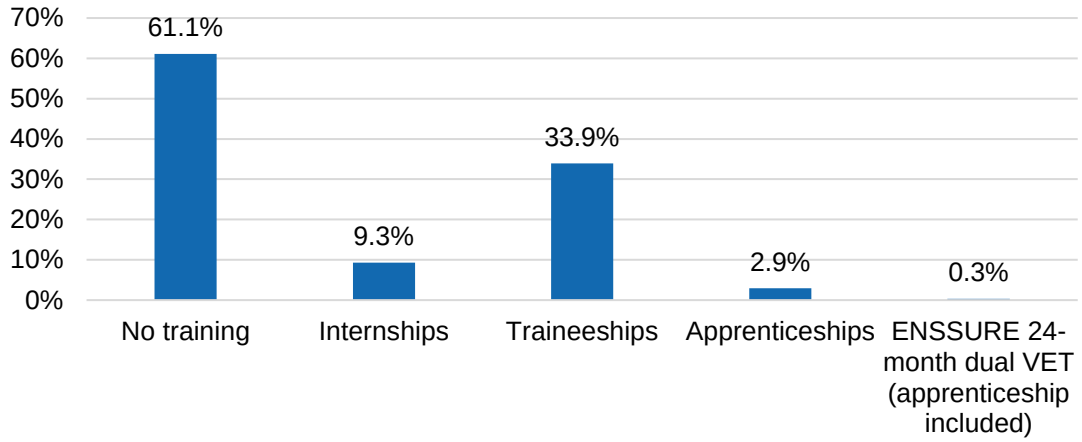
6.5 Companies' involvement in training – current state and future potential

6.5.1 Employers' current involvement in training

The previous section details the skills gaps in industry, and the extent to which they affect companies' ability to grow. Notably, the skills where employers report the largest gaps between need and availability are also those where they state the skills are better learned in the workplace than at school. Given this finding, we expect that companies are either offering training or should be willing to do so, to better ensure a supply of relevant skills for current and future generations. In this section, we look at the extent to which companies offer training, the kind of training they currently offer, as well as any cooperation with other actors. We then move to the barriers and possible motivations for companies to participate in training.

Despite clear evidence that employers believe many important skills are best learn at work, Figure 14 shows that only two in five companies in the sample offer any kind of training, the vast majority of which are informal traineeships. Only 3% of the sample offers apprenticeships, 10% of which are a part of the ENSSURE dual apprenticeship program, a 24-month dual apprenticeship being piloted in a number of sectors, where students spend 19 months in workplace training. However, as shown in Table 9, almost all the programs have dedicated trainers in the company, with well over 90% of these trainers having received training for this job. This suggests that where training is offered, it is likely of good quality.

Figure 14: Does your company offer training through programs like internships, traineeships, or (dual) apprenticeships?



Notes: The figure displays the share of companies in the sample that offer or do not offer various training programs. N=581. Numbers do not sum to 100% because respondents can select multiple options.

Table 9: Average shares of companies who have designated trainers, and average share of trainers who are trained for that role

	Internships	Traineeships	Apprenticeships	ENSSURE 24-month dual TVET (apprenticeship included)
Trainers	0.87	0.82	0.86	1
	53	*193*	*14*	*1*
Trainers trained	0.93	0.99	0.92	1
	46	*158*	*12*	*1*

Notes: The table displays whether training companies have trainers for their training programs and whether those trainers are trained. Number in italics are number of employers who responded.

6.5.2 Reasons, barriers, and incentives

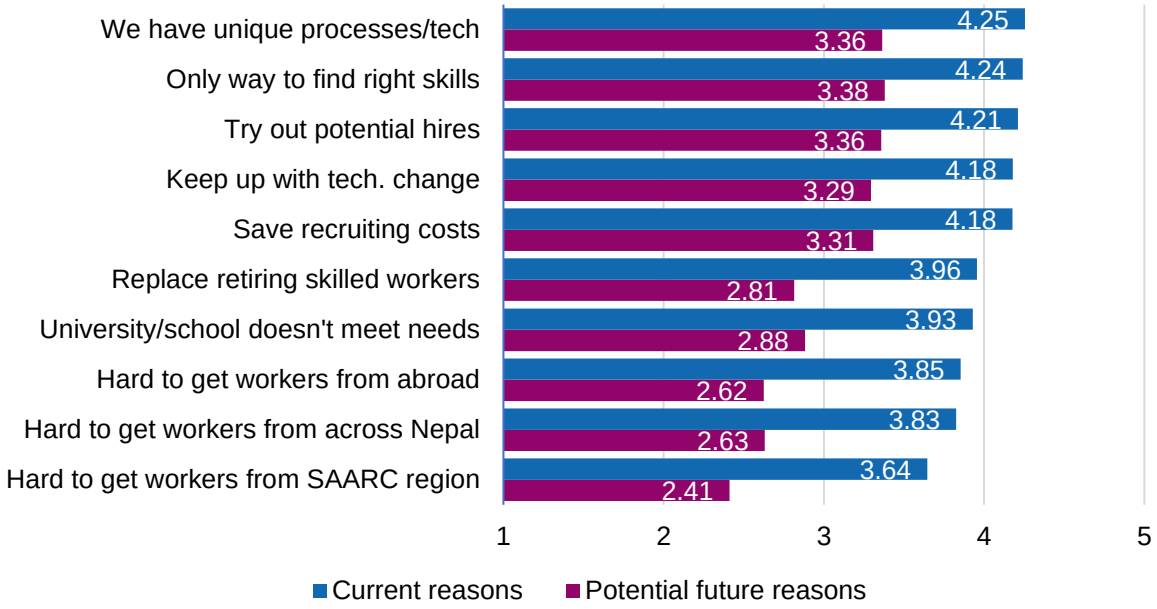
We asked all companies a series of questions concerning reasons why they train (or why they would train if they do not do so already), barriers to training and factors that would help to increase training, results of which are displayed in the next three figures (Figure 15, Figure 16, and Figure 17) for training and non-training companies.

Concerning **reasons for training**, results are expectedly higher for training companies than non-training. For training companies, all reasons register an average rating above the midpoint of the scale. Five register scores above 4/5, namely having specific production technologies, equipment or procedures, the only way to find workers with the right skills, taking a “try before you buy” approach or establish probation periods, keeping up with rapid technological change, and saving on recruitment costs. While for non-training companies, these **potential reasons** all score lower, the patterns are almost identical between the two. This finding suggests **compelling, widely held** motivations behind offering workplace training.

The pattern is less clear concerning **barriers**, suggesting that while training may be motivated by common factors, deciding not to train, or limiting the training offer, is based on more firm- or sector-specific reasons. The most strongly held reasons expressed by both training and non-training companies are **a being fine with people on the labour market, cost, fear of poaching or migration,** and **lack of time**.

When considering possibilities to **increase training**, companies rate almost all reasons equally highly, with a slight variation in the level based on being a training or non-training company. Alongside ensuring **training has a financial benefit**, many of these reasons involve both **clearer national standards and societal recognition** and **more coordination and cooperation between training companies and the government actors**.

Figure 15: Importance of reasons in favour of training

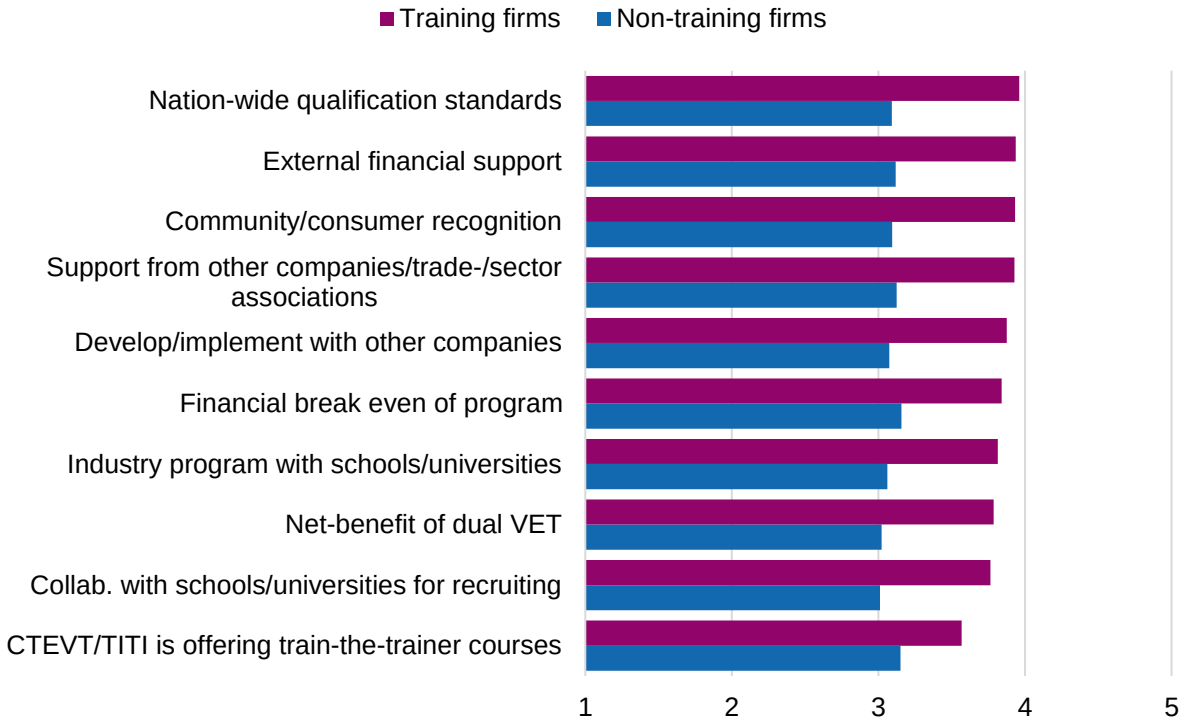


Notes: The figure displays the importance of reasons for offering training on a five-point Likert scale (1=Not important at all; 5= Very important). N ranges from 223-355 depending on the subquestion. Respondents who offer training respond about current reasons (N=226), while those who do not offer training (N=355) respond about potential future reasons.

Figure 16: Barriers to training

Notes: The figure displays the relevance of various barriers to provide internships, traineeships, or apprenticeships to the employees on a five-point Likert scale (1=Not at all applicable; 5=Highly applicable). N=226 for training companies and N=355 for non-training companies.

Figure 17: Factors that would help increase training



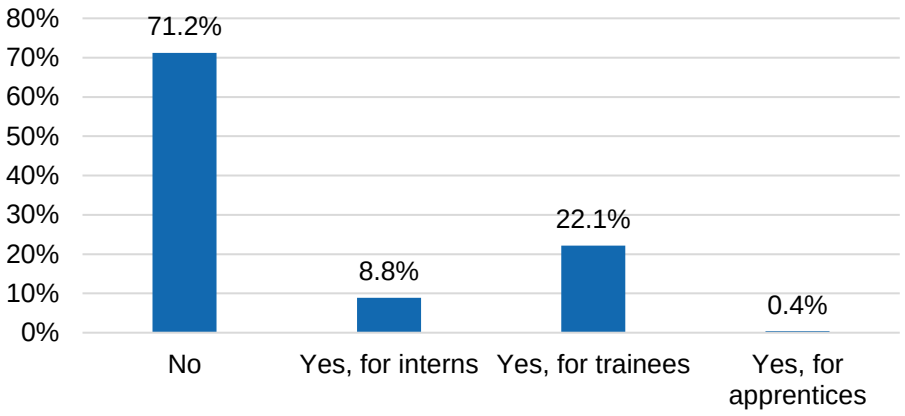
Notes: The figure displays the relevance of various training features to provide internships, traineeships, or apprenticeships to the employees on a five-point Likert scale (1=Not at all important, 5=Very important). N=226 for training companies and N=354 for non-training companies.

6.5.3 How much are companies already cooperating?

One finding in the previous results indicates that more cooperation may serve to encourage more training. We are therefore interested in the extent to which companies already cooperate, both with each other and with other entities in the TVET system.

As with the previous finding that companies believe many important skills are best learned in the workplace but do not offer the training to teach them, most companies express a desire for cooperation but very few cooperate in practice. Indeed, **almost three-quarters** of training companies in the sample indicate **they do not cooperate with other actors in the system**.

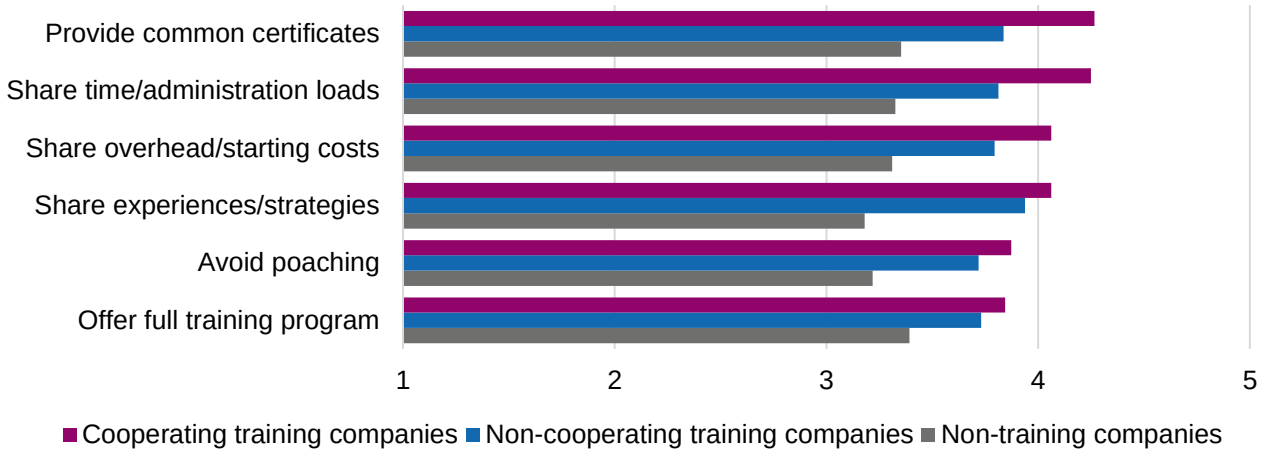
Figure 18: Do you cooperate with other companies, schools, intermediaries, or other organizations to train?



