Return on investment or an investment without return?

A cost-benefit ratio analysis of in-company training in Pakistan

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Chief Finance Officer asks CEO:

"What happens if we invest in developing our people and they leave us?"

CEO:

"What happens if we don't, and they stay?"

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Abbreviations

ADB	Asian Development Bank
B4S	Build4Skills
BiBB	Federal Institute for Vocational Education and Training
BMBF	German Federal Ministry of Education and Research
BMZ	German Federal Ministry for Economic Cooperation and Development
CBA	Cost-Benefit Analysis
CEO	Chief Executive Officer
CBT&A	Competency Based Training & Assessment
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GPATI	Germany-Pakistan Training Initiative
NVQF	National Vocational Qualifications Framework
PKR	Pakistani Rupee
SERI	Swiss State Secretariat for Education, Research and Innovation
TVET	Technical and Vocational Education and Training

1. WHY IT IS WORTH TO INVEST IN VOCATIONAL TRAINING?

A country's most valuable resources are its human resources!

An investment in people and their skills is not only imperative for a nation's economy but a social responsibility not limited to the government only. Technical and vocational education and training (TVET) tend to have little practical orientation and not meet the actual requirements in the workplace. Upon completing their training, many graduates are thus not prepared for the requirements of potential work areas that match their training profile.

They are often not familiar with the actual work context or at most have experience from brief internships at companies. **Therefore, companies often find they have to provide training to compensate for this, which involves making investments, undermines trust in the capabilities of state institutions for vocational education and training, and makes entrepreneurs reluctant to hire young qualified trainees without work experience.** Formal state certificates lose their value if the holders have only a tenuous grasp, or none at all, of the skills required to do the job. The private sector is often not consulted in designing the framework conditions for vocational education and training. Curricula, standards of training, and examination standards are defined almost exclusively by state actors, and are often not in line with the actual labour market needs. The funding of vocational education and training often is also the sole responsibility of the state. Practical training components are negligible. Companies are not systematically considered or institutionalised as training providers to convey practical skills. Likewise, the business community is not systematically involved in examinations or certifications.

TVET is much more than just the mere acquisition of skills, but a **tool to empowerment.** This mutual belief has been the foundation of Germany's and Pakistan's cooperation in TVET and unites them in a joint vision. Only if TVET considers industry needs and is responsive to national, regional and global dynamics, it will generate a competitive workforce. TVET is often not considered a desirable career path. Despite a large number of unemployed university graduates, the notion persists, that TVET is for those who have failed to enter higher education. We strongly object this narrative and advocate that TVET is more than a second best option but sets the ground for future prospects – for an individual and a nation's economic development.

2. WHO BENEFITS FROM WORK-BASED TRAINING?

But let's talk business:

"Will investing in people's skills benefit my company?"

"Yes, it will and here is why:"

It is widely agreed that a crucial factor for successful Technical Vocational Education and Training (TVET) systems is the participation of the private sector. If private companies get involved in TVET, they can build up the **workforce they need!** This will not only lead to **more productive outcome** for the company but also to a motivated staff equipped to perform a job well! There is a wide range of possibilities for the private sector to get involved in workplace-based training. Any profit-seeking company will carefully assess their engagement in TVET in the light of **cost-benefit considerations**.

A promising model for private sector engagement is the implementation of a **cooperative TVET system** in which trainees receive work-based training at a company complemented by theoretical input at school. Labour market data suggest that such dual TVET systems are more effective. In Germany, for example, the practical part can reach up to 80%. Evidence shows that such **dual TVET systems are more effective for all stakeholders involved** (Bolli et al. 2017). Companies, industries, trainees, governments and society at large will benefit from such a system.

Countries like Germany and Switzerland proof that the provision of **work-based training builds the backbone of sustainable economic growth**. Additionally, in 2018 the youth unemployment rate in Germany was at 6.2 % - the lowest rate in Europe with an ever declining tendency. Another figure illustrates this even more drastically: From all TVET trainees of the year 2013–2014 only 5.7 % got unemployed after graduation.

Globally, private companies, governments and training aspirants become increasingly aware of its benefits. During the past decade, development projects around the globe proved the applicability of this educational approach in different cultural contexts and sectors. However, the adaption to the local conditions is imperative.

Pakistan has taken up this trend years ago and is currently implementing a TVET reform itself. The reform focusses on labour market orientation of TVET and the recognition of the essential role of work-based training. Often, unexperienced companies with regard to work-based training are reluctant to engage in TVET. Giving evidence-based background information about the cost and benefits of work-based training from a firm's perspective can help to overcome some of the misinterpretations of Pakistani employers.

The main publicly expressed argument for the introduction of work-based training is the more favourable labour market outcome for the trainees. However, research shows that **companies also benefit from their participation in TVET systems in many ways.** The long-time voluntary commitment of the private sector to provide in-company training in traditional TVET countries like Germany and Switzerland would not be possible without an overall net benefit for the companies.

In this paper, we will discuss how companies can benefit from the provision of work-based training. Existing research from the TVET pioneers' countries will be presented as well as data from leading Pakistani companies providing work-based training. The study will provide a cost-benefit analysis (CBA) of training, taking the trainees' work output (benefits), their wages and the expenses for provision of work-based training into account. Other benefits that are mainly realized after training and not directly connected to the trainee's work output will be discussed separately (e.g. lower recruiting costs).

3. HOW DO COMPANIES EXACTLY BENEFIT?

TVET can only be successful when it is closely tailored to the needs of the labour market. Therefore, participation of employers in the TVET system helps to achieve favorable outcomes for both TVET graduates and companies.

In this chapter, different means of private sector engagement for TVET will be discussed, focusing on direct and indirect financial and social consequences for the participating companies. For the identification of the different forms of private sector engagement, we make use of previous work published by the Donor Committee for dual Vocational Education and Training (Euler 2017).

Obviously, in a fully school-based TVET system companies can participate the least intensive (and thus least costly) way. Inter alia, in this kind of system employers have the possibility to get involved in examination and certification of apprentices or in qualification and teaching of training staff. Other areas of engagement in a school-based TVET system where private actors can participate in are curriculum development, joint governance and provision of equipment and teaching material. This involvement in school-based TVET will contribute to the overall enhancement of labour market orientation of the TVET system (thus benefit the companies indirectly). However, direct benefits for single companies are missing.

The opportunity to gain direct benefits is therefore a main argument for the provision of in-company work-based training. Possible direct benefits of work-based training are as follows:

In a globalised economy, **a skilled workforce is considered an important competitive advantage**; for companies, workers and national economies alike. Collaboration between the private sector and public institutions ensures that the workforce meets industry requirements.
It is proven that the provision of work-based training benefits a company in a variety of financial and non-financial ways.