Notes: The figure displays the share of training companies that cooperate with other companies for various training programs. N=226. Does not sum up to 100% because respondents can select multiple options.

Most companies nevertheless express strong agreement with various benefits of training, as shown in Figure 19. Training companies, as expected, are the most enthusiastic about the benefits of cooperation, in particular, the **provision of common certificates**, the ability to **share administrative burdens**, **costs, and experiences**. While amongst training companies that do not train, and non-training companies, the agreement with these reasons is lower, in all cases it is above the midpoint of the scale. This suggests that there is a latent support for training cooperation amongst the sample that may be able to be unlocked under the right conditions.

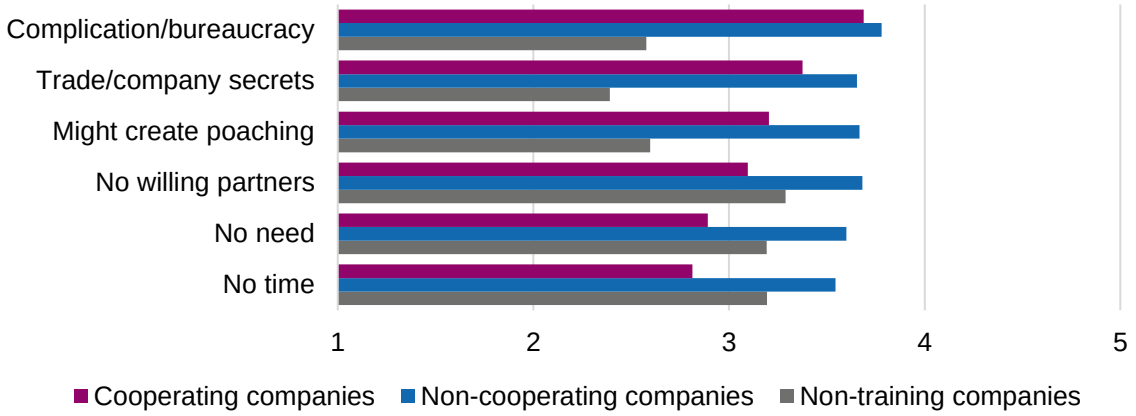
Figure 19: Importance of benefits for cooperation



Notes: The figure displays the average relevance of several reasons to cooperate in training provision for cooperating companies and non-cooperating companies on a five-point Likert scale (1=Not at all important, 5=Very important). N=64, 161, 355 for cooperating training, non-cooperating training, and non-training companies, respectively.

Training companies that do not cooperate express the highest agreement to statements concerning the **barriers to training**, with particular focus on **complexity and bureaucracy**, concerns about **company and trade secrets**, and **poaching**, as shown in Figure 20. However, there is also strong agreement with the statements concerning a lack of **willing partners**, **need**, and **time**. Nevertheless, for all respondent groups the ratings on barriers are slightly lower than the benefits – a further reinforcement of the idea that under the right conditions, barriers to cooperation may be overcome.

Figure 20: Importance of barriers to cooperation



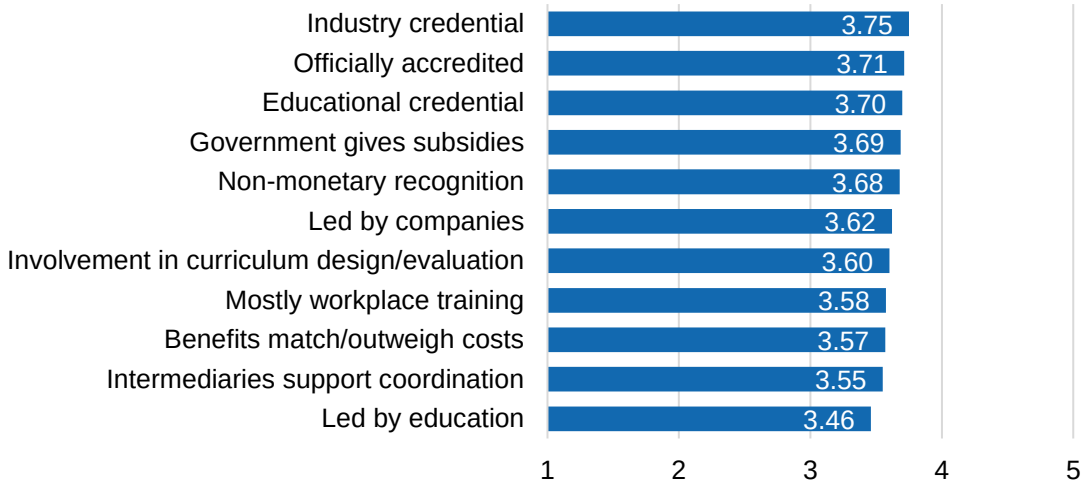
Notes: The figure displays the average relevance of several barriers to cooperate in training provision for cooperating companies and non-cooperating companies on a five-point Likert scale (1=Not at all important, 5=Very important). N=64, 160, 354 for cooperating training, non-cooperating training, and non-training companies, respectively.

6.5.4 Encouraging training in companies

All results presented so far indicate that while companies suffer from skills shortages, recognize the importance of workplace training, and are open to higher degree of cooperation, they remain reticent to commit themselves to an expanded role in skills formation. In this section, we turn our analysis to the conditions under which companies may be willing to increase their participation in training.

Firstly, concerning **features of training programs**, employers are open to several possibilities, but especially interested in programs that offer some kind of **recognized credentials**, either through industry or the education system. Figure 21 shows that they also express positive sentiment towards some kind of assurance of **benefit** (monetary or not) to the training, either through government subsidy, some form of official recognition, or a program that produces a net economic benefit. Other factors, including **support for coordination**, and **involvement in curriculum design and evaluation**, are important but less so for respondents.

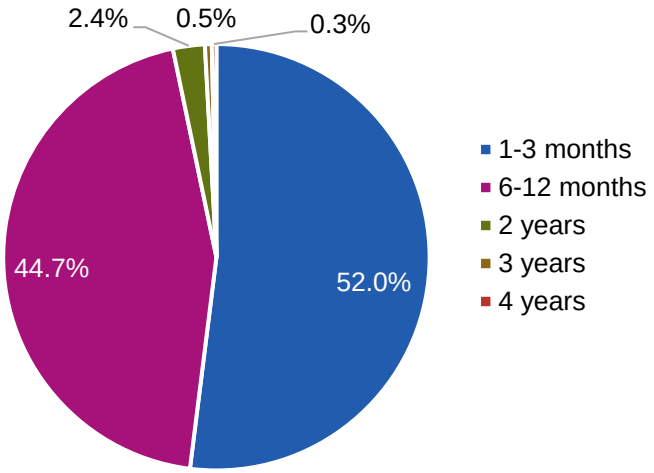
Figure 21: Appeal of new training program features



Notes: The figure displays how appealing various features of a new training program are on a five-point Likert scale (1=Very unappealing, 5=Very appealing). N=579.

We also asked companies about their ideal **program length** and found an almost even split between companies preferring a **short program** (1-3 months), and a **year-long program**, as depicted in Figure 22. Conversely, there seems to be little appetite for programs lasting **two years or longer**.

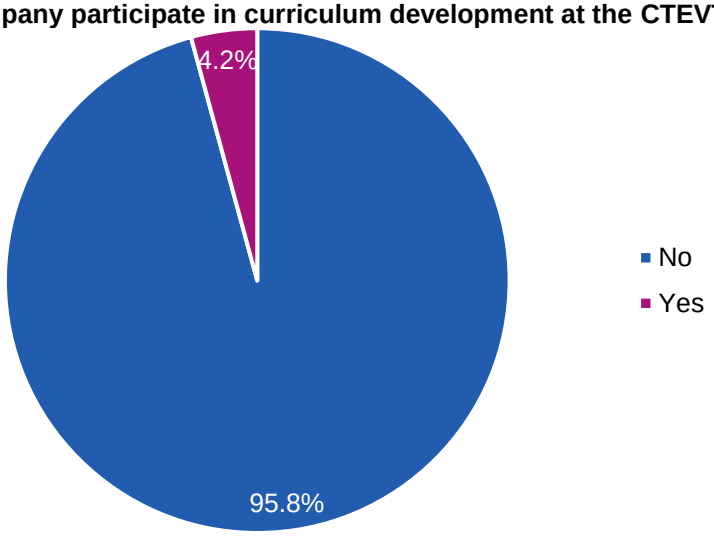
Figure 22: How long should training last in an ideal solution for innovative workplace training that provides skilled workers?



Notes: The figure displays the companies' preferred duration of training programs. N=579.

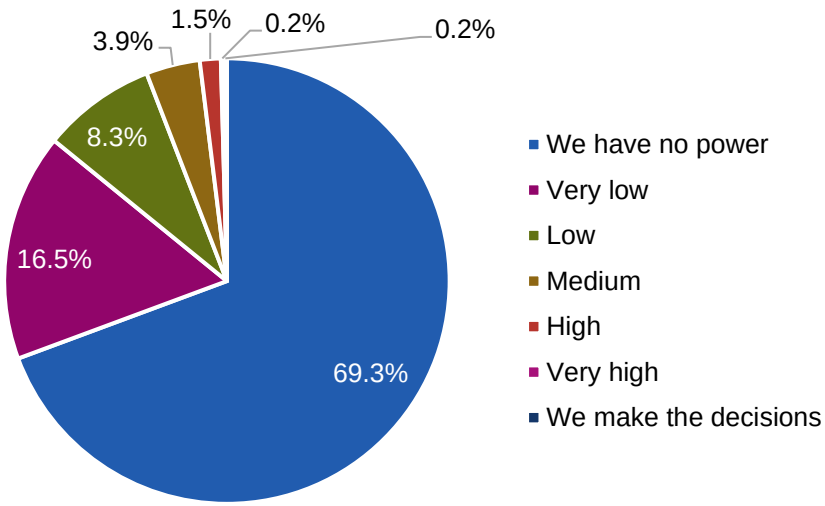
At present, companies are neither **involved in curriculum development** (see Figure 23), nor do they consider themselves to have **influence** on curriculum-related decisions (see Figure 24). This suggests there may be some leeway to **increase training participation** through **increased cooperation on curriculum development**. Of course, this could change if the industry is organized at the macro level and the roles and responsibilities on the industry side are clarified (see section 5).

Figure 23: Does your company participate in curriculum development at the CTEVT-level?



Notes: The figure displays the share of companies that do or do not participate in curriculum development. N=567.

Figure 24: How strong is your company's influence on curriculum content decisions?

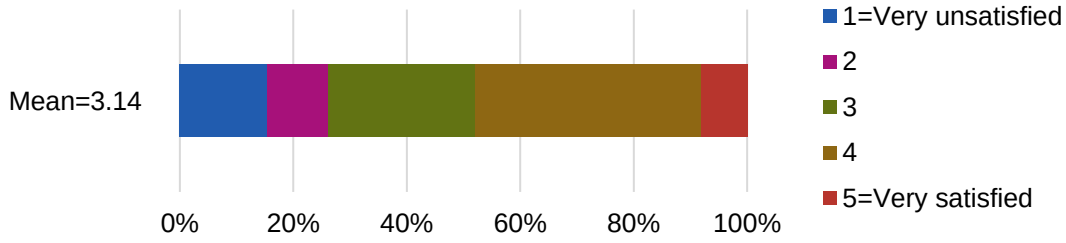


Notes: The figure displays the share of companies that have varying power in curriculum content decisions. N= 460.

6.5.5 Awareness of governance and reform, satisfaction with TVET system

Most employers in the sample (81%) are **aware of the federalization process** taking place in TVET, meaning they also have a certain level of awareness in the **governance of TVET**. On this point, employers are only **moderately satisfied** with the current state of the system – as shown in Figure 25, an average of 3.14 on the five-point scale.

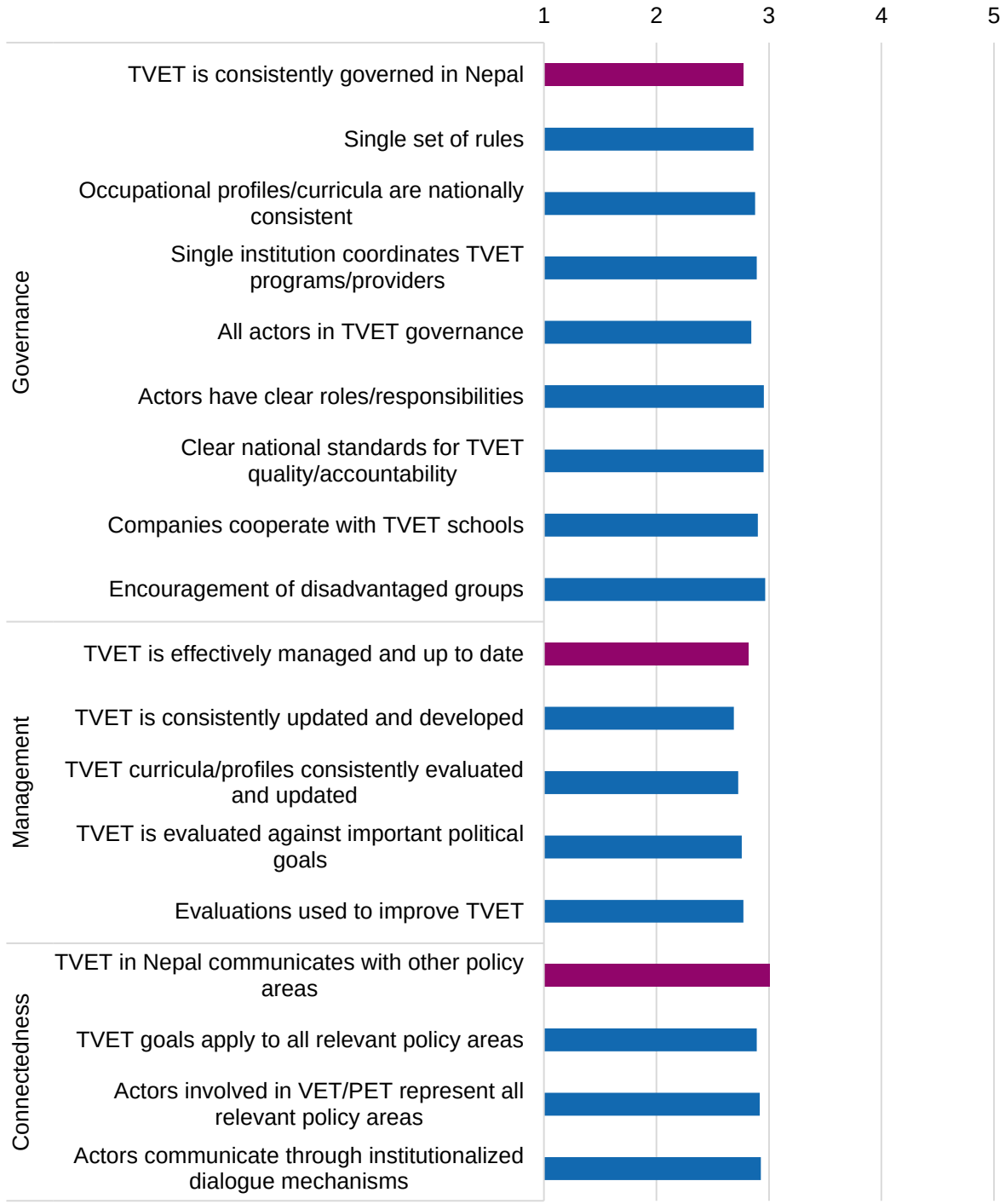
Figure 25: Overall, how satisfied are you with the governance of the TVET system in Nepal?



Notes: The figure displays the companies' satisfaction with TVET governance. N= 443.

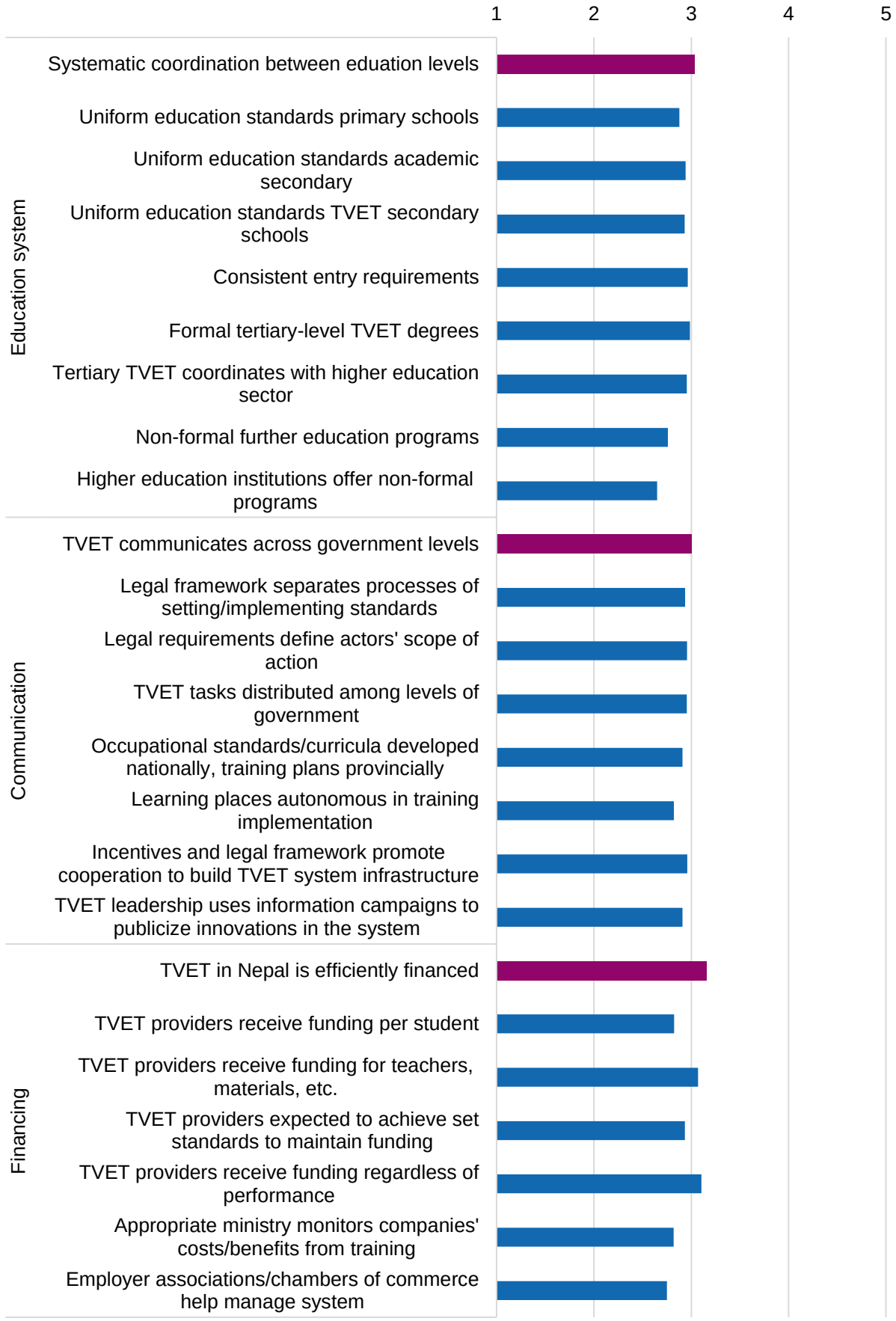
Breaking this down to more specific governance components, Figures 26 to 28 reveal that employers are not fully satisfied with the **consistency of TVET governance**, and the fact that they consider TVET is **not kept up to date**. Moreover, they are neither convinced that TVET **provides the right skills for Nepal**, nor that it is **high quality**. On the other hand, respondents express somewhat more satisfaction with the **effectiveness of TVET financing**, and the **coordination between government levels**.

Figure 26: Assessment of TVET governance, management, and connectedness



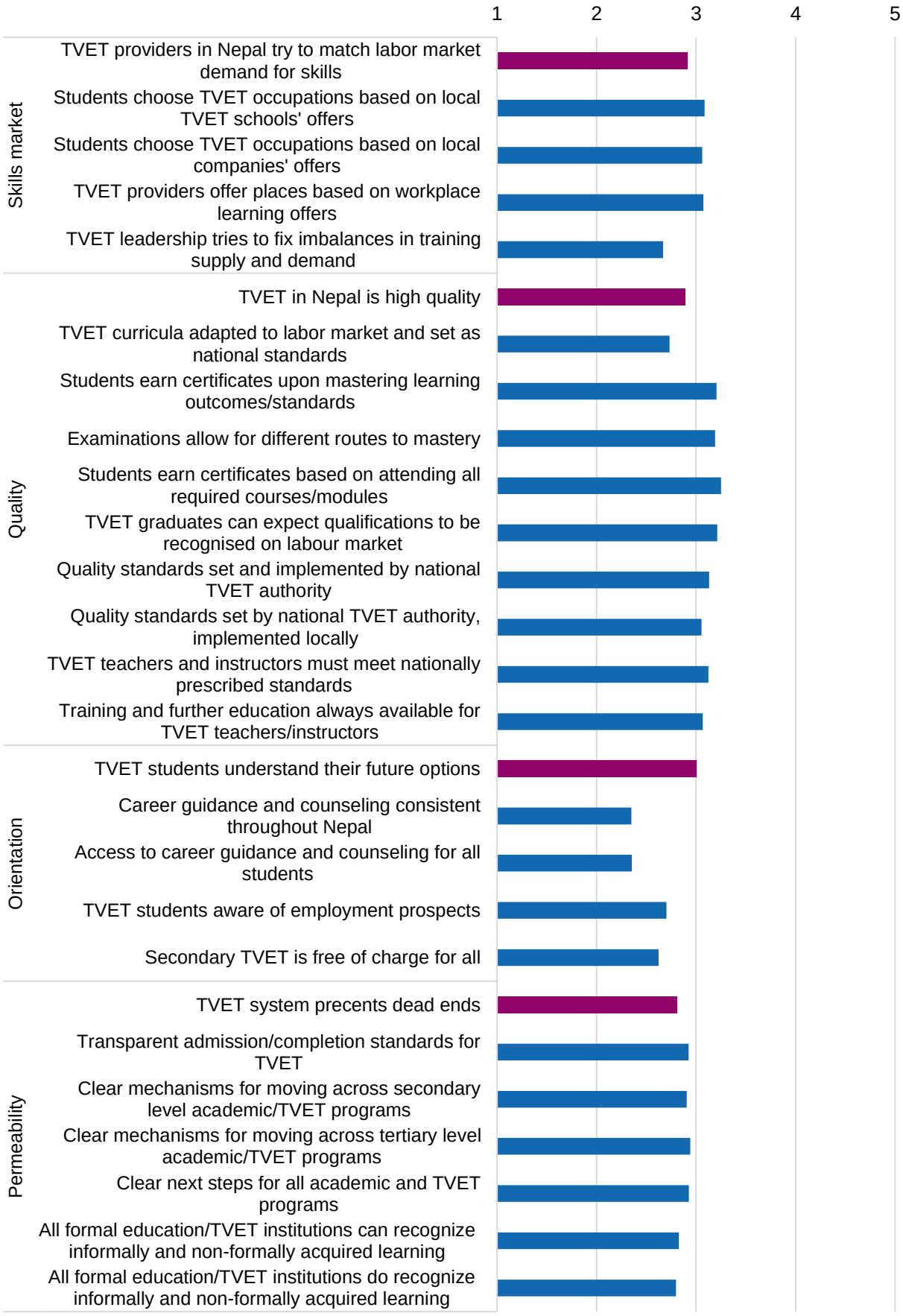
Notes: The figure displays the respondents' opinions about TVET governance in Nepal on a five-point Likert scale (purple: 1=Not at all, 5=Very much; blue: 1= Not accurate at all; 5= Completely accurate).

Figure 27: Assessment of education system, communication, and financing of TVET



Notes: The figure displays the respondents' opinions about TVET governance in Nepal on a five-point Likert scale (purple: 1=Not at all, 5=Very much; blue: 1= Not accurate at all; 5= Completely accurate).

Figure 28: Assessment of skills market, quality, orientation, and permeability of TVET



Notes: The figure displays the respondents' opinions about TVET governance in Nepal on a five-point Likert scale (purple: 1=Not at all, 5=Very much; blue: 1= Not accurate at all; 5= Completely accurate).

This relatively lukewarm assessment of TVET governance is certainly a factor in the overall reluctance of companies to be more active in the formal TVET system. TVET governance may also explain their unenthusiastic reception of new apprenticeship initiatives, such as the ENSSURE project – as Table 10 shows, less than 60% of the sample – a comparatively engaged group – expressed interest in these initiatives. Dissatisfaction with, or at least ambivalence towards, governance of the TVET system is at the heart of the lack of company participation, especially given their acknowledgement of the benefits of being involved in training. Using the federalization process as an opportunity to **improve governance** and **increase employee involvement** is therefore vital to ensure a stronger, more sustainable workplace-based education offering for youth.

Table 10: Are you interested in the new apprenticeship initiatives that companies, schools, and industry intermediaries are currently developing together?

	N	%
Yes	331	59.53
No	206	37.05
Maybe	19	3.42
Total	**556**	**100**

6.5.6 Factorial survey results

To better to understand the conditions under which employers are willing to participate in workplace training, we also integrated a factorial survey into the questionnaire. Factorial surveys are an analytical tool used in economics and social science to understand the way respondents come to making decisions and the trade-offs they are confronted with in their decision-making processes. Respondents receive a series of hypothetical scenarios in which a series of factors are randomly changed. This allows us to understand whether a particular factor affects the decision directly, without the influence of related or unobserved variables. Factorial surveys are especially useful for understanding the decision-making processes of employers on labour market matters (McDonald, 2019).

In this survey, respondents were presented with four different scenarios and asked to indicate whether they would accept to participate training in them. Figure 29 shows an example of the kind of scenario respondents received. Critically, the type of program varied between four different options:

- A short, cost-neutral training program
- A short program with an NPR 5,000 net benefit
- A 24-month program with an NPR 10,000 net benefit
- A 24-month program with an NPR 100,000 net benefit

Figure 29: Example vignette

Training scenarios

We are now going to present you with several scenarios concerning workplace training. Please indicate whether you would consider participating in each case.