It is a common misconception that the provision of work-based training only leads to costs but no benefits. This perception does not stand up to reality. The productivity gap between the trainee and a trained worker is minimized during training: The longer the training, the smaller the remaining gap. This mechanism and the lower salaries of the trainees make it possible to **compensate the expenses over the entire duration of the work-based training.** In Switzerland, for example, **net benefits reach PKR 145'063 p.a.** on average, depending on the profession and duration of the training. (see chapter 4.1 and 5.2)

The provision of work-based training is an **excellent opportunity to assess the performance of potential future employees** before offering them a regular position. Therefore, recruitment costs for external staff (e.g. job ads or interviews) can be reduced noticeably. Furthermore, the induction phases can be shortened. **The filling of a vacancy without any training is a myth.** 50% of German apprentices still work for the training firm one year after graduation. German **companies save 75% of the total expenses for a three-year TVET track.** (see chapter 4.2 and 5.3)

Companies that employ both unskilled and skilled workers can **increase the loyalty of staff if there is a chance to climb up the career ladder** thanks to the participation in work-based training. This helps to reduce hiring and induction costs and may also **foster productivity** of the lower skilled workers when staying longer at a company due to the **provided perspective.**

Unemployment and especially **youth unemployment are considered a major challenge** in many economies around the world. Companies which are contributing to the labour market integration of young people might benefit from an increased reputation.

The provision of work-based training not only secures access to a workforce that meets the company's requirements but also **promotes innovation.** TVET systems that follow a regular and institutionalized curriculum development provide access to new knowledge and thus drive innovation. If companies collaborate for the provision of work-based training, they also exchange about production methods. This is an **opportunity to raise both a single company's but also an industry's productivity and foster its competitiveness.**

How and to what extent direct benefits are realized depends on the specific design of the TVET system. As we will see further below, both German and Swiss firms benefit from the provision of work-based training, but since German firms are confronted with a tighter wage regulation, they realize a positive cost-benefit ratio mostly thanks to reduced hiring and induction costs, while Swiss firms already achieve net benefits during the training itself. The Swiss model can be described as a **production-oriented training strategy**, whereas German firms generally seem to follow a more **investment-oriented training strategy** (Dionisiusa 2009).

The main difference between these two strategies are the costs and benefits they focus on. From an analytical perspective, three different types of a company's costs and benefits that are related to the provision of work-based learning can be distinguished: Direct, downstream and indirect effects.

Table 1 provides an overview of these types. The last column shows the related strategy. A company seeking to maximize direct benefits follows a **production-oriented strategy**. An **investment-oriented strategy** on the other hand implies a focus on down-stream costs and benefits.

Tab. 1: Types of costs and benefits

TYPE	DEFINITION	EXAMPLES	STRATEGY
DIRECT	Arise during the provision of the training and are direct consequence of it.	**Benefits:** Productive output **Costs:** Salaries, Training material	Production-oriented training strategy
DOWNSTREAM	Arise after the provision of the training and are direct consequence of it.	**Benefits:** Reduced recruitment costs (hiring and induction) **Costs:** –	Investment-oriented training strategy
INDIRECT	Arise during or after the provision of training but are not a direct and automatic consequence of it.	**Benefits:** Increased reputation **Costs:** –	

In the course of this study, direct and downstream costs and benefits will be discussed more in depth, as they directly arise from the provision of work-based training and result in monetizable impacts.

Naturally, employers are free to pursue both strategies at a time as long as they are not contradicting eachother. A company might substitute apprentices for unskilled or skilled workers (production-oriented) as well as provide work-based training to secure future skill supply (investment-oriented). In a nutshell: The **production-oriented strategy implies lower salaries** for the trainees to increase immediate net benefits, whereas higher salaries are paid under an **investment-oriented model to increase the loyalty** of the trainees. Additionally, companies involved in TVET will always benefit from the indirect effect of an increased reputation and recognition within society.

4. FACTS AND FIGURES FROM SWITZERLAND AND GERMANY

Switzerland and Germany are considered as pioneers concerning private sector involvement in TVET. In **Switzerland**, an impressive total of **52'000 companies (25% of all companies) provide work-based training** at upper-secondary level. (SERI 2017). In **Germany, 20% of all companies** actively participate in TVET. (BMBF 2017, p. 9). Since both countries are often referred to as role models, we will discuss key indicators from these countries on the next pages.

4.1 Direct costs and benefits

Despite binding regulatory requirements of formal TVET systems, the actual design of in-company training can still vary between companies. Experience shows that these variations can influence a company's specific cost-benefit ratios. Generally speaking, a trainee can be engaged in three ways: First, the trainee participates in in-company training not generating any direct value for the company. Second, the trainee carries out the work of an unskilled worker (e.g. cleaning of machinery on constructions sites, ordering of office supplies or fist level costumer contact). Third, the trainee is entrusted with tasks of a skilled worker. In European TVET systems, trainees are engaged in all three

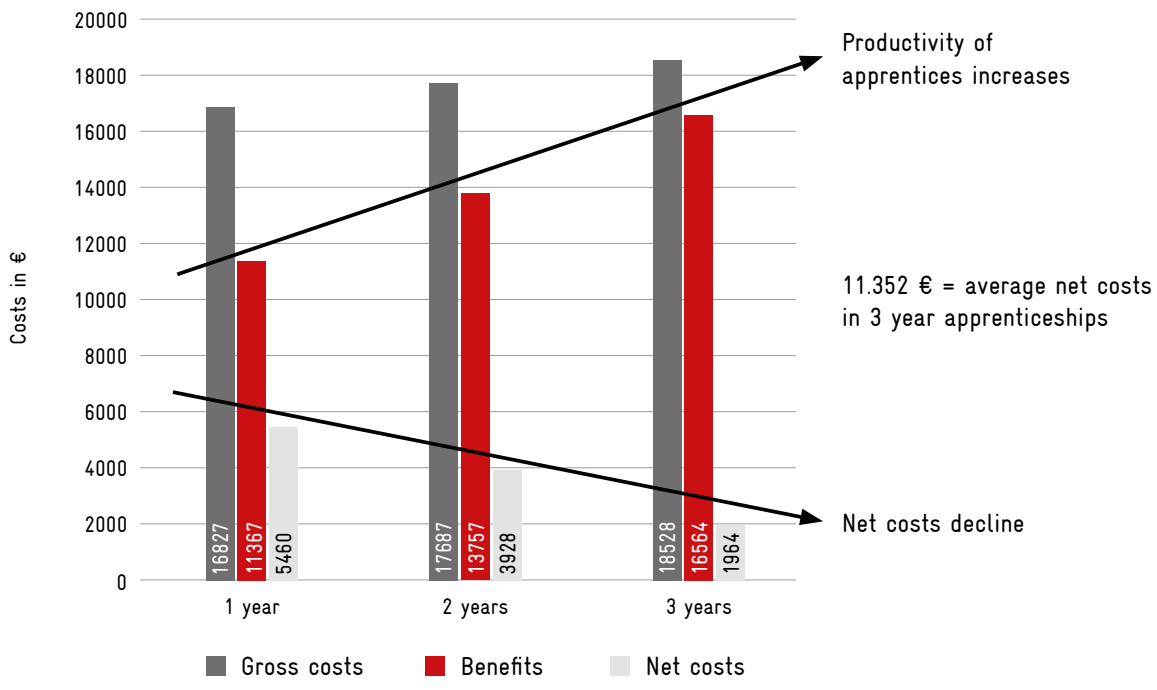
ways. However, **a company benefits the most when trainees perform the skilled tasks at the pace of a skilled worker without additional supervision**. Bluntly put, cost-benefit ratios are maximized when trainees perform as perfect substitutes of skilled workers at a lower salary level. Therefore, a profit-seeking company has a strong incentive to raise the trainee's productivity in skilled tasks as fast as possible at minimal costs.