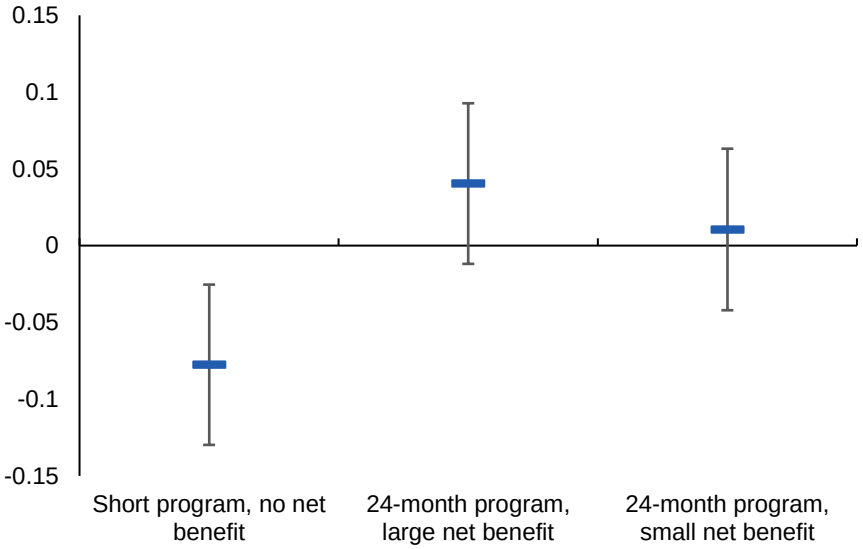
Imagine you have the possibility to participate in a **short-term training program** which will bring your company a **net benefit of NPR 5,000**. You receive an application from **Srijana Bista**, who is **20**. Would you consider participating under these circumstances?

(1) Definitely not (2) Probably not (3) Maybe (4) Probably (5) Definitely

Notes: Text in bold randomly varies. A total of 20 different vignettes were created, of which respondents received four randomly selected vignettes to evaluate.

In Figure 30, we show the results of this analysis. In general, respondents were positive about participating in workplace training, with an average score of 4 out of 5, indicating that on average respondents would "probably" agree to participate in the program. In terms of the program characteristics, we see that a **cost neutral** program is seen as less interesting to the employers than one that **results in a net benefit**. However, there is no great difference in the evaluation of programs that result in some kind of benefit – compared to the baseline group of a short program with an NPR 5,000 net benefit, the two longer, benefit-generating programs are no more popular, as their 95% confidence intervals cross zero.

Figure 30: Impact on program characteristics on employers decision to participate in workplace training



Notes: The figure shows change in evaluation on a five-point Likert scale compared to baseline group "Short program, small net benefit". We include 95% confidence intervals. Number of respondents: 598; number of vignettes: 2,202 (average 3.7 vignettes rated per respondent). Graph derived from OLS regression with individual fixed effects, see Table A.8 in Appendix A for full results.

From these results, we can conclude that designing programmes that **generate a net benefit for companies** is a powerful tool for increasing participation of companies. Curiously, the **size of the net benefit** seems not to be relevant. This suggests that companies are aware of the positive future benefits they are generating through participation in workplace programs, but nevertheless want to see some small return during the programme itself. Experience with cost-benefit studies from other countries shows that companies need to be informed about the various influencing factors. As this has not yet been done in Nepal, the results should be treated with caution.

6.6 Interview results from industry focus groups

To validate and deepen the quantitative survey results, we conducted three focus groups with industry representatives in January 2024. The sessions took place on January 14 in Kathmandu, January 15 in Hetauda, and January 16 in Janakpur. Each focus group included between 8 and 20 firm representatives (see Table B.1 in Appendix B). The discussions were audio recorded with the permission of participants, transcribed, and translated into English using the software "HappyScribe" for analysis.

We discussed various topics in these focus groups, some of which we address in this chapter because they are considered relevant for the further development of the role of industry in the TVET system. These topics also frequently appear in the literature.

6.6.1 Overall feedback to the survey results

The focus group participants expressed a range of opinions on the study's results. Generally, they agreed with the findings and offered numerous comments. For instance, one participant noted, *"It's a wonderful presentation and that is in line with what we have been thinking about. So, that spoke our mind, actually there is a skill shortage. There's definitely soft skill shortage, which is more prevalent than the hard skilled one"* (Kathmandu focus group).

6.6.2 Main topics addressed

We analysed the transcripts to identify the key topics highlighted in each focus group. While there were thematic overlaps, some areas were discussed only in one specific focus group.

Skilled worker shortage: Participants confirmed the quantitative findings, highlighting a significant shortage of skilled workers across various sectors that impacts company growth and productivity. They emphasized the need for improved training programs and qualifications to address this gap and enhance the labour market's overall skill level. In Janakpur, a participant said, *"The scarcity of skilled manpower is a significant problem that affects productivity in the industry. It's an old problem of the country."* Another employer agreed, stating, *"We are currently facing a shortage of skilled workers which is hampering the growth of our industries. This needs to be addressed through proper vocational training and education"* (focus group Janakpur).

Differences from individual economic sectors were also expressed as well as the importance of soft skills. "*Basically, we also agree on what others are saying. Especially in terms of the institutions are training. But in terms of **dairy sector,** they have faced shortages of the human resources. For example, in ice cream. They are hiring people from India"* (Kathmandu focus group). "*Regarding the **ICT sector**, generally we will not get the skilled human resource here in Nepal. It's very difficult. And what we do is we will take the graduate, we'll pay them, and we'll train them. And the problem is after getting trained, they will switch the job for better pay"* (Kathmandu focus group). *"Our **agriculture sector** needs to think little bit differently as it's a very small industry but a very big self-employment area. Many people they are doing self-employment, and we have to label their entrepreneurs also. (…) I strongly believe we have to promote entrepreneurial skills because it's a family related business."* (Kathmandu focus group). *"I'm working in **a manufacturing company**. It manufactures the cable and wires industry. (…) So, what I have seen, the companies or the competitors of which we have exist here in the market, they all are surviving in terms of skilled manpower. So right now, if you talk about the skilled manpower, we are hiring maximum of the skilled manpower from India. (…) So just recently, one year back, we have started a program called the Skills for employment program. (…) So, through that curriculum, yes, we were able to develop skill and manpower. (…) We have internally developed the curriculum development. But in terms of if we talk about CTEVT, the curriculum development in cable and wire industry is lacking. So, we need to develop that"* (Kathmandu focus group).

Another aspect of skills shortage was postulated in Janakpur: *"The current practices in our industries are exploitative and unethical. There is a need for reforms to ensure better working conditions and fair practices."*

Importance of workplace learning: Many participants agreed that essential skills, particularly soft skills like communication and problem-solving, are best learned in the workplace rather than in educational institutions. This view is supported by international studies, which suggest that on-the-job training is crucial for acquiring these competencies. *"There is a skill shortage. There's definitely soft skill shortage which is more prevalent than the hard skilled one." (*Kathmandu focus group). A participant familiar with the 24-month apprenticeship program said, "*But perhaps just to add something on that point: even in the 24-month apprenticeship program small companies made benefits on their own throughout this program. And we're talking NPR 100,000 across two years. So, it is remarkable. The possibilities are*

there, their conditions have to be correct. And that's what have heard with the length of time and the amount of time that is spent in the workplace actually doing productive work" (Kathmandu focus group). In Janakpur, participants' comments primarily focused on the agriculture sector. Statements included: *"We should keep technical education in the basic areas like agriculture. This should be prioritized for the betterment of our economy," and "Focusing on agricultural skills in technical education will help enhance productivity and sustainability in the agricultural sector."* Another participant highlighted, *"Given our reliance on agriculture, it is essential to equip individuals with advanced agricultural techniques through proper education and training"* (all three statements from Janakpur focus group).

Barriers to training: The focus groups identified several key barriers to investing in training programs. High costs, time requirements, and concerns about trained employees being poached or migrating to other companies were identified as significant obstacles. Despite these challenges, some participants mentioned that companies still see value of training for addressing specific production needs and technological advancements. One participant stated, "*There are a couple of things we need to understand. No company ABC would train the people of another company F at their cost without subsidy from the government. And then the barriers cited were bureaucracy and poaching. Obviously, I won't train my competitors personnel at my cost"* (Kathmandu focus group)**.** However, industry representatives expressed that with appropriate support, training could be beneficial: *"So that is possible what we want from the sector committee; and more and more involvement with the sector. Another possibility is perhaps if a group of companies – say automobile group of companies – they want to have their own set of own training facilities and government CTEVT and National Skill Testing Board and concerned offices may through a fast track approve that training program"* (Kathmandu focus group)**.**

Collaboration and cooperation: There was a consensus on the benefits of collaboration among companies, especially in sharing training strategies, reducing administrative burdens, and developing common certification standards. Such cooperation could also help mitigate issues like poaching and enhance overall training effectiveness. As one participant from Janakpur noted, *"Industries should collaborate with educational institutions to provide practical training and ensure that the curriculum aligns with industry needs."* However, challenges in the cooperation were also acknowledged. For instance, a participant emphasised, *"But some companies would need support. The small one. The small ones yeah. Okay"* (Kathmandu focus group). Additionally, another Janakpur participant stated, *"Educational institutions and industries must work together to create a skilled workforce that meets the demands of the job market."* Furthermore, the importance of ethical practices was highlighted: "*Associations should advocate for ethical practices within industries, ensuring that workers are treated fairly and work in safe conditions. (…) Industry associations have a role in promoting reforms that will create a more conducive and ethical working environment*" (Janakpur focus group).

Government, policy support, and industry roles: The Hetauda focus group reached a consensus on the need for stronger government involvement and policy support to implement effective training programs. One participant emphasized, *"If the application (…), with all policy matters related to the government, civil training will not be conducted in the coming days"* (Hetauda focus group). Without adequate support, participants felt that TVET initiatives would lack sustainability and impact. In Kathmandu, participants expressed the need for greater industry involvement in curriculum development and decision-making processes. They argued that companies should have more influence over training programs to ensure alignment with industry needs, with the government facilitating this process through support and subsidies – albeit without overly burdensome regulations. One participant noted, *"So, we have different industry bodies, umbrella organizations, and we have commodity organizations where specific sector is represented by those commodity organizations. And what we see is, if there is a legal instrument that industry sector should initiate, then they should initiate sector skilled councils. In the absence of those legal instruments, what's happening now is CTEVT is initiating and CTEVT is kind of constituting the sector in committees"* (Kathmandu focus group). In a similar vein, a participant in Janakpur argued: *"The role of industrialists in technical education and professional training is crucial. There needs to be a full role of industry and business in the educational system, including adherence to*

relevant laws." In Hetauda, the discussion also highlighted the importance of proper certification for skills acquired through training, with participants noting that certification would enhance the recognition and validation of trainees' skills, thus improving their employability and career prospects.

6.6.3 Key issues needing resolution

The focus group participants highlighted several key problems they want to have resolved in the near future.

Need for more SSCs and their empowerment: Participants emphasized the importance of establishing more SSCs and ensuring that these committees are empowered to make decisions on training and curriculum development. They believe that this would enhance the effectiveness of training programs and better address industry needs. One participant noted, *"Let me share my understanding. In India, the SSCs are called sector skill councils, and they have lots of power. It doesn't matter if you still call it SSC and give the same power but that's what is required"* (Kathmandu focus group). Another echoed this sentiment: *"We have different industry bodies, umbrella organizations, and we have commodity organizations where specific sector is represented by those commodity organizations. And what we see is if there is a legal instrument that industry sector should initiate sector skilled councils then they should initiate if there is a legal instrument"* (Kathmandu focus group). Summarizing the discussion, one participant said, *"If I may summarize in two words, we need more sector committees and we need sector committees empowered to do it then everything will measure good" (*Kathmandu focus group). Another added, *"What industry wants, is, that they themselves can initiate successful council committees based on legal instruments" (*Kathmandu focus group).

Role of government and regulation: A significant issue is the perception that the government relies too heavily on regulation to address problems. Participants argued that the government's role should focus more on facilitation rather than direct intervention. They advocate for a model in which the industry has greater autonomy and decision-making power, particularly in curriculum development and training initiatives. As one participant stated, *"The skills problem with the government is (…) that they think they can solve any problem by regulation. Government should act as facilitator"* (Kathmandu focus group).

Labour shortages: There is a critical shortage of skilled labour in sectors like dairy, ice cream, and IT, which has led to the hiring of foreign workers. Participants stressed the need for more effective involvement of institutions like CTEVT and industry sector committees in curriculum design to better meet local labour demands and reduce dependency on foreign labour. In Kathmandu, participants offered several suggestions to address these issues:

- *"So, regarding the ICT sector generally we will not get the skilled human resource here in Nepal, it's very difficult. And what we do is we will take the graduate, we'll pay them, and we'll train them. And the problem is after getting trained, they will switch the job for better pay."*
- *"Basically, we also agree on what others are saying. Especially in terms of the institutions are training. But in terms of dairy sector, they have faced shortages of the human resources. For example, in ice cream, they are hiring people from India. And then the expectation is like if CTEVT involves in the curriculum design and that field, that would be helpful."*
- *"Let me add to it. When ABC expressed the desire to set up a training centre, they approached me for an opinion on what to set up. I said refrigeration air conditioning training started from the Institute of Engineering in 1976. And there are faculties and there are people trained in that job and they have a culture of that. So, it's better to set up in the institute."*
- *"We have different industry bodies, umbrella organizations, and we have commodity organizations where specific sector is represented by those commodity organizations. And what we see is if there is a legal instrument that industry sector should initiate sector skilled councils then they should initiate if there is a legal instrument."*

In Hetauda, there was also a specific request for handicraft manpower: *"According to the cooperative, there is a need for handicraft manpower in each province."*

6.6.4 Expectations from the government

During our discussions, participants shared their views on the role the government should play in the future of TVET. Opinions varied, but several key themes emerged.