A major concern raised by companies against the provision of training are the related costs. These costs are likely to vary between different occupations due to variation in costs of the required training materials, differing need for induction or because of the duration of the training as such. Thus, it is difficult for a company to calculate the costs in advance. A Swiss study shows that firms not providing work-based training estimate the related cost to be significantly higher than firms already providing training (Muehlemann et al. 2010). This overestimation explains why so many firms are reluctant to start with the provision of work-based training.

Still, companies (and researchers) have difficulties to calculate cost benefit-ratios as they vary even between companies in the same sector. In a simplified CBA model, **a company's net profit or net loss from the provision of TVET depends on the productivity of the trainee and the related total costs**. Any company will try to alter these two parameters to increase its benefit.

In Switzerland, the wages of the apprentices are basically subject to the agreement between the apprentice and the company, whereas in Germany apprentice wages are determined collectively (Ryan et al. 2013). When Germany introduced labour market reforms in 2003, it became less attractive to provide in-company training places because unskilled workers turned to be cheaper. Nonetheless, companies kept offering apprenticeships. They did so because they adopted a more production-oriented strategy and involved the trainees more in actual work that required trained skills and reduced tasks with no direct value for the company (e.g. pure training hours). Somehow, surprisingly this strategy did not harm the growth in productivity of the apprentices. Thus, being involved in the real-life work process serves as a valuable learning-experience during training (Jansen 2015).

Fig. 1: Development of costs over a 3 year training period in Germany



→ Source: Wenzelmann, Felix; Jansen, Anika; Schönfeld, Gudrun; Pfeifer, Harald
Kosten und Nutzen der dualen Ausbildung aus Sicht der Betriebe.
Ergebnisse der fünften BIBB-Kosten-Nutzen-Erhebung, 2016.

Swiss firms already generate profit from the provision of work-based training during the apprenticeship, whereas German firms lose money over the course of the training. On average, apprenticeship training in Germany produces net costs of PKR 1'196'952 per annum, whereas in Switzerland, firms achieve a net benefit of PKR 145'167 (Dionisusa 2009). However, actual net benefits vary widely between different occupations. The most profitable apprenticeship is Electrician with an accumulated net benefit of PKR 7'535'487 over the course of the entire 4 years long training period. The main reason for the differences in net benefits between Switzerland and Germany are the different strategies pursued by their companies: production-oriented vs. investment-oriented.

In Germany, trainees have on average higher relative wages. Metalworking craft apprentices in Germany earn a third (33.4%) of what a recently qualified skilled employee in the same occupation receives, whereas in Switzerland apprentices only receive a fifth (19.5%). Moreover, the differences in wages during the first and the last year are bigger in Switzerland (from 12.5% to 27.9%) than in Germany (30.5% to 36.3%). This suggests that Swiss companies align the salaries for apprentices closer to their productivity level (Ryan 2012). The second reason is that Swiss apprentices are engaged more often in productive work compared to their German counterparts (Dionisusa 2009). To sum it up: **Swiss firms benefit directly from the provision of work-based training because they pay lower salaries and involve the apprentices in more productive work.**

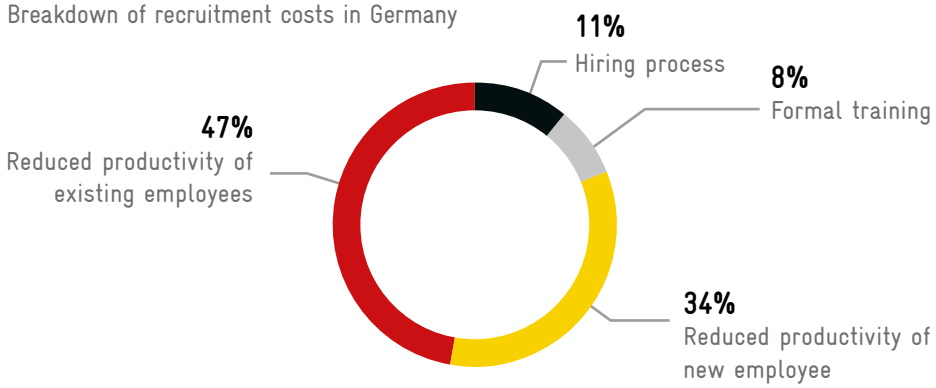
Given the fact that German companies have to bear a net loss from the provision of work-based training, it is surprising that they still participate in the TVET system. This long-lasting engagement is only possible, when overall costs at least equal the benefits. A hypothesis why German companies still provide TVET assumes reduced hiring and induction costs for skilled workers. According to data from the year 2000, 36% of Swiss apprentices still work for the training firm one year after graduation. In Germany, the corresponding value is more than 50% (Dionisusa 2009, p. 11).

The next chapter will therefore closely examine if the provision of work-based training helps companies to reduce hiring and induction costs.

4.2 Downstream costs and benefits

The provision of TVET can also serve as an alternative to hiring external employees. **The higher the recruitment costs, the greater the incentive to invest in internal training** for any profit-maximizing company. Recruitment costs are composed of expenses during the hiring process (e.g. job ads and interviews) and induction costs. Data from Switzerland show that external recruiting[1] costs vary considerably between companies. On the other hand, expenses for induction training of external candidates and lower initial productivity levels are by far the biggest cost factors (Strupler and Wolter 2012, p. 54). These findings clearly demonstrate: **The filling of a vacancy without any training is a myth!** The often-made assumption, that there are candidates on the labour market who achieve full productivity level from the first day on, mostly turns out to be wrong. German data validates this claim further (see figure 2).

Fig. 2: Breakdown of recruitment costs in Germany

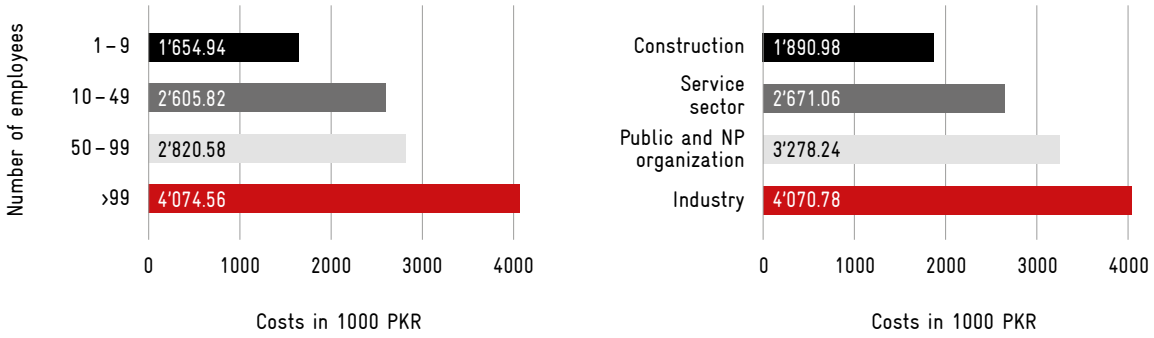


→ Data from BiBB (2015, p. 18)
Visualisation kek.ch

1 Cost factors taken into account were: Job ads, job interviews, external recruiting services, reduced productivity during induction phase, induction training costs and effort of existing employees for induction training.

On average, **German companies spend more than 90 % of the overall recruitment costs on the induction of the external hired employee**. It is noteworthy that – like in Switzerland – the **main cost driver is not the formal induction training but the on-the-job training**. Since new staff has to learn the specific production processes and techniques, they not only have a lower productivity themselves but they also lower the productivity of their co-workers. High induction costs are the main reason why German companies achieve net benefits from the provision of work-based training. The **saved recruitment costs make up to 75% of the total expenses for a three-year TVET track** (BiBB 2015).

Fig. 3: Average hiring and induction costs in Switzerland



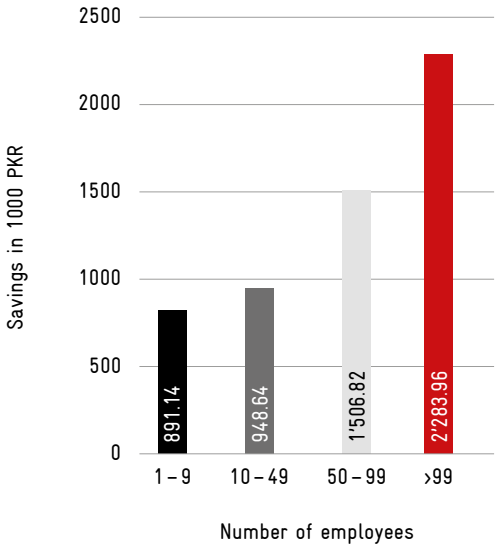
→ Data from Strupler and Wolter (2012, p.54)
Visualisation kek.ch

In general, bigger companies tend to have higher hiring and induction costs. When comparing by sectors, the construction sector bears the lowest costs and the industry sector the highest (see figure 3).

On average, Swiss firms offering training by themselves have 17% lower hiring costs.

Compared to companies not providing any training, firms that also hire externally achieve on average a net benefit of PKR 1'022560. Firms that solely hire internally trained employees generate a net benefit of PKR 1'394'260 on average (Blatter 2012,

Fig. 4: Average realized savings in recruitment and training costs per trained employee by company size in Switzerland



However, actual net benefits gained by a company vary considerably depending on its size, its degree of specialization and its ability to keep trained employees (Wolter 2014, Strupler and Wolter 2012). Providing attractive salary and creating good working conditions as well as professional development and perspectives (Euler 2017, p. 22) can reduce the often-perceived risk of poaching. Furthermore, big companies (≥ 100 employees) can reach benefits up to three times higher than the benefits of small companies (< 10 employees). (see figure 4).

5. TVET MADE IN PAKISTAN

Nearly 17% of the youth in Pakistan complete secondary education and a **very small percentage of them acquire employable skills**. A major portion of the youth gets absorbed by the informal sector and learns various vocational skills through the traditional Ustad-Shagird (master-apprentice) system. This traditional training system is prevalent mostly in manufacturing, crafts, trade and transport. Formation of skills is slow, not organized systematically and depends on the willingness of the Ustad. The system is based on demonstration, learning by doing, and trial and error. Due to the absence of a regulatory framework within the Ustad-Shagird system **exploitative practices** such as child labour, long working hours, etc. are easy to exert.

Additionally, the technological know-how is not very advanced in most of the informal learning and working settings, the knowledge imparted is less codified and tacit in nature. Therefore, ap-prentices hardly get to know advanced trades or the use of new technologies and processes. Annually 2.4 million young people enter the job market, but as of 2015 there are only 476,850 places available in the formal TVET system through 3,581 institutes across Pakistan. Apart from this mismatch between demand and supply, even quality and rele-vance of the training delivered does not match the demands of the job market.

To improve the access, quality, equity and relevance of TVET, the Government of Pakistan has embarked upon a comprehensive reform in 2011 with the support of the European Union and the governments of Germany, the Netherlands and Norway. Up to now, a number of milestones have been achieved such as a national TVET policy in 2015, National Vocational Qualifications Framework (NVQF) and Competency Based Training & Assessment (CBT&A).

Inter alia, the policy's aim is to foster the involvement of the private sector to provide access to high quality training. With the Germany-Pakistan Training Initiative (GPATI) a pilot project tested the applicability of a cooperative TVET approach according to the Pakistani context. Leading Pakistani and multinational companies like **Suzuki Pakistan, Archroma, General Tyre, World Wide Group, BMW - Dewan Motors and Siemens** already provide work-based training for different occupations in different industries. Their long-time commitment demonstrates that benefits from the provision of work-based training are real and applicable to the Pakistani context.

Table 2 provides an overview over the interviewed companies.

Tab. 2: Interviewed companies

COMPANY	INDUSTRY	TRAINED PROFESSIONS
SUZUKI	Automotive	• Auto mechanic • Electrician
ARCHROMA LIFE ENHANCED	Chemical	• Machinist • Electrician
GENERAL TYRE	Tyre and rubber	• Machinist • Electronics technician • Mechatronic • Electrician
BMW Dewan Motors	Automotive	• Auto mechanic
World Wide Group The Ultimate Logistics Solution	Logistics	• Logistics and Supply • Chain Assistant • Customer Services and Sales Assistant

SIEMENS
Ingenuity for life

Siemens commitment for TVET made in Pakistan

Training is and has always been an imperative part of corporate culture at Siemens. This strategy of imparting in-company and on-job training has enabled Siemens to not only fulfil its own requirement for skilled labour, but also of the industry for trained manpower. The work-based training program at Siemens provides young people from diverse and in some cases less privileged backgrounds, the opportunity to acquire industry-relevant skills, leading to a more sustainable career.