Facilitation over regulation: Participants strongly favoured a government role focused on facilitation rather than heavy regulation. They believe that the government's role should be to support and enable the industry, rather than imposing restrictive regulations. For example: *"The skills problem with the government is – I don't know about the other government – our government they think they can solve any problem by regulation. Government job is to facilitate. Government should be off the back of the people"* (Kathmandu focus group).

Establishment and empowerment of SSCs: There is a call for the government to support the creation and empowerment of SSCs. These committees should have the authority to make decisions on training programs and curricula, ensuring they are aligned with industry needs. *"We need more sector committees, and we need sector committees empowered to do it then everything will measure good"* (Kathmandu focus group).

Support for industry-led training initiatives: Participants emphasized the need for government recognition and support for industry-led training programs. They highlighted the importance of having these programs accredited and officially recognized. *"We can transform that into an industry sector TVET council because large employers which employ more than 80% of the Nepali industries are leading that organization. So that can be transformed"* (Kathmandu focus group).

Bureaucracy was also highlighted as a significant hurdle in integrating companies into training programs. In Hetauda, participants pointed out the practical **challenges in implementing training programs** such as a lack of infrastructure, insufficient funding, and the need for qualified trainers. They say that addressing these challenges is crucial for the success of any training initiative. Participants from Hetauda also stressed the need for supportive government policies and effective implementation, including adequate support for local governments to fulfil their roles in education and development. **Reduction of bureaucratic barriers:** There is a strong call for reducing bureaucratic barriers that impede training initiatives. Participants advocate for a streamlined process for approving and implementing training programs, which would make it easier for companies to participate in training activities without excessive red tape. As one participant noted: *"Encourage them to come up with that because if they feel they can train the people now the question of bureaucracy and poaching can be reduced if the companies come together and solve these issues"* (Kathmandu focus group). Another participant added: *"The role of industrialists in technical education and professional training is crucial. There needs to be a full role of industry and business in the educational system, including adherence to relevant laws"* (Janakpur focus group).

6.6.5 Areas of willingness to contribute

The participants expressed their willingness to contribute to strengthening the TVET sector in several ways.

Establishing and supporting SSCs: Participants emphasized the importance of setting up and actively participating in sector committees. They are prepared to contribute their expertise and resources to these committees to ensure effective training and curriculum development. One participant noted, *"We need more sector committees, and we need sector committees empowered to do it then everything will measure good"* (Kathmandu focus group). Another commented on the need for well-represented

committees, saying, *"Various committees like the Photo too is of construction. (...). In committee have been the people which are Industry - Business the right professional organization"* (Janakpur focus group). They also highlighted the role of SSCs in bridging industry needs with TVET, as reflected in this statement: *"For TVET which the industry [committee] is the main link for the business is not grand because someone should (...) lobbying for it*" (Janakpur focus group). Furthermore, a participant pointed out, *"SSC members are from the industry. So, there's no question of training SSC members because they are already from the industry. But those people need to understand the return-on-investment to industry. I am a member of SSC. I understand my problem. SSC is formed from member from the industries"* (Kathmandu focus group). In Hetauda, participants discussed the organization of SSCs, with one participant expressing frustration about not being invited to meetings despite being a provincial representative. Another participant suggested, *"Different types of committees to cooperate with the industry sector should have arrangements to send representatives from the groups"* (Hetauda focus group).

Pooling resources for training programs: Participants across cities expressed a strong willingness to pool resources with other companies to develop effective training programs. This collaboration is seen as crucial for addressing skill shortages and ensuring high-quality training. As one participant from the Kathmandu focus group noted, *"Some companies don't need subsidies. For instance, this air conditioning. They can pool the resources and training if it is made easy by the government because they all need manpower."*

Providing learning spaces and staff: Furthermore, companies are prepared to offer learning spaces and staff to facilitate practical in-house training. This includes setting up training centres on their premises and providing on-the-job training opportunities. As highlighted by one participant, *"We can pool the resources and training if it is made easy by the government because they all need manpower. They all have to hire people from India and they are not dependable because they have something they will leave. (…) They can't finish the project in time so they can pull the resources with encouragement to come in"* (Kathmandu focus group).

Engaging in curriculum development: Participants are willing to play an active role in developing curricula that align with industry needs. They believe that having industry-led curricula will enhance the relevance and effectiveness of training programs. As one participant notes, *"Through that curriculum, yes, we were able to develop skill and manpower. Right now, we are little bit getting support from the skilled manpower from this curriculum which we have developed"* (Kathmandu focus group).

These contributions reflect a strong commitment from the industry to collaborate and invest in the TVET sector, ensuring that training programs are relevant, effective, and aligned with market needs.

6.6.6 Expectations for an organized industry

Industry associations: Participants have expressed several expectations from their industry associations, particularly regarding initiation and establishment of SSCs. Here are key quotes from the Kathmandu focus group reflecting these expectations:

- *"What industry wants is, if there's a legal instrument, then industry association can initiate with the legal mandate successful council committees within different community organizations based on the priorities.*"
- *"So, we have different industry bodies umbrella organizations, and we have commodity organizations where specific sector is represented by those commodity organizations. And what we see is if there is a legal instrument that industry sector should initiate sector skilled councils."*
- "*So, five large organizations. The presidents of those organizations are the members of the board. (...) And there is the member secretary which is the permanent staff. That is the structure. And that unit delivered Dakshata program on three sectors agriculture, construction, and hotel.*

So, what I said was, we can transform that into an industry sector TVET council because large employers which employ more than 80% of the Nepali industries are leading that organization."

- *"We have CNI research cell, and we also have (...) kind of an umbrella body. Five employee association employs more than 80%. Then that's a resource body. Yes. So, we can probably have that knowledge of simulation and all that within those two units*."
- *"We can transform that into an industry sector TVET council because large employers which employ more than 80% of the Nepali industries are leading that organization. So that can be transformed. And this is the common platform for different umbrella organizations because one umbrella organization normally won't talk to the other. But since we have made the common platform, we can leverage that and maybe include other organizations like the computer organization or other federations into that platform and create a larger TVET platform which facilitate establishment of the sector."*

It is evident that industry representatives recognize the need for better organization and unified representation. They aim to set up more SSCs, speak with one voice, and improve collaborative efforts.

6.6.7 Other issues

Besides these topics, participants also discussed various other HR issues, including migration, returnees, labour regulations, land use, and employment practices for both Indian and Nepali workers. They also touched on broader educational system strengthening. However, addressing these topics falls outside the scope of this report, and therefore, they will not be covered here.

6.7 Recommendations

The results of the **quantitative study** and the **focus group discussions** shown that there is an enormous shortage of well-trained specialists with labour market-relevant skills. The shortage impedes economic growth. To address this, we recommend the following:

- **Industry (i.e., SSCs) should lead** the development of national competency standards and curricula in collaboration with CTEVT and other relevant stakeholders to better align skills with labour market needs.
- Establish additional **SSCs** under the new TVET industry council to guarantee alignment with company need.
- **Organize the industry sector** to facilitate cooperation and streamline processes within the industry, ensuring a unified voice (refer to recommendations of previous chapter).
- Develop **short-term training for company owners,** explaining the benefits and conditions of offering training.
- Establish and expand TVET infrastructure to train young professionals in **pre-diploma and diploma courses** and promote models like the ENSSURE 24-month dual TVET (apprenticeship) that offer a **return on investment for companies**.
- Increase availability of **short-term, competence-oriented courses** that can later be credited to formal programs though RPL.
- Develop training alliances **involving SMEs** (network of companies willing to train), either led by big companies or provincial chambers of commerce, to ensure broad participation in TVET programs.

7 Summary of Recommendations

7.1 Recommendation related to legal framework development

The legal framework has evolved significantly since the new constitution, impacting the TVET sector as well. Based on recent developments, we recommend the following activities:

Employment

- We recommend that the **IIPBN** be carefully considered when structuring the TVET industry and that its potential to acquire rights and obligations in education be fully utilized.
- We recommend revising the existing **TVET industry strategy** based on the findings from this report. The strategy should be recognized and officially approved by national authorities, possibly through the IIPBN.
- Although the law contains important recommendations for improving local employment, we recommend regularly **evaluating sectors** where local workers are scarce. Based on evaluations, corresponding TVET programs should be launched.

Education

- We recommend that the upcoming **national TVET Act** ensure industries play a significant role and that provinces are mandated to lead TVET schools and invest in knowledge sharing.
- The varying approaches of **provincial TVET Acts** illustrate how differently two provinces regulate the TVET sector, largely due to the absence of a national TVET Act. Without national guidelines, provinces are left to independently determine which functions need regulation at the provincial level. Provincial TVET laws must be coherent with a national TVET Act. Therefore, we recommend finalizing and approving the national TVET Act, incorporating the findings of this report and the best practices from provincial legislation.
- To achieve sustainable outcomes in the skills development sector, we recommend that short-term courses adopt **competence-oriented curricula** aligned with the formal TVET programs regulated by the CTEVT. This alignment will facilitate the recognition of non-formally acquired skills and provide access to formal education.

7.2 Recommendations based on industry landscaping

The industry sector already well-organized, but its role in the education sector is not always clear. Industry leaders should clarify their specific roles within the education sector and **speak with one voice** when engaging with education stakeholders.

A close dialog with the education authorities is essential. The aim should be for both industry and education stakeholders to recognize the mutual benefits of co-producing qualifications. This dialogue becomes more effective when the industry community speaks with a unified voice and represents the entire economy. It is crucial to enshrine the role of economic stakeholders in the new **TVET Act**. Missing this opportunity would be unfortunate, as boosting economic productivity relies on firm, binding commitments from the industry community. However, for the industry sector to fully realise its potential, it must have clearly defined rights, roles, and responsibilities.

If the industry successfully organizes itself according to the model outlined, the following recommendations are made for establishing this organized economy:

- Discuss the existing mapping and improve or expand if necessary.

- Establish a clear structure within a new **TVET industry council**, including membership criteria, tasks, and the roles of sector associations and SSCs.
- Review the **TVET industry strategy** developed under the leadership of CNI, make improvements if needed, and secure approval from all members.
- Define the role of TVET industry representatives in the TVET Act based on the new strategy.
- Recommend that the IIPBN seek approval of this strategy from the GoN.
- Allocate TVET industry functions across the three political levels, detailing the roles and responsibilities of industry units.
- Develop processes for all functions managed by TVET industry partners.

7.3 Recommendation based on survey and focus groups

The results of the **quantitative study** and the **focus group discussions** shown that there is an enormous shortage of well-trained specialists with labour market-relevant skills. The shortage impedes economic growth. To address this, we recommend the following:

- **Industry (i.e., SSCs) should lead** the development of national competency standards and curricula in collaboration with CTEVT and other relevant stakeholders to better align skills with labour market needs.
- Establish additional **SSCs** under the new TVET industry council to guarantee alignment with company need.
- **Organize the industry sector** to facilitate cooperation and streamline processes within the industry, ensuring a unified voice (refer to recommendations of previous chapter).
- Develop **short-term training for company owners,** explaining the benefits and conditions of offering training.
- Establish and expand TVET infrastructure to train young professionals in **pre-diploma and diploma courses** and promote models like the ENSSURE 24-month dual TVET (apprenticeship) that offer a **return on investment for companies**.
- Increase availability of **short-term, competence-oriented courses** that can later be credited to formal programs though RPL.
- Develop training alliances **involving SMEs** (network of companies willing to train), either led by big companies or provincial chambers of commerce, to ensure broad participation in TVET programs.

We believe that a well-organized and committed industry can significantly enhance the TVET system. A robust TVET system is essential for improving both the standard of living of educated individuals and the overall economic situation. We hope that many of these proposed measures can be implemented effectively.

8 Author Information

Ursula Renold is *Professor of Education Systems* at the Swiss Federal Institute of Technology (ETH) Zurich. She is also Director of the Center on the Economics and Management of Education and Training Systems (CEMETS). In addition, she is Chairman of the University Board of the University of Applied Sciences and Arts, Northwestern Switzerland. She is a member of the Research Advisory Council of the German Economic Institute in Cologne (Germany), the International Advisory Group at the Center on International Education Benchmarking (USA), the Pearson International Expert Panel (UK), Board of Trustees Committee member, Swisscontact, Zurich, and member of the Commission for the Dual Education Law (Serbia). She holds an honorary Professorship at the University of Applied Labour Studies in Mannheim (Germany). She is a visiting faculty member at the Kathmandu University School of Education (Nepal). She was a Visiting Fellow at the Harvard Graduate School of Education (USA). Prior to this, Renold was Director General (equal to Secretary of State in other countries) of the Federal Office for Professional Education and Technology (OPET) in the Department of Economic Affairs, Bern. In this position she led Switzerland's competence center for professional education, universities of applied sciences, and innovation. Before becoming Director General, she was head of OPET's Vocational and Professional Education and Training (VPET) Division and Director of the Swiss Federal Institute of Vocational Education and Training. Renold has launched numerous key initiatives, which have had great impact on the VPET system in Switzerland. In her research, Ursula Renold applies empirical methods, statistics, and theoretical concepts to the areas of comparative education and translational research with a specific focus on labour-market-oriented education and training. Ursula Renold has been accompanying the federalization process for TVET in Nepal with research and consulting since 2017.