There has been a traditional supply and demand gap in Pakistan for skilled manpower in the industry. Siemens' engagement in TVET in Pakistan has helped to address this gap. For Siemens this meant an increase in staff loyalty, enhanced the reputation of the company and a better matching of individuals to industry related job profiles.

Siemens employs more than 700 people and maintains manufacturing facilities in Pakistan which do not only focus on employment but also on life-long learning by regularly conducting training programs for upskilling and reskilling its workforce. Siemens has been able to maintain its strong position in the market by ensuring that its workforce remains abreast of new technologies.

In 2014, a joint pilot project on mechatronics was launched by GIZ's TVET Sector Support Programme in Pakistan, Siemens and the private sector vocational training.

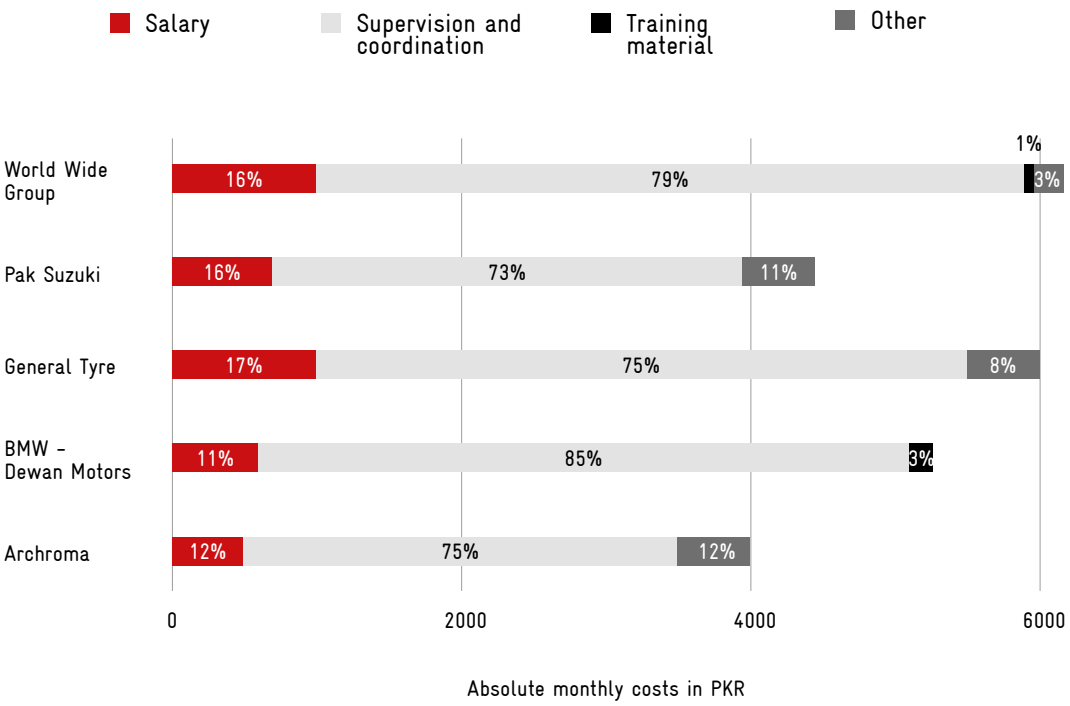
institute Aman Tech in Karachi. As part of the cooperation arrangement, a mechatronics laboratory with a Siemens control unit was procured for practical training. In addition, three teachers received training on using the equipment at the Siemens Academy in Germany over a period of six weeks and obtained certificates. So far, three courses, each with 25 trainees, have been conducted.

Currently, two Pakistani students are enrolled as ambassadors of learning in the Siemens International vocational apprenticeship program in Germany with a commitment to hire them back in Pakistan after completion. Siemens is also investing in enhancing the quality of TVET (curriculum, training equipment, teacher qualification) in close cooperation with local TVET institutes. In order to conduct work-based training more effectively and to realize greater productivity gains from the trainees, Siemens plans to train existing staff of partnering companies to develop pedagogical and technical skills of its in-company trainers.

5.1 Direct costs

Reported monthly costs[2],[3] vary between PKR 40'000 and PKR 61'666. In figure 5 the corresponding values are plotted in both absolute terms (x-axis) and as the share of different cost categories in overall costs (percentage points in bar areas).

Fig. 5: Monthly costs per trainee



→ Data from interviews conducted by GIZ Pakistan
Visualisation kek.ch

2 In addition to the monthly costs, two companies also reported one-time investments for material and tools used for training. We divided these amounts by the overall months of training provided which is the number of trainees multiplied with the training duration.
3 If changing monthly cost were reported (e.g. decreasing costs for supervision), we calculated the mean.

Monthly salaries of the trainees are between PKR 5'000 and PKR 10'000. Contrary to the initial assumptions of the Pakistani companies expressed before they started their involvement in TVET (Franz 2013), **not the salaries but expenses for supervision and coordination are by far the most important cost factor**. In view of the data, a realistic budgeting should allocate at least three quarter (75%) for this category. Only two out of five companies reported substantial initial fix costs that stay the same regardless how many trainees are trained.

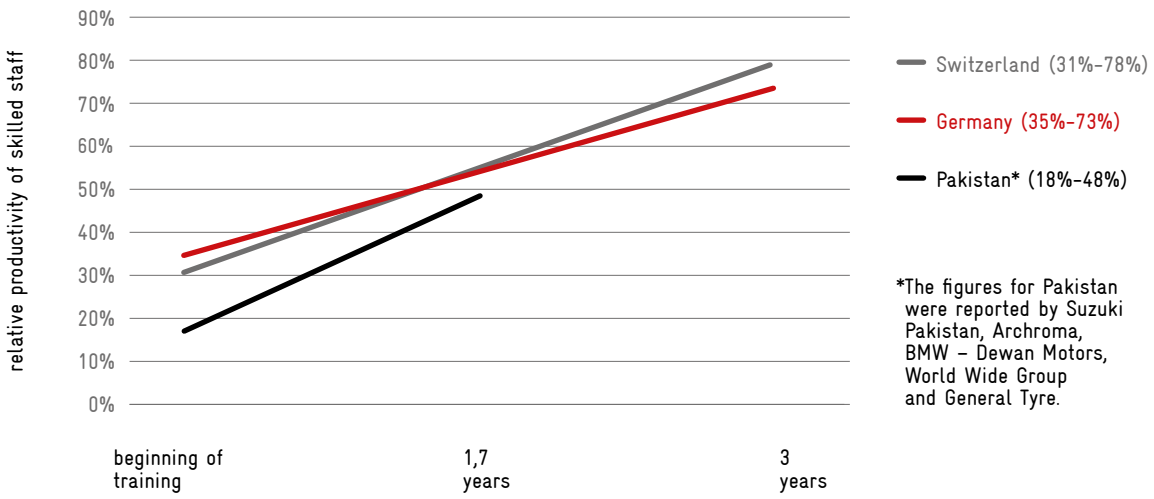
The cost structure of Pakistani companies differs substantially from the cost structure of Swiss companies. In Switzerland, the salary of trainees account for around 46% to 50% of the overall costs (Strupler and Wolter 2012, p. 41), whereas in Pakistan the corresponding values are between 12% and 17%.

There are various causes for the differences between the mentioned cost structures for work-based training. Since **costs for supervision and coordination tend to be higher during the first months, they become less relevant the longer the training lasts**. Accordingly, two of the interviewed companies reported decreasing supervision costs. As aforementioned, Swiss TVET tracks have a significantly longer duration. Another possible cause for deviation is the considerably lower productivity level of the Pakistani trainees. Therefore, more supervision is needed.

5.2 Direct benefit: work output

The net benefit a company can draw from the provision of work-based training mainly depends on the productivity of the trainee. Not only therefore, the achieved increase is a key indicator to assess the **overall performance of TVET systems**. Figure 6 plots the overall mean values of different occupations in Switzerland, Germany[4] and for the interviewed Pakistani companies.

Fig. 6: Trainee's productivity



→ Data from Muehlemann (2016) and interviews conducted by GIZ Pakistan

It is important to keep in mind that TVET tracks do not have the same duration. The plotted Swiss tracks have an average duration of 3.3 years, the German tracks of 3.1 years and the Pakistani tracks of 1.7 years. If we just consider the work-based training component, the corresponding value for Pakistan is only 0.85 years (the rest of the TVET track duration is spent at school).

Against this background, it is remarkable: Pakistani trainees achieve this productivity increase in a significantly shorter time span than their German and Swiss counterparts.

4 For the following TVET tracks, productivity increases are reporter. Switzerland: Retail worker, Commercial employee, Social care specialist, Cook, Logistician, Health care specialist, Bricklayer, IT specialist, Industrial mechanic, Electrician / Germany: Clerk, Medical employee, Logistician, IT specialist, Public administration employee, Joiner, Cook, Tax specialist, Electronics technician, Car mechatronic / Pakistan: Automotive, Machinist, Electrical, Electronics, Mechatronics, Logistics and Supply Chain Assistant, Customer Services and Sales Assistant

The average monthly productivity increases in Pakistan over the overall duration of the TVET track (1.7 years) is 1.5 percentage points and thus above the corresponding value in Switzerland (1.2 percentage points) and Germany (1 percentage point). However, Pakistani companies reported a lower productivity level at the beginning (18%) compared to their counterparts in Germany and Switzerland. Significant differences between the interviewed companies underline the relevance of companies **to actively involve into TVET for achieving positive net benefits** by providing work-based training.

5.3 Downstream benefit: saved recruitment costs

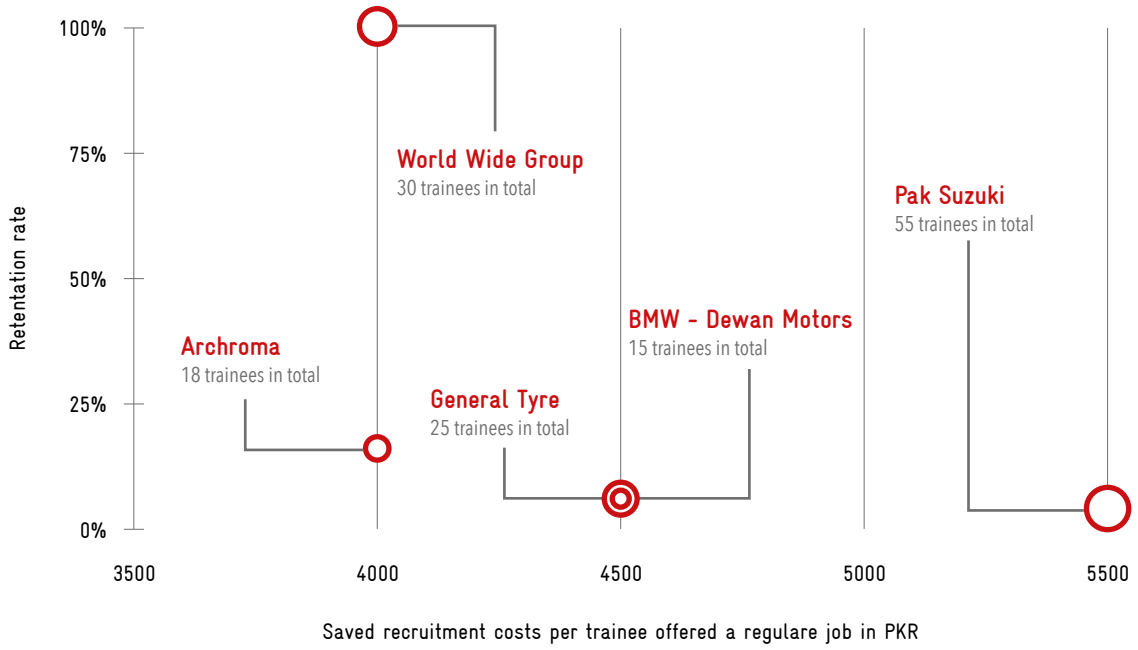
As already discussed, the proportion of trainees who continue to work for a company after completion of training is an important factor for the (downstream) cost-benefit ratio. Savings in recruitment costs correspond to hiring trainees as regular workers.

The five interviewed companies reported hiring costs for a skilled worker between PKR 20'000 and PKR 25'000 and induction costs around PKR 15'000 and PKR 30'000 depending on the sector. On average, the companies save PKR 45'000 on hiring and induction costs when a trainee stays with the company.

Retention rates of trainees can serve as indicator for the overall quality of a TVET system. **If the trained skills meet the labour market requirements, companies are more prone to offer their trainees regular jobs.** Out of 143 trainees who received work-based training, 53 were offered a position at their company. The average retention rate is 37% and thus close to the numbers of the Swiss TVET system. However, the Pakistani numbers are strongly influenced by an outlier. One company hired all its trainees (and even recruited trainees from other companies). If we exclude this case, the average retention rate drops to 21%.

Taken together, the five interviewed companies reduced the recruitment costs by PKR 2'310'000, respectively by PKR 462'000 on average. A closer look at the data reveals a surprising pattern (figure 7). Since companies with higher recruitment cost have higher incentives to the keep trainees, one would expect higher retention rates. The available data does not support this hypothesis. It can be assumed that, **companies could increase their overall net benefits if they align the number of training positions closer to their expected need of skilled workers**.