Usha Bhandari is Senior Program Officer/TVET specialist at the Swiss Agency for Development and Cooperation, SDC Nepal. She manages TVET programs, funded by the Government of Switzerland to support a systemic reform of the TVET sector in Nepal. Bhandari obtained her PhD in Education from the Kathmandu University, Nepal, following education at the University of Melbourne (Australia) and the Tribhuvan University, Nepal. Her research *Social Inclusion in Technical Education and Vocational Training in Nepal* comprehends social inequalities regarding TVET opportunities and employment in the job market, with a focus on mixed methods and theoretically driven analysis.

Patrick McDonald is a postdoctoral researcher at the Chair of Education Systems at the Swiss Federal Institute of Technology (ETH) Zurich. He was coordinator of the LELAM-TVET4Income project from 2020-2024, a Swiss National Science Foundation (SNSF)/SDC project that seeks to understand the conditions under which TVET can improve youth labour market outcomes in developing countries. McDonald obtained his PhD in economic sociology from the University of Lausanne, Switzerland, following education at the University of Melbourne (Australia) and the University of Geneva. His research encompasses labour market inequalities, employer discrimination, and transitions from education to employment, with a focus on experimental and quasi-experimental methods and theoretically-driven empirical analysis.

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Subas Subedi brings over a decade of specialized expertise in Project Management, focusing on TVET projects since 2008. His accolades include the Young Project Manager Award from the International Project Management Association (IPMA) in 2012, and he actively assesses for IPMA's Project Excellence Award. Presently, as Team Leader at the Nepal Vocational Qualification System (NVQS) project, a collaboration between the Government of Nepal and Swiss Agency for Development and Cooperation SDC, with technical assistance from Swisscontact. His extensive experience encompasses pivotal roles in flagship projects like Employment Fund and ENSSURE, solidifying his commitment to TVET advancement. Besides his regular professional work, his key interests are on research and knowledge sharing on the TVET and project management topics.

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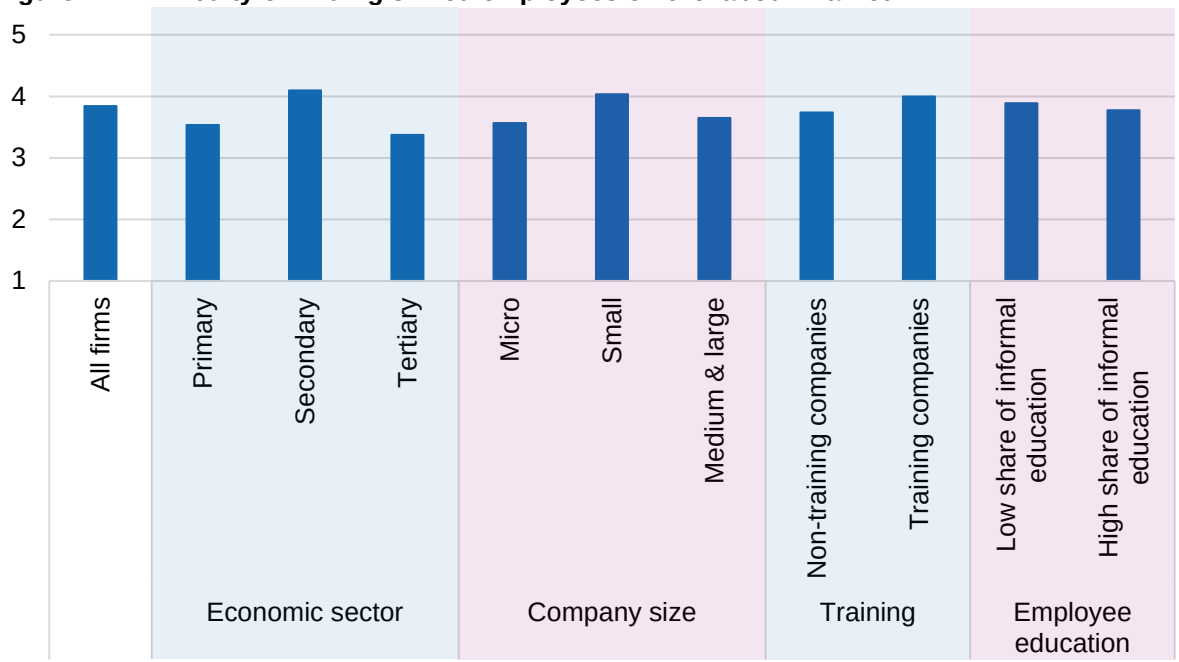
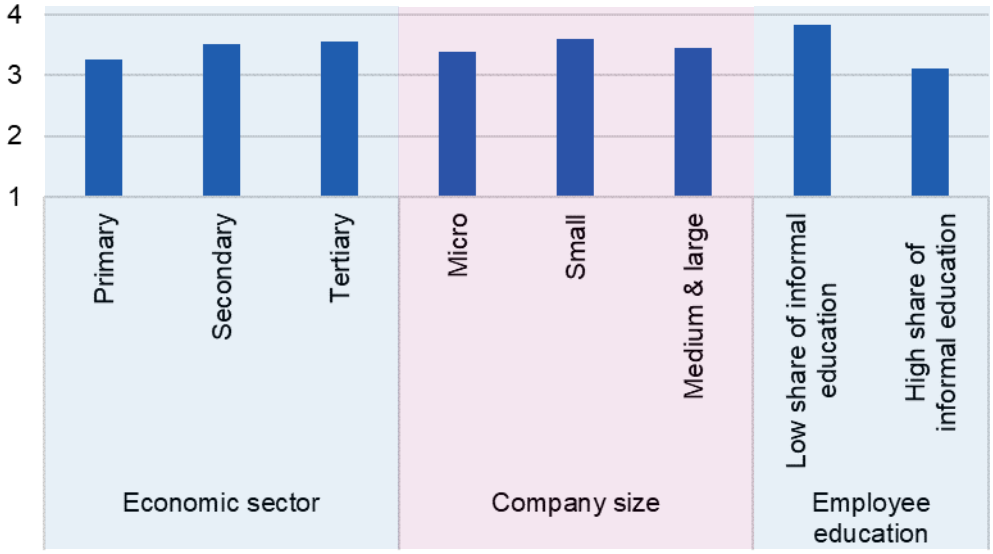
10 Appendix A

Figure A.1: Difficulty of finding skilled employees on the labour market



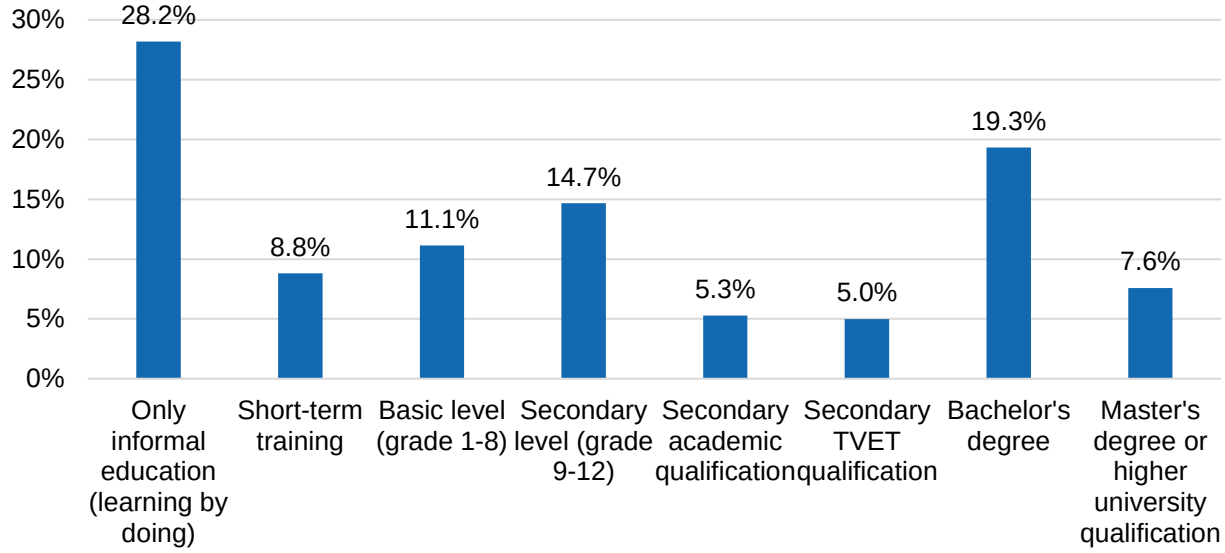
Notes: The figure displays the difficulty of finding skilled employees on the labour market on a five-point Likert scale (1=Very easy, 5=Very difficult). N=574 for all firms, N=15, 367, 192 for primary, secondary, and tertiary sector companies. N=142, 315, 117 for micro, small, and medium and large companies. N=224, 350 for training and non-training companies. N=329, 245 for firms with a low and high share of employees with informal education.

Figure A.2: Heterogeneity of skills-shortage on company growth



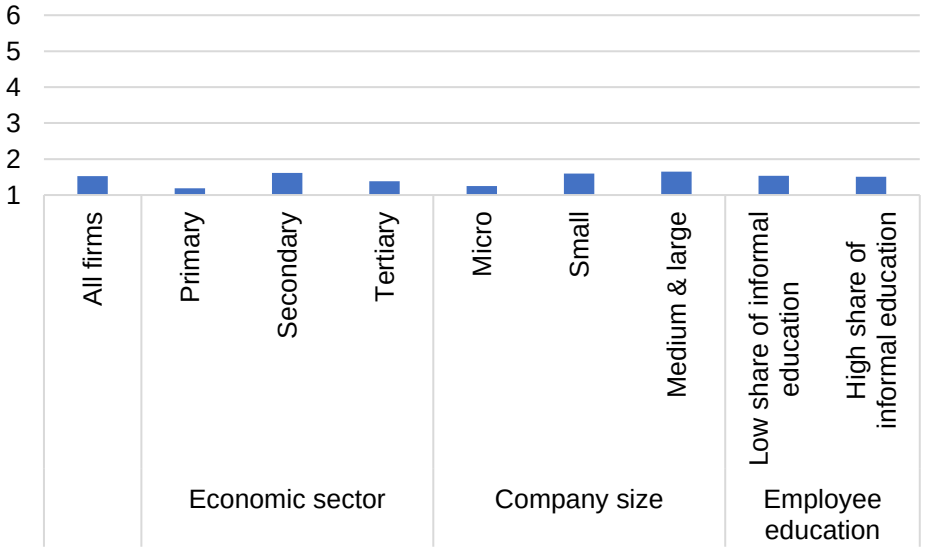
Notes: The figure displays the share of companies that consider the effect of skill shortage on company growth 1=unimportant, 2= little, 3=moderately or 4=significantly. N=16, 372 and 193 for primary, secondary, and tertiary sectors. N=143, 321, and 117 for micro, small, and medium and large companies. N=334 and 247 for low and high share of employees with only informal education.

Figure A.3: Approximately what percentage of your company's employees have the following as their highest completed education and/or training?



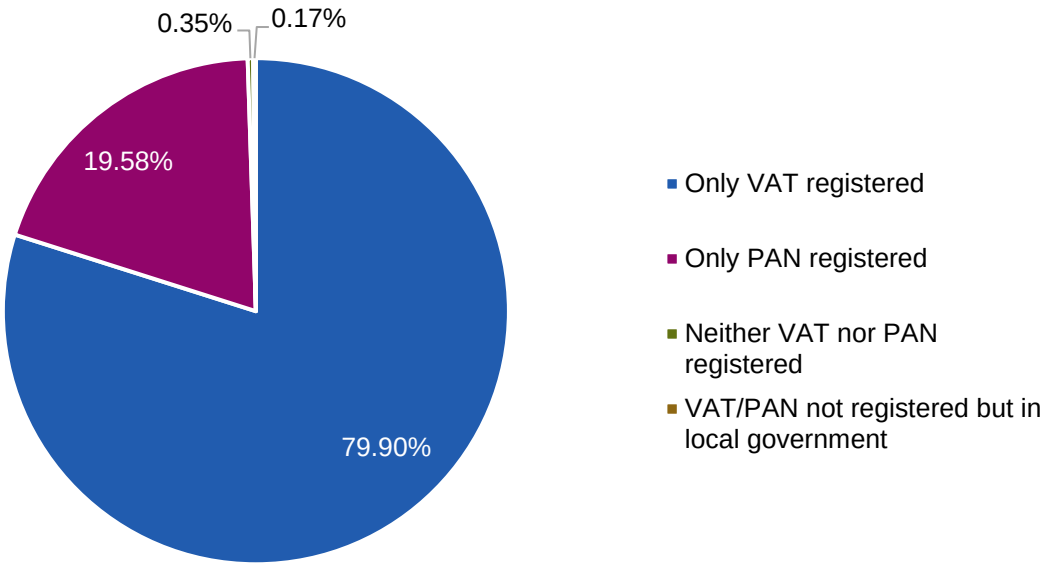
Notes: The figure displays the share of average education levels among employees in all companies. N=580.

Figure A.4: Ideal duration for innovative workplace training that provides skilled workers



Notes: The figure shows average ideal duration for innovative workplace training that provides skilled workers. Answers are 1=1-3 months, 2=6-12 months, 3=2 years, 4=3 years, 5=4years, 6=5+ years. N=579 for all firms. N=16, 371, 192 for primary, secondary, and tertiary. N=142, 320, 117 for micro, small, and medium and large companies. N=334, 245 for low and high share of employees with informal education.