Fig. 7: Retention rate and saved recruitment costs per trainee offered a regular job



→ Data from interviews conducted by GIZ Pakistan
Visualisation kek.ch

5.4 Net benefits

Cost-benefit ratios depend on many factors. The preceding chapters highlighted the most important ones, except for the market value of the trainee's work output. Since this information is a delicate one for most of the companies, a simulation was made to estimate the **break-even point for net benefits when taking the ratio of the salaries between a skilled worker and a trainee into account**.

The underlying assumption is that the **market value of a skilled workers output equals at least his salary**. Since private companies are profit-seeking and have additional costs to the workers' salaries, our estimations are highly conservative and net benefits should be realized even at lower ratios.

Furthermore, we assume a **non-linear productivity growth curve** with constant initial productivity during the first fifth of the training and maximum productivity during the last fifth of the training. In Pakistan, the mean productivity of a trainee at the end of the training is at 48% of the productivity of a skilled worker (see also chapter 5.2).

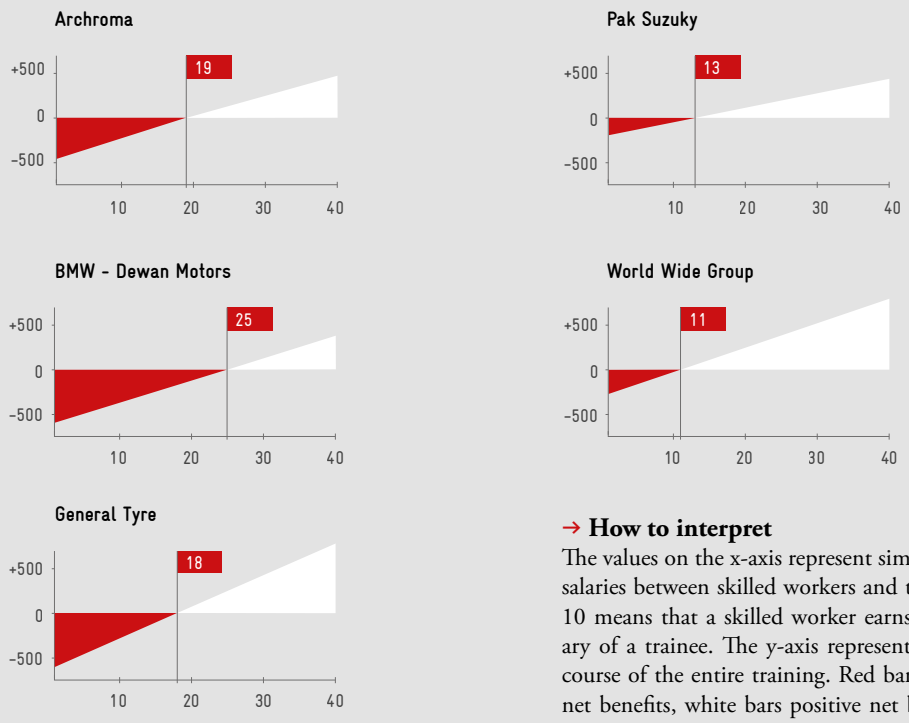
Accordingly, if a hypothetical skilled worker earns PKR 100'000, we estimate the market value of an average trainee's work output at 48'000 during the last fifth of the training (and to be PKR 18'000 during the first fifth)[5]. Figure 8 plots the results.

For each company, we ran a separate simulation for a training that ends with the recruitment of the trainee as a regular worker and for a training without further employment. The calculations can serve companies as a **rule of thumb for setting the trainees' wages in relation to the wages of skilled workers**.

Based on the results of our simulation, it's questionable if all interviewed companies achieve direct or downstream net benefits. Two main conclusions were drawn from the simulation.

First, whether a training ends with the recruitment of the trainee or not obviously influences overall net benefits. However, this is not the most influential factor. Second, the large differences between the companies underline the relevance of the statement that **companies are co-responsible for whether they achieve positive net benefits form the provision of work-based training**. BMW-Dewan Motors needs a twice as high ratio as World Wide Group to financially profit from the provision of work-based training. Obviously, the difference might be owed in large part to the different industries the companies belong to. Nonetheless, it can be suspected that these contextual factors fully explain the differences. Therefore, the individual design of the work-based training a company provides seems to be an important factor too.

Fig. 8: Results of net benefits simulation



→ How to interpret

The values on the x-axis represent simulated ratios of the salaries between skilled workers and trainees. A value of 10 means that a skilled worker earns ten times the salary of a trainee. The y-axis represents net benefits over course of the entire training. Red bars indicate negative net benefits, white bars positive net benefits. The highlighted numbers show at which ratio the estimated net benefits turn positive.

5 As a reference, the interviewed companies reported that skilled in-company instructors earn between 7.5 to 16 times higher wages than a trainee does.

5.5 Social and other non-financial benefits

In order to gain deeper knowledge about non-financial aspects of the provision of work-based training, also qualitative data was collected during the interviews with the Pakistani firms. They describe the relevance of TVET from a company's perspective.

Almost all company representatives confirmed that the introduction of work-based training and the participation in the formal TVET system is a complex undertaking. The design of in-company training plans and the budgeting are challenging tasks, especially when experience is lacking. One company representative stated that the provision of work-based training is also linked to the company's corporate social responsibility agenda and that all costs for TVET were covered by the budget for this agenda. This is a very straightforward example of the social benefits of TVET. It also shows that the underlying motivation to provide work-based training can be manifold and serves different purposes.

Further incentives mentioned were benefits on the systemic level, as for example the opportunity to provide technical input for developing training frameworks, curricula, assessment mechanisms and trainee selection. This kind of involvement ensures close alignment of the whole TVET system to the needs of the labour market. The fact that trainees attend courses at TVET schools guarantees that they are well prepared before starting the in-company training to apply their knowledge under working conditions.

When asked about unexpected effects the interviewees mainly referred to indirect benefits. Namely, that involving in TVET provides opportunities to generally enhance internal training mechanisms of the company or that staff and technical managers can also receive training on pedagogical and technical skills. Another benefit reported was an enhanced image of the company.

In addition to the positive aspects, the companies also described challenges and outlined possible measures to improve the cost-benefit ratios. Several interviewees stated that in-company training systems should be improved in order to integrate trained workforce better into the work routine. To achieve this, further customization of training sequences is required considering content, time, delivery etc. Introducing and accommodating new (and young) staff in the company was also mentioned to be a challenging aspect.

Others stated that the non-industry partners (i.e. public institutions and donor agencies) should invest in the visibility of TVET in order to increase acceptance for this career path. Additionally, the collaboration between the different stakeholders (TVET schools, companies, industry associations) should be improved by introducing more flexible forms of cooperation. Further, a joint vision for the training of the future workforce should be established. The interviewed companies unanimously confirmed that a main benefit of the provision of work-based training is its ability to serve as a recruitment tool to get (semi-) skilled human resources.

+30% increase of productivity

In Pakistan, productivity of trainees compared to the productivity of a skilled worker **increases from 18% to 48%** during the training. This **remarkable increase** surpasses the corresponding values achieved in Switzerland and Germany, when taking the duration of the training into account.

up to 100% retention rate

Retention rates **indicate the overall quality of a TVET system.** If the acquired skills meet the labour market requirements, companies are more prone to offer their trainees regular jobs after graduation. The average retention rate of the five interviewed companies is 37% and thus close to the numbers of the Swiss TVET system. On the disaggregated level, the company specific retention rates vary between 18% and 100%.

PKR 462'000 SAVED recruitment COSTS per company

In addition, **high retention rates improve the company's cost-benefit ratio** of the provision of work-based training. Hiring and induction costs are saved when skilled workers do not have to be recruited externally and trainees are hired instead. Overall, the five interviewed companies saved PKR 2'310'000 on recruitment costs in total respectively PKR 462'000 on average. Naturally, **increasing the retention rate also leads to further savings.**

"Use TVET as a recruitment TOOL!"

Given the figures presented above, the message of the participating firms to those not yet participating in TVET is: **"Embed TVET as a regular feature in the organization and use this medium as a recruitment tool to get semi-/trained skilled human resources!"** In addition, several companies also report that the provision of work-based training brought **new perspectives and ideas** into the company and helped to replace traditional mindsets. To provide work-based training, staff and **technical managers have to be trained in pedagogical and technical skills.** This might lead to innovations with regard to a company's work processes.

Social BENEFITS

Besides the financial motives, the provision of work-based training is also linked to the company's **corporate social responsibility.** The benefits of TVET and motivation to provide work-based training can be manifold and can serve different purposes.

6. BUILD4SKILLS: TVET AND INFRASTRUCTURE – AN INNOVATIVE VISION

TVET systems, globally, often lack alignment with industry requirements. Even though they are formally certified, graduates from vocational training institutes often have little to no exposure to the workplace they have been trained for. Industry representatives highlight a poor level of competencies and skills taught at vocational training institutes.

Build4Skills' primary objective is to make use of the untapped potential of infrastructure projects for on-site training measures. A workplace-based and nationally accredited training on construction sites of infrastructure projects will enhance the employability of the local workforce. Further, training that is oriented towards the needs of the labour market will increase the chances of TVET graduates for decent work and higher incomes.

The German Federal Ministry for Economic Cooperation and Development (BMZ) and the Asian Development Bank (ADB) jointly set up Build4Skills in 2018. The first pilot was launched in Mongolia in January 2019. There, the ADB funded "Ulaanbaatar Urban Services and Ger Areas Development Investment Programme" with its considerable number of ongoing and planned infrastructure measures will be the operational frame for the trainings. The German development organization Gesellschaft für Internationale Zusammenarbeit (GIZ) will be responsible for the TVET component. Further, a digital interface, that is to be facilitated by the project, will enable better evidence-based policy making by providing labour market data.

Build4Skills Pakistan in brief

In Imran Khan's First 100 Days Agenda, the prime minister indicates that **vocational education and training will play an important role in transforming Pakistan's economy.** The first point in his ten-point economic plan reads: "Rapidly create jobs for the youth: Unveil Pakistan's most ambitious Job Creation Strategy to create 10 million jobs across five years, along with a special focus on skill-building through TVET training." Executive Director of the National Vocational and Technical Training Commission (NAVTTC) seconds his statement by saying: "The **industry has a strong role to play** in the policy formulation for skill development and bringing a paradigm shift in the delivery of TVET in the country."Build4Skills is based on the vision of establishing vocational education and training in the long term as a standard in public invitations to tender for infrastructure programmes. Given the complexity of such change processes, Build4Skills seeks to enter into **dialogue with (regional) banks and national stakeholders** to analyse both the feasibility of the approach and the political commitment. In addition, alternative **models of a non-binding nature** will be examined and developed. The recently approved national TVET strategy "Skills for All" recommends "making TVET training component mandatory for all companies participating in bidding for government tenders" in the medium to long term. **This strong political commitment to TVET** will leverage Build4Skills' vision to boost the potential of infrastructure projects for providing quality work-based training in Pakistan.

The innovative approach to make the provision of work-based training an awarding criterion for tendering processes has never been applied to the extent of such big infrastructure projects financed by regional development banks. However, the arguments listed above also hold true for the construction sector.

Examples from South Africa where a similar approach was conducted on a smaller scale show:

- Companies involved made use of the **screening opportunity** coming with the provision of work-based training. The best trainees were offered a position after completion of the training.
- Trainees who received an accredited certificate had **better chances to find decent employment** on other construction sites. This effect ought to be even stronger in formalized TVET systems.

7. WHY SHOULD YOUR COMPANY PROVIDE WORK-BASED TRAINING?

The German TVET System is a promising model to demonstrate how the government and the private sector share mutual responsibility in governing Germany's TVET system and how significant work-based learning is to acquire the knowledge and skills needed to perform a job well.

We do not promote to transfer the German TVET system 1:1 to our partner countries as it is often demanded, but we do encourage considering to adapt constituting elements of our system. The consultation of the private sector, the investment in research to generate relevant labour market data, the relevance of work-based learning and the training of teachers and instructors are such elements.

The provision of work-based training holds manifold potential benefits. Empirical evidence and **examples from Pakistan contradict the often-voiced assumption that involving in TVET systems results in a losing deal for private companies**. However, net benefits are not guaranteed either. Only companies that are successfully mastering the accompanied challenges will achieve net benefits. A company willing to invest in work-based training with the prospect of medium- and long-term net benefits, should consider the following:

Companies and all stakeholders involved in TVET like the government, TVET schools and the civil society need to **collaborate closely** to shape an efficient TVET system. For example, firms willing to introduce in-company training can receive support from focal points and networks of experienced colleagues. Exchanging with other companies involved in work-based training **will help to improve the performance of a single company but also the whole TVET system** (e.g. training plans for work-based training, curricula development). In order to increase the productivity of trainees, employers and TVET schools should explore how to **better match theoretical and practical contents** so trainees are well prepared for the workplace-based training. For a positive cost-benefit ratio, companies should consider offering a **number of training places that does not exceed the expected vacancies**. Otherwise, returns on investment achieved through saved recruitment costs are not optimized.

We strongly advocate for getting involved in TVET as a training company! This paper shows that well organized and planned training will result in a **return on investment** for a company! **The monetary and social benefits gained do not only compensate but exceed the investments made in training one's workforce!**

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