Figure A.5: Is the business VAT registered or PAN registered?

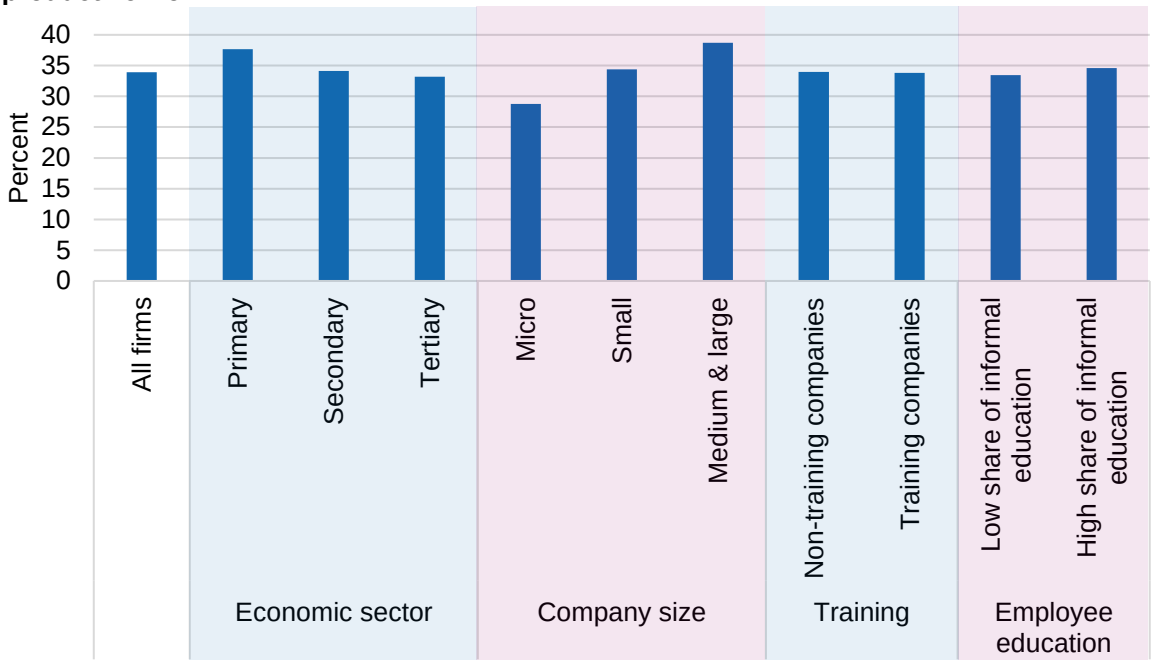


Notes: The figure displays the share of companies that are or are not Value-added Tax (VAT) or Permanent Account Number (PAN) registered. N=57.

Figure A.6: How long does it take newly hired entry-level employees to reach the same productivity level as a qualified/skilled employee?

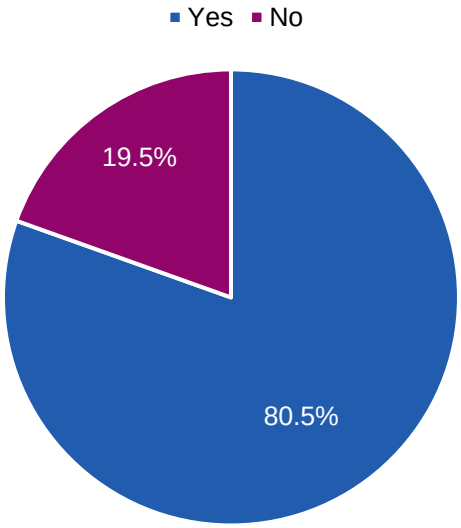
Notes: The figure displays the average duration how long it takes a new employee to reach the same productivity level as a skilled employee (in weeks). N=576 for all firms, N=15, 370, 191 for primary, secondary, and tertiary sector companies. N=141, 318, 117 for micro, small, and medium and large companies. N=224, 352 for training and non-training companies. N=334, 242 for firms with a low and high share of employees with informal education.

Figure A.7: How much time do newly hired entry-level employees spend in training as opposed to productive work?



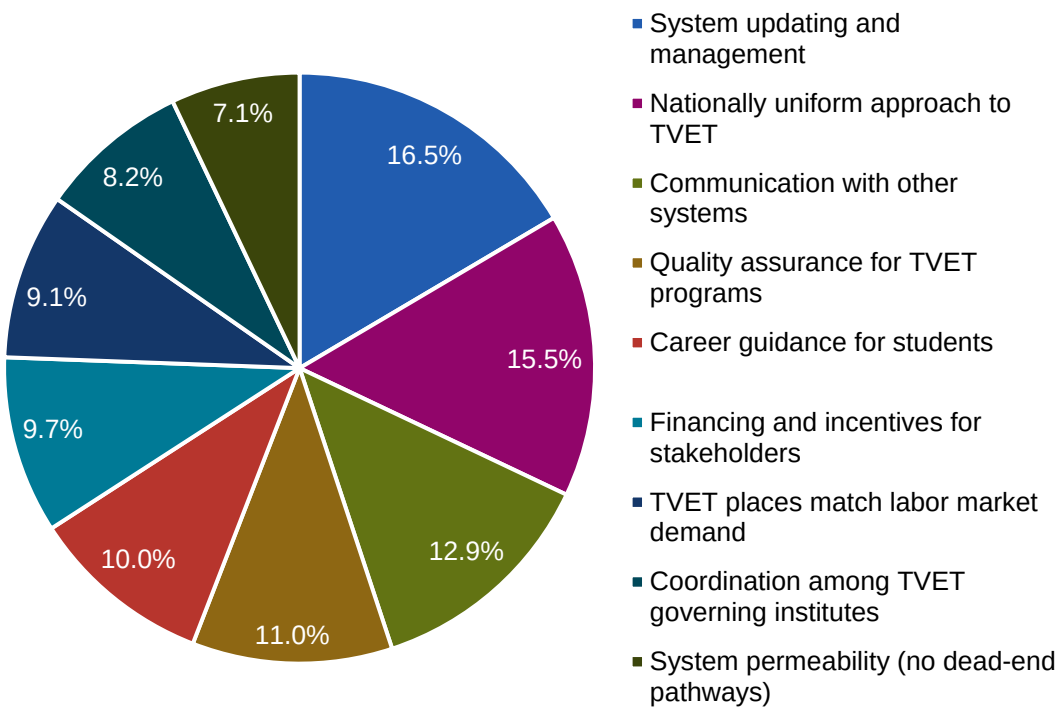
Notes: The figure displays the share of time newly higher employees spend in training as opposed to productive work (in percent). Training can be in-house or external courses, training modules, etc. Example: Training might be learning how to use a machine or using that machine to make practice parts, while productive work is using that machine to make parts that will be sold. N=519 for all firms, N=15, 313, 191 for primary, secondary, and tertiary sector companies. N=134, 269, 116 for micro, small, and medium and large companies. N=223, 296 for training and non-training companies. N=319, 200 for firms with a low and high share of employees with informal education.

Figure A.8: Are you informed about the federalization process of the TVET system in Nepal?



Notes: The figure displays the share of companies that know or do not know about the Nepali federalization process of the TVET system. N=476

Figure A.9: How important are the following issues for ensuring high-quality TVET governance?



Notes: The figure displays how important different issues are for companies for ensuring high-quality TVET governance. N=316.

Table A.1: Heterogeneity of importance of recruitment strategies

	All	Primary	Secondary	Tertiary	Micro	Small	Medium & large	Trainer	Non-trainer
Global job market	2.18	1.63	2.35	1.91	1.87	2.35	2.10	2.27	2.12
Indian job market	2.74	1.81	2.96	2.40	2.48	2.83	2.82	3.03	2.55
National job market	4.05	3.81	4.02	4.13	3.77	4.00	4.55	4.62	3.70
Local job market	4.47	4.25	4.37	4.69	4.53	4.34	4.77	4.76	4.29
Internal job market	3.46	2.88	3.53	3.37	3.25	3.39	3.89	4.02	3.10
On-the-job training	3.11	2.56	3.32	2.75	2.99	3.11	3.25	3.56	2.83
Apprentice/Trainee	2.97	3.19	3.07	2.78	2.86	3.00	3.05	3.56	2.60
Temp/screening jobs	2.98	2.44	3.13	2.72	2.76	3.00	3.17	3.49	2.65
Above-market pay	3.15	2.25	3.31	2.91	2.86	3.23	3.28	3.56	2.88

Notes: The table displays heterogeneity of recruitment strategies among the different types of companies on a five-point Likert scale (1=Not at all important, 5=Very important). N=581.

Table A.2: Correlation of training program and firm characteristics

	Any type	Internships	Traineeships	Apprenticeships	ENSSURE
Economic sector (Ref. Cat.: Primary)					
Secondary	-0.258*	-2.224***	1.015	-1.515***	
	(0.141)	(0.426)	(0.644)	(0.362)	
Tertiary	0.0240	-1.250***	0.313	-2.105***	
	(0.130)	(0.294)	(0.634)	(0.335)	
Company size (Ref. Cat.: Micro companies)					
Small	-0.171	1.031***	0.739	0.159	-2.083***
	(0.138)	(0.355)	(0.618)	(0.401)	(0.538)
Medium & large	1.099***	1.532***	-0.142	0.510	-2.196***
	(0.177)	(0.372)	(0.642)	(0.370)	(0.281)
Employee education (Ref. Cat.: Low share informal education)					
High share informal education	-0.656***	-0.176	0.189	-0.0719	0.139
	(0.116)	(0.233)	(0.298)	(0.258)	(0.462)
N	581	226	174	221	106

Notes: The table displays marginal effects of Probit estimations and robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% level, respectively. Primary, secondary, and tertiary refers to economic sectors. Micro, small, and medium and large refers to companies with 1-9, 10-49, and more than 50 FTE employees, respectively. Low and high share informal education refers to companies with a share of employees with only informal education above or below the average, respectively.

Table A.3: Correlation of training reasons and firm characteristics

	Only way to find right skills	We have unique processes/tech	Keep up with tech. change	Save recruiting costs	Try out potential hires	University/school doesn't meet needs	Replace retiring skilled workers	Hard to get workers from abroad	Hard to get workers from across Nepal	Hard to get workers from SAARC region
Economic sector (Ref. Cat.: Primary)										
Secondary	-0.543***	-0.337*	-0.116	0.156	0.154	-0.201	0.0623	0.259	0.206	0.304
	(0.204)	(0.188)	(0.252)	(0.323)	(0.323)	(0.298)	(0.281)	(0.308)	(0.322)	(0.315)
Tertiary	-0.666***	-0.257	-0.247	-0.00236	0.174	-0.105	0.201	0.384	0.320	0.456
	(0.213)	(0.196)	(0.260)	(0.330)	(0.329)	(0.304)	(0.287)	(0.316)	(0.329)	(0.322)
Company size (Ref. Cat.: Micro companies)										
Small	0.325***	0.360***	0.296**	0.221*	0.296**	-0.0424	-0.0452	-0.0486	-0.0694	-0.141
	(0.125)	(0.122)	(0.124)	(0.123)	(0.124)	(0.137)	(0.135)	(0.145)	(0.144)	(0.148)
Medium and large	0.317**	0.509***	0.439***	0.320*	0.436***	0.228	0.317*	0.272	0.326*	0.283
	(0.160)	(0.148)	(0.157)	(0.164)	(0.156)	(0.170)	(0.166)	(0.187)	(0.184)	(0.197)
Employee education (Ref. Cat.: Low share informal education)										
High share informal	-0.420***	-0.420***	-0.441***	-0.355***	-0.363***	0.0208	0.0124	-0.270**	-0.169	-0.414***
education	(0.0963)	(0.0897)	(0.0949)	(0.0970)	(0.0936)	(0.107)	(0.104)	(0.116)	(0.115)	(0.118)
Constant										
	4.218***	3.887***	3.728***	3.513***	3.434***	3.419***	3.107***	2.894***	2.900***	2.742***
	(0.194)	(0.173)	(0.242)	(0.312)	(0.311)	(0.283)	(0.268)	(0.295)	(0.311)	(0.302)
N	580	579	578	578	579	578	579	578	579	578

Notes: The table displays coefficients of OLS estimations and robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% level, respectively. Training firms were asked for current reasons for training and non-training firms were asked for potential future reasons for training. Primary, secondary, and tertiary refers to economic sectors. Micro, small, and medium and large refers to companies with 1-9, 10-49, and more than 50 FTE employees, respectively. Low and high share informal education refers to companies with a share of employees with only informal education above or below the average, respectively.

Table A. 4: Correlation of training barriers and firm characteristics

	It's too expensive	We don't have enough time	We don't know how	We are afraid of poaching	We are afraid of emigration	We are too small/no staff	Education provides our skills	Can find skills on labour market	We have outsourced training	Trainees are too young	Technology changes too fast	Our union context prevents it
Economic sector (Ref. Cat.: Primary)												
Secondary	0.253	0.571*	0.309	0.631*	0.422	0.568*	0.445	-0.0141	0.333	0.278	0.546*	0.884***
	(0.371)	(0.313)	(0.323)	(0.368)	(0.360)	(0.318)	(0.345)	(0.264)	(0.340)	(0.293)	(0.313)	(0.309)
Tertiary	-0.261	0.105	-0.240	0.0640	-0.0985	0.289	0.661*	0.178	0.0802	0.00695	0.225	0.279
	(0.376)	(0.319)	(0.330)	(0.375)	(0.365)	(0.326)	(0.347)	(0.267)	(0.346)	(0.300)	(0.317)	(0.312)
Company size (Ref. Cat.: Micro companies)												
Small	0.235*	0.211	0.105	0.196	0.210*	-0.637***	-0.0178	-0.182	-0.198	-0.260*	0.114	-0.295**
	(0.127)	(0.129)	(0.125)	(0.125)	(0.127)	(0.122)	(0.133)	(0.119)	(0.137)	(0.134)	(0.130)	(0.143)
Medium and large	0.124	0.0463	-0.214	0.134	0.246	-0.769***	0.631***	0.492***	0.378**	0.0133	-0.00709	-0.131
	(0.171)	(0.169)	(0.169)	(0.164)	(0.166)	(0.168)	(0.164)	(0.141)	(0.175)	(0.175)	(0.175)	(0.188)
Employee education (Ref. Cat.: Low share informal education)												
High share informal	-0.224**	-0.104	-0.201*	-0.376***	-0.205**	0.437***	-0.0965	0.276***	-0.137	-0.0269	-0.263**	-0.187
education	(0.103)	(0.103)	(0.103)	(0.104)	(0.101)	(0.109)	(0.108)	(0.0996)	(0.111)	(0.112)	(0.104)	(0.118)
Constant												
	3.324***	2.953***	3.232***	2.916***	3.123***	3.047***	2.643***	3.348***	2.778***	2.688***	2.752***	2.231***
	(0.361)	(0.298)	(0.311)	(0.362)	(0.349)	(0.313)	(0.329)	(0.251)	(0.331)	(0.285)	(0.296)	(0.293)
N	578	578	580	578	581	580	581	580	578	580	579	580

Notes: The table displays coefficients of OLS estimations and robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% level, respectively. Primary, secondary, and tertiary refers to economic sectors. Micro, small, and medium and large refers to companies with 1-9, 10-49, and more than 50 FTE employees, respectively. Low and high share informal education refers to companies with a share of employees with only informal education above or below the average, respectively.

Table A.5: Correlation of firm characteristics and features facilitating training

	Collab. with schools/ universities for recruiting	Industry program with schools/ universities	Financial break even of program	Net-benefit of dual TVET	Develop/ implement with other companies	External financial support	Support from other companies/ trade-/sector associations	Nation-wide qualification standards	Community/ consumer recognition	CTEVT/TITI is offering train-the-trainer courses
Economic sector (Ref. Cat.: Primary)										
Secondary	0.195	0.133	0.201	0.244	0.0162	0.0175	-0.153	-0.418	-0.356	-0.0852
	(0.292)	(0.313)	(0.361)	(0.369)	(0.323)	(0.365)	(0.362)	(0.283)	(0.295)	(0.408)
Tertiary	0.360	0.330	0.275	0.353	0.0662	0.246	0.129	-0.119	-0.134	0.185
	(0.298)	(0.321)	(0.369)	(0.375)	(0.332)	(0.373)	(0.368)	(0.295)	(0.306)	(0.418)
Company size (Ref. Cat.: Micro companies)										
Small	0.403***	0.361***	0.314**	0.241*	0.352***	0.291**	0.322**	0.251*	0.298**	0.487***
	(0.136)	(0.133)	(0.126)	(0.136)	(0.132)	(0.136)	(0.131)	(0.130)	(0.129)	(0.129)
Medium and large	0.734***	0.696***	0.661***	0.560***	0.749***	0.447**	0.555***	0.572***	0.617***	0.906***
	(0.163)	(0.162)	(0.151)	(0.167)	(0.161)	(0.176)	(0.165)	(0.164)	(0.161)	(0.161)
Employee education (Ref. Cat.: Low share informal education)										
High share informal education	-0.444***	-0.415***	-0.432***	-0.472***	-0.425***	-0.369***	-0.351***	-0.485***	-0.436***	-0.254**
	(0.107)	(0.106)	(0.0969)	(0.109)	(0.105)	(0.108)	(0.102)	(0.104)	(0.103)	(0.109)
Constant										
	2.878***	2.998***	3.080***	2.998***	3.189***	3.250***	3.353***	3.690***	3.589***	2.958***
	(0.282)	(0.308)	(0.357)	(0.362)	(0.319)	(0.362)	(0.355)	(0.279)	(0.292)	(0.412)
N	578	580	579	578	579	578	579	579	579	566

Notes: The table displays coefficients of OLS estimations and robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% level, respectively. Primary, secondary, and tertiary refers to economic sectors. Micro, small, and medium and large refers to companies with 1-9, 10-49, and more than 50 FTE employees, respectively. Low and high share informal education refers to companies with a share of employees with only informal education above or below the average, respectively.

Table A.6: Correlation of firm characteristics and features facilitating interest in new training program

	Workplace share	Cost/benefit balance	Companies leadership	Education leadership	Gov. subsidies	Off. accredited	Edu. credential	Industry credential	Intermed. coordination	Non-monetary recognition	Curriculum design/ evaluation
Economic sector (Ref. Cat.: Primary)											
Secondary	-0.343*	-0.437**	-0.271	-0.145	-0.383	-0.372	-0.182	-0.221	0.283	-0.260	0.351
	(0.193)	(0.221)	(0.231)	(0.317)	(0.256)	(0.273)	(0.282)	(0.253)	(0.355)	(0.279)	(0.292)
Tertiary	-0.167	-0.335	-0.187	-0.177	-0.200	-0.0958	0.0106	0.0783	0.439	-0.00583	0.598**
	(0.201)	(0.229)	(0.241)	(0.325)	(0.266)	(0.283)	(0.289)	(0.264)	(0.363)	(0.288)	(0.301)
Company size (Ref. Cat.: Micro companies)											
Small	0.473***	0.358***	0.387***	0.366***	0.172	0.235**	0.259**	0.260**	0.269**	0.358***	0.291**
	(0.107)	(0.106)	(0.106)	(0.115)	(0.114)	(0.115)	(0.115)	(0.112)	(0.118)	(0.114)	(0.118)
Medium	0.573***	0.617***	0.643***	0.651***	0.481***	0.601***	0.650***	0.678***	0.511***	0.661***	0.614***
and large	(0.134)	(0.133)	(0.130)	(0.146)	(0.138)	(0.138)	(0.141)	(0.134)	(0.144)	(0.144)	(0.149)
Employee education (Ref. Cat.: Low share informal education)											
High share informal	-0.257***	-0.410***	-0.458***	-0.536***	-0.406***	-0.456***	-0.467***	-0.371***	-0.384***	-0.450***	-0.343***
education	(0.0847)	(0.0847)	(0.0849)	(0.0964)	(0.0893)	(0.0897)	(0.0905)	(0.0869)	(0.0929)	(0.0906)	(0.0948)
Constant											
	3.583***	3.813***	3.707***	3.505***	3.978***	3.925***	3.736***	3.743***	3.133***	3.707***	3.038***
	(0.184)	(0.217)	(0.227)	(0.314)	(0.252)	(0.269)	(0.277)	(0.249)	(0.348)	(0.275)	(0.283)
N	579	577	576	575	574	575	577	575	576	575	574

Notes: The table displays coefficients of OLS estimations and robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% level, respectively. Primary, secondary, and tertiary refers to economic sectors. Micro, small, and medium and large refers to companies with 1-9, 10-49, and more than 50 FTE employees, respectively. Low and high share informal education refers to companies with a share of employees with only informal education above or below the average, respectively.

Table A.7: Correlation of skill shortage indicators and firm characteristics

	Vacancy length skilled	Vacancy length unskilled	Growth effect	New employees' hard skills	New employees' soft skills	Skills shortage summary
Economic sector (Ref. Cat.: Primary)						
Secondary	1.558***	1.473***	0.106	-0.403**	-0.266*	0.342***
	(0.400)	(0.432)	(0.173)	(0.167)	(0.160)	(0.119)
Tertiary	-0.451	-0.717*	0.0414	-0.0622	0.0343	-0.0732
	(0.408)	(0.433)	(0.178)	(0.171)	(0.162)	(0.119)
Company size (Ref. Cat.: Micro companies)						
Small	1.945***	1.988***	0.222***	0.155*	-0.149**	0.473***
	(0.412)	(0.410)	(0.0841)	(0.0810)	(0.0611)	(0.0967)
Medium and large	1.973***	1.385***	0.0522	0.548***	0.174**	0.394***
	(0.535)	(0.526)	(0.0992)	(0.0983)	(0.0744)	(0.115)
Employee education (Ref. Cat.: Low share informal education)						
High share informal education	-0.480	0.00696	-0.730***	-0.218***	-0.0966*	-0.258***
	(0.373)	(0.382)	(0.0686)	(0.0601)	(0.0519)	(0.0861)
Constant						
	1.669***	1.373***	3.616***	3.817***	4.021***	-0.442***
	(0.350)	(0.385)	(0.166)	(0.161)	(0.157)	(0.109)
N	550	534	581	580	580	534

Notes: The table displays coefficients of OLS estimations and robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% level, respectively. Primary, secondary, and tertiary refers to economic sectors. Micro, small, and medium and large refers to companies with 1-9, 10-49, and more than 50 FTE employees, respectively. Low and high share informal education refers to companies with a share of employees with only informal education above or below the average, respectively.

Table A.8: Respondent preferences for programme characteristics and participant types

	Likelihood to participate
Programme type (Ref. Cat: Short program, small return)	
Short program, cost-neutral	-0.078***
	(0.026)
24-month apprenticeship, large return	0.040
	(0.027)
24-month apprenticeship, small return	0.011
	(0.027)
Age (Ref. Cat.: 20)	
25	-0.029
	(0.030)
30	-0.047
	(0.031)
35	-0.041
	(0.031)
40	-0.080**
	(0.031)
Sex (Ref. Cat.: Female)	
Male	0.013
	(0.020)
Ethnic group (Ref. Cat.: group 1)	
Group 2	0.023
	(0.031)
Group 3	0.056*
	(0.031)
Group 4	0.062**
	(0.032)
Group 5	0.073**
	(0.031)
Constant	
	3.667***
	(0.034)
N	
Respondents	598
Vignettes	2,202

Notes: The table displays coefficients of OLS estimations and robust standard errors in parentheses. *, **, and *** denote statistical significance at the 10%, 5% and 1% level, respectively. Among the ethnic groups, Group 1 is the most privileged, whereas Group 5 is the most underprivileged.

11 Appendix B

Table B.1: Participant list of focus groups

	Name	Organization
Participants in Kathmandu		
1	Birendra Raj Pandey	CNI
2	Rabindra Nath Bhattarai	CTEVT
3	Binat Dhakal	NVQS, CTEVT
4	Radha Krishna Sapkota	SSC, CTEVT
5	Sunita Nhemaphuki	SSC, Agriculture
6	Binod Kumar Shrestha	Litmus Industries-CNI
7	Subas Subedi	NVQS – Phase II
8	Eva Lickert	ETH (presenter, interviewer)
9	Patrick McDonald	ETH (interviewer)
10	Ursula Renold	ETH (interviewer)
11	Amrita Sharma	KUSOED (interviewer)
Participants in Janakpur		
	Name	**Organization**
1	Naresh Prasad Singh	FNCST
2	Pramod Kumar Chaudhary	Pshupati Plyboard Udhyog
3	Pradeep Dutta	FNCCI – Madhesh
4	Vijay Kumar Jhunjhunwala	HAN-Madhesh
5	Pramod Kumar Sah	CNI-Madhesh
6	Jitendra Mahaseth	Janakpur Udhyog Banijya Sangh
7	Md. Samim Akhtar	QualiTY Project
8	Prameshwar Sah	Janakpur Udhyog Banijya Sangh
9	Pares Jain	Steel Industries Pvt.
10	Santosh dahal	Everest Paper Mill
11	Khirendra Yadav	QualiTY Project
12	Gautam Saraff	Nepal Paper Mill
13	Prakash Kumar Paudel	KUSOED (support)
14	Eva Lickert	ETH (presenter, interviewer)
15	Patrick McDonald	ETH (interviewer)
16	Ursula Renold	ETH (interviewer)
17	Usha Bhandari	SDC (interviewer)
Participants in Hetauda		
	Name	**Organization**
1	Sudarshan Parsad Adhikari	Nepal Village Nepal
2	Ram Kishow Gupta	Gabionet environment Solution
3	Prabhat Bhattarai	CE Hydro Mechnical
4	Rabindra Aryal	Valley Pellet Feed
5	Rahul Chhetri	RM Chemical Nepal
6	Someexa Dahal	Hetauda Fabrication
7	Bijay Kumar	GM Polymers
8	Sambhu Pd Nepal	Association of Industries
9	Krishna Neupane	Saftey Hygine Pvt.

10	Prabhakar Bhandari	Gorkha leheri
11	Samrat Sing	Employer
12	Jagannath Lamichane	CBPI
13	Lekharaj Pokhrel	CBPI
14	Shiromani Pokhrel	CBPI
15	Badrinath Sharma	AIM
16	Sukrit Raj Parajuli	Mobile packaging
17	Kishor Ku Shrestha	Yeti Polychem PVT
18	Sushila Dahal	Shivam Cement
19	Prakash Kumar Paudel	KUSOED (support)
20	Usha Bhandari	SDC (interviewer)
21	Eva Lickert	ETH (presenter, interviewer)
22	Patrick McDonald	ETH (interviewer)
23	Ursula Renold	ETH (interviewer)

